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# Academic Catalog 2022 - 2024

As the only urban land-grant institution in the United States, the only public university in the District of Columbia, and a proud Historically Black College, the University of the District of Columbia (*www.udc.edu*) supports a broad mission of education, research and community service across all member colleges and schools, which include the Community College, College of Agriculture, Urban Sustainability and Environmental Sciences, College of Arts and Sciences, School of Business and Public Administration, School of Engineering and Applied Sciences, and the David A. Clarke School of Law.

The University of the District of Columbia is an Equal Opportunity/Affirmative Action institution. Minorities, women, veterans and persons with disabilities are encouraged to apply. For a full version of the University's EO Policy Statement, please visit: *http://www.udc.edu/equal_opportunity* .

The University of the District of Columbia is accredited by the Middle States Commission on Higher Education, 1007 North Orange Street, 4th Floor, MB #166, Wilmington, DE 19801: https://www.msche.org/

TABLE OF CONTENTS (**NAVIGATION TIP: Click bookmarks for quick locating; to return, press "alt" + "←")**


Executive Officers ..... iiii
Deans ..... iii
Academic Administration and Location ..... 4
Disclaimer ..... 8
University Compliance ..... 8
The American with Disability Act (ADA) ..... 8
Filing a Complaint ..... 9
Family Educational Rights and Privacy Act (FERPA) ..... 9
Drug & Alcohol Abuse Policy ..... 11
University Health Services – 202.274-5030 ..... 11
Vaccinations/Immunizations ..... 11
Student Health Insurance ..... 12
Text Book Information ..... 12
UDC E-mail ..... 12
Police and Public Safety – 202.274-5050 ..... 12
Annual Security Report at the University ..... 13
Environmental Safety ..... 13
UDC Graduation Rate Information ..... 14
Office of Judicial Affairs ..... 14
History of the University of the District of Columbia ..... 14
Accreditation ..... 15
Undergraduate Admissions ..... 16
Graduate Admissions ..... 19
Financial Aid ..... 21
Academic Advising ..... 22
Office of the Registrar ..... 28
Consortium of Universities ..... 36
Academic Standing, Performance, and Grading ..... 38
General Education Program Overview ..... 41
IGED Table of Substitutions ..... 43
Learning Resources Division and Center for the Advancement of Learning ..... 45
College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES) ..... 46
College of Arts and Sciences (CAS) ..... 79
School of Engineering and Applied Sciences (SEAS) ..... 179
School of Business and Public Administration ..... 238
David A. Clarke School of Law (UDC-DACSL) ..... 254
University of the District of Columbia Community College (UDC-CC) ..... 255
UDC-CC Workforce Development and Lifelong Learning Division ..... 291
UDC-Community College Course Descriptions ..... 301
Faculty Listing ..... 306

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**University Academic Calendar**
The Academic Calendar can be accessed on line at: http://www.udc.edu/registrar/academic_calendars

**University Directory**
The directory can be accessed on line at: http://directory.udc.edu/. It provides contact information for University offices faculty, and staff members.

## Academic Administration and Location

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**AAS Mortuary Science Program**
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| | |
|---|---|
| Academic Advising Center (Flagship) | (202)274-6899 |
| Academic Advising UDC-CC Student Success Center (Community College) | (202)274-6988 |
| Admissions- Community College | (202)274-6155 |
| Admissions—Graduate | (202)274-6155 |
| Admissions—Law School | (202)274-7341 |
| Admissions—Undergraduate | (202)274-6155 |
| Alumni Affairs | (202)274-5117 |
| Architectural Research Institute | (202)274-5059 |
| Blackboard | (202)274-6628 |
| Bookstore | (202)274-5110 |
| Cable Television | (202)274-5300 |
| Campus Police | (202)274-5050 |
| Career Services | (202)274-6920 |
| Cashier | (202)274-5112 |
| Center for 4-H and Youth Development | (202)274-7115 |
| Center for Nutrition, Diet, and Health | (202)274-7115 |
| Center for Sustainable Development | (202)274-7115 |
| Center for Urban Agriculture and Gardening Education | (202)274-7115 |
| Child Development Center [Lab School] | (202)274-5213 |
| College of Agriculture, Urban Studies, and Environmental Sciences | (202)274-7115 |
| College of Arts and Sciences | (202)274-5194 |
| Computer Center | (202)274-5500 |
| Counseling Services | (202)274-6000 |
| Financial Aid | (202)274-5157 |
| Financial Aid—Law School | (202)274-7292 |
| Graduate Student Government | (202)274-5207 |
| Health Insurance | (202)274-5030 |
| Health Services | (202)274-5030 |
| Institute of Gerontology | (202)274-6697 |
| Interdisciplinary General Education | (202)274-5857 |
| Library [Learning Resource Division] | (202)274-6370 |
| Lost & Found | (202)274-5050 |
| New Student Orientation (Flagship) | (202)274-5373 |
| Parking | (202)274-5159 |
| Registrar | (202)274-6200 |
| Registrar—Law School | (202)274-7348 |
| School of Engineering and Applied Sciences | (202)274-5220 |
| Special Events | (202)274-5576 |
| Speech & Hearing Clinic | (202)274-6161 |
| Student Accounts | (202)274-5168 |
| Student Affairs | (202)274-5210 |
| Student Employment | (202)274-6268 |
| Student Life & Services | (202)274-5900 |
| Sustainability Division of Land Grant Programs | (202)274-7182 |
| Trilogy Student Newspaper | (202)274-5574 |
| Undergrad Student Government | (202)274-5190 |
| Veterans Affairs | (202)274-6099 |
| Water Resource Research Institute | (202)274-7115 |

## Disclaimer

The course offerings, requirements and policies of the University of the District of Columbia are under continual examination and revision. Thus, the information contained in this catalog is not a contract. Instead, the catalog presents the offerings, requirements and policies in effect at the time of publication and in no way guarantees that the offerings, requirements and policies will not change. As a result, statements may not be regarded as binding obligations on the institution, or as an irrevocable commitment from the University or any of its Schools and Colleges, to the reader.

This Undergraduate and Graduate Catalog has been prepared for the benefit of students, faculty, and administrators of the University, and others wishing to know more about the University's programs, services, and activities. This catalog is the primary reference for information about the University's curriculum, academic policies and procedures, and courses. Updated and supplemental information can be found in the following publications and information environments:

The Student Handbook available online and from the Office of Student Affairs, published annually: https://www.udc.edu/student-life/student-handbook/.

The University Intranet myUDC.edu for current students, administrators, faculty and staff.

These sources will be updated regularly with a variety of information about the University's programs, particularly upcoming activities and events, and links to departments, programs, students, and faculty. The information in this Catalog is accurate as of the date of publication, and the authors know of no significant changes to be made by the University in the near future. The University, however, reserves the right to make changes at any time, with or without prior notice, including, but not limited to, changes in rates and fees, deadlines, program offerings, course offerings, and course and program descriptions and requirements.

## University Compliance

### Equal Opportunity Statement

The University of the District of Columbia is an Equal Opportunity Affirmative Action institution. The University prohibits discrimination or harassment against any person on the basis of the actual or perceived actual race, color, religion, national origin, sex, age, disability, sexual orientation, gender identity or expression, family responsibilities, matriculation, political affiliation, marital status, personal appearance, genetic information, familial status, source of income, status as a victim of an intrafamily offense, place of residence or business, credit information or status as a covered veteran, as provided for and to the extent required by District and Federal statutes and regulations. This policy covers all programs, services policies, and procedures of the University, including admission to educational programs and employment. The University emphasizes the recruitment of minorities, women, disabled individuals, disabled veterans, Vietnam era veterans, and other eligible veterans.

In accordance with our Discrimination and Harassment Policy, the University will strive to provide an educational and working environment for all faculty, staff and students that is free from all forms of discrimination and harassment, including sexual harassment. We are committed to providing an environment that treasures diversity and emphasizes the dignity and worth of every individual and an environment in which every individual is treated with respect. The University will examine impartially all complaints of sexual harassment and attempt to resolve them as promptly as possible.

## The Americans with Disabilities Act (ADA)

In accordance with Section 504 of the Rehabilitation Act of 1973 and the Americans with Disabilities Act (ADA) of 1990, no otherwise qualified student with a disability shall, solely because of the student's disability, be excluded from participation in, be denied benefits of, or be subjected to discrimination under any program or activity of the University, including facilities and employment.

### Copyright Infringement Consumer Disclosure

Copyright infringement is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under section 106 of the Copyright Act (Title 17 of the United States Code). These rights include the right to reproduce or distribute a copyrighted work. in the file-sharing context, downloading or uploading substantial parts of a copyrighted work without authority constitutes an infringement. Penalties for copyright infringement include civil and criminal penalties. In general, anyone found liable for civil copyright infringement may be ordered to pay either actual damages or "statutory" damages affixed at not less than $750 and not more than $30,000 per work infringed. For "willful" infringement, a court may award up to $150,000 per work infringed. A court can, in its discretion, also assess costs and attorneys' fees. For details, see Title 17, United States Code, Section 504, 505. Willful copyright infringement can also result in criminal penalties, including imprisonment of up to five years and fines of up to $250,000 per offense. For more

information, please see the website of the U.S. Copyright Office at www.copyright.gov

## Filing a Complaint

Persons who believe they have been discriminated against (including sexual harassment) may file a complaint by contacting the Equal Opportunity Officer/ADA Coordinator or Title IX Coordinator.

Equal Opportunity Officer/ADA Coordinator/
Title IX Coordinator: Ms. Evola Bates.
Evola.Bates@udc.edu

### Family Educational Rights and Privacy Act (FERPA)

The Family Educational Rights and Privacy Act (FERPA) is a federal law that protects the privacy of student education records. Education records are directly related to the student and are maintained by the University. Student educational records are confidential and will only be shared by University officials with other University faculty or staff or with lending agencies that have a legitimate interest to know certain information. FERPA prevents the release of information about a student, other than directory information, without the student's consent.

Under FERPA, students are given certain rights regarding education records:

- The right to inspect and review education records pertaining to the student kept by the University;
- The right to request the amendment of education records the student believes to be inaccurate, misleading or otherwise in violation of his or her privacy rights;
- The right to limit disclosure of education records; and
- The right to file a complaint with the US Department of Education concerning alleged failures by the institution to comply with the requirements of FERPA and the regulations.

For instructions on filing a FERPA complaint with the Family Policy Compliance Office of the US Department of Education, visit this website: https://studentprivacy.ed.gov/file-a-complaint.

The following documents are located in the University's Office of the Registrar:

- Information regarding the Family Educational Rights and Privacy Act of 1974, as amended
- Student Request Form to Review Education Records
- Student Request Form to Amend or Remove Education Records
- Student Request Form to Limit Disclosure of Directory Information
- Student Consent Form for Access to Education Records
- Third-party Request for Student Information

**Directory Information**

Directory information is information contained in an education record of a student that generally would not be considered harmful or an invasion of privacy if disclosed. It includes, but is not limited to: the student's name; student's address; telephone listing; electronic mail address; photograph; date and place of birth; major field of study; dates of attendance; classification; enrollment status (undergraduate or graduate, full-time or part-time); participation in officially recognized activities and sports; weight and height of members of athletic teams; degrees, honors, and/or awards received; and previous education agency or institution attended.

Information that can never be identified as directory information are a student's Social Security number (SNN); student identification number (SID); race and ethnicity; gender; religious preference; country of citizenship; grades and grade point average; class schedule; disciplinary actions; and biometric record (for example, fingerprints).

**Disclosure without Consent**

Please note that the University may be permitted or required to release educational records without a student's consent under the following conditions: school officials with legitimate educational interest; other schools to which a student is transferring; specified officials for audit or evaluation purposes; appropriate parties in connection with financial aid to a student; to local officials or authorities pursuant to specific law regarding the juvenile justice system; organization conducting certain studies for or on behalf of the school; accrediting organizations; to comply with a judicial order or lawfully issued subpoena; appropriate officials in cases of health and safety emergencies; to a victim of an alleged perpetrator of a crime of violence or a non-forcible sex offense; to a parent if the student has violated any law, rule or policy governing the use or possession of alcohol or a controlled substance; or the disclosure concerns sex offenders required to register under federal law. (34 CFR § 99.31)

**Disclosure to School Officials with Legitimate Educational Interest**

The University discloses education records without a student's prior written consent under the FERPA exception for disclosure to school officials with legitimate educational interests. A school official is a person employed by the University in an administrative, supervisory, academic or research, or support staff position (including University law enforcement personnel and University health staff); a person or company with whom the University has contracted as its agent to provide a service instead of or in addition to using University employees or officials (such as an attorney, auditor, or collection agent); a person serving on the Board of Trustees; or a student serving on an official committee, such as a disciplinary or grievance committee, or assisting another school official in performing his or her tasks.

A school official has a legitimate educational interest if the official needs to review an educational record in order to fulfill his or her professional responsibilities for the University.

**Disclosure for Student Athletes**

As required by the Department of Education, the University of the District of Columbia prepares and submits the annual Equity In Athletics Disclosure which reports athletics participation, staffing, and revenue and expenses for men's and women's teams. The report can be obtained from the University's athletics web page - www.udcfirebirds.com, or through the Department of Education - ope.ed.gov/athletics.

**Misrepresentation**

The University of the District of Columbia (UDC) has procedures to ensure that it does not misrepresent the nature of its educational program. The procedures include, but are not limited to, assurances that the school does not provide false, erroneous or misleading statements.

No employee may make statements indicating that any program or degree offered by the university will result in employment, promotion in existing employment, increases in salary or other benefit. No employee will make statements such that completion or attendance at UDC will result in admission to any other institution nor to any program at UDC. This UDC Catalog contains the requirements for admission and completion of all degrees and the costs associated with such degrees also available here: https://www.udc.edu/registrar/course-catalog/. No employee may make representation that any of these policies may be waived without written permission from the appropriate administrative official. As a District of Columbia Agency, all faculty and staff are required to take Ethics Training, and other Professional Development training, provided by the Office of Human Resources found on this website link: http://www.udc.edu/human_resources/training_-professional-development/

**Disclosure on Enrollment of Veterans**

The University understands and will comply with the 85/15 rule, which restricts the enrollment of students receiving financial support from the Veterans Affairs.

**VA Pending Payment Compliance**

In accordance with Title 38 US Code 3679 subsection (e), UDC adopts the following additional provisions for any students using U.S. Department of Veterans Affairs (VA) Post 9/11 G.I. Bill® (Ch. 33) or Vocational Rehabilitation & Employment (Ch. 31) benefits, while payment to the institution is pending from the VA. The university will not:

- Prevent the student's enrollment;
- Assess a late penalty fee to the student;
- Require the student to secure alternative or additional funding;
- Deny the student access to any resources (access to classes, libraries, or other institutional facilities) available to other students who have satisfied their tuition and fee bills to the institution.

However, to qualify for this provision, such students may be required to:

- Provide the VA Certificate of Eligibility (COE) by the first day of class;
- Provide a written request to be certified;
- Provide additional information needed to properly certify the enrollment as described in other institutional policies.

Students who are eligible to receive benefits from the Department of Veteran Affairs (VA) under Chapter 31 Vocational Rehabilitation and Services (VR&E), Chapter 30, Chapter 35, Fry Scholarship or Chapter 33 Post 9/11 GI Bill must submit a request for certification for each semester in which they elect to receive funding.

## Statement of Assurance of Compliance with Equal Opportunity Laws:

The University of the District Columbia hereby agrees that it will comply with Title VI of the Civil Rights Act of 1964 (42 U.S.C. 2000d et seq.), Title IX of the Education Amendments of 1972, as amended (20 U.S.C. 1681 et seq.), Section 504 of the Rehabilitation Act of 1973 (29 U.S.C. 794), the Age Discrimination Act of 1975 (42 U.S.C. 6101 et seq.), and all Federal regulations adopted to carry out such laws. This assurance is directed to the end that no person in the United States shall, on the ground of race, color, national origin (Title VI), handicap (Section 504), sex (Title IX, in education programs and activities only), or age (Age Discrimination Act) be excluded from participation in, to be denied the benefits of, or be subjected to discrimination

under any program or activity of the Signatory receiving Federal financial assistance or other benefits under statutes administered by VA (Department of Veterans Affairs), the ED (Department of Education), or any other Federal agency. This assurance applies whether assistance is given directly to the recipient or indirectly through benefits paid to a student, trainee, or other beneficiary because of enrollment or participation in a program of the Signatory.

The University of the District of Columbia will maintain a written record of previous education and training of veterans (and all eligible persons for veterans' benefits) which clearly indicates that appropriate credit has been given by the school for previous education and training, with the training period shortened proportionately.

The University of the District of Columbia Understands that GI Bill® is a registered trademark of the U.S. Department of Veterans Affairs (VA). More information about education benefits offered by VA is available at the official U.S. government Web site at https://www.benefits.va.gov/gibill.

## Drug & Alcohol Abuse Policy

The unlawful possession, use, or distribution of illicit drugs by students on University property or as part of any University activity is prohibited. Federal and District of Columbia laws prohibit the unlawful use, manufacture, possession, control, sale and dispensation of any illegal narcotic or dangerous drug. Consumption of alcoholic beverages on University property and University events shall be by persons of the age of 21 years or older. The University prohibits alcoholic beverages and related paraphernalia at any University-sponsored housing facility. No student, faculty or staff are permitted to store, consume or possess alcoholic beverages or containers in University-sponsored housing facilities and surrounding areas, including common areas (main lounges, laundry rooms, study lounges, workout rooms, etc.), pool area, courtyards, parking lots, stairs and elevators.

The health risks associated with the use of illicit drugs and the abuse of alcohol include physical and mental impairment, emotional and psychological deterioration, fine and gross motor degeneration, and death. Students who unlawfully possess, use, or distribute illicit drugs or alcohol shall be sanctioned. Sanctions may include referral for criminal prosecution, expulsion, suspension, reprimand, or requiring the student to complete an appropriate rehabilitation program.

The University of the District of Columbia provides confidential counseling and referral services to students with problems related to drug use and alcohol abuse. The University also provides information about substance abuse and treatment programs available to UDC students.

Students who desire information regarding substance abuse or treatment programs should contact the University Health Services at 202.274.5030.

## University Health Services – 202.274.5030

The purpose of University Health Services (UHS) is to ensure a healthy campus environment and to promote optimal physical and emotional health and wellness among students, faculty, and staff. UHS is committed to providing caring, quality, confidential services to the University community, inclusive of all sexual orientation and gender identities. UHS is conveniently located on the Van Ness Main campus in Building 44, Room A-40 and staffed by highly skilled, board-certified, licensed nurse practitioners and a student health coordinator. The goal is to provide affirming health and wellness services through mandatory and routine preventative health care, urgent care, and specialist referrals. Preventative health services include lectures, workshops, disease screenings, immunizations, routine gynecological exams and routine physical exams. Urgent care services include the following health issues: respiratory infections, urinary tract infections, headaches, abdominal pain, sexually transmitted infections (STIs), dermatological conditions, sports-related injuries, and other concerns that require a visit to a family doctor or general practitioner. Students in the healthcare professions and athletic programs are required to submit proof of a recent physical examination and documentation of required laboratory testing. All students with chronic medical conditions (e.g., allergies, seizures, diabetes, and high blood pressure) are recommended to have a medical history on file with UHS documenting pertinent information. DC Immunization Law 3-20, mandates it is mandatory for all students 26 years and under, enrolled in classes at the University be fully immunized. For more details on immunization requirements or other information about UHS visit us online at http://www.udc.edu/health-services/immunizations/ or call 202.274.5030.

### Vaccinations/Immunizations

District of Columbia Immunization Law 3-20 requires any student under the age of 26, enrolled in a primary, secondary or post-secondary school of higher education (college or university), submit proof of immunization as follows:

- Two (2) doses of measles, mumps and rubella vaccines (commonly known as MMR), given at least 30 days apart, or copies of blood tests showing immunity to measles, mumps and rubella.

- One booster for tetanus/diphtheria (Td) within the last 10 years.
- Three doses of hepatitis B vaccine. The second dose should be given one month after the first dose, and the third dose should be five months after the second. A positive blood test for hepatitis B is also acceptable.
- Two varicella (chicken pox) vaccines or a positive blood test for varicella.
- Students under the age of 18 must also show proof of polio immunization.
- Athletes and other students living in university housing must have received at least one (1) meningococcal vaccine within the last 5 years.
- A recent PPD skin test for tuberculosis is encouraged for international students.

Upon receipt of a letter of acceptance from the University, applicants must obtain your immunization records from previous school(s) and/or primary care provider. Before coming to register for classes, applicants must contact UHS (not the Office of Admissions) for instructions on how to upload and submit medical records electronically through the student health portal, udc.studenthealthportal.com. Instructions for the Student Health Portal are found at http://docs.udc.edu/healthservices/Student_HealthPortal_Instruction_Sheet.pdf. Immunization records are accepted through the student health portal. If help is needed, students may come to the UHS with their immunization records. The mandatory immunization sheet(s) can be found at http://www.udc.edu/health-services/forms under "My Forms." A medical history on file provides documentation of long standing medical conditions. Students in health professions, preparing for clinical rotations are required to show proof of immunizations regardless of age. All records must be written in English. If any of the above immunizations are missing, applicant must arrange to obtain the vaccine(s) from a private health care providers' office or neighborhood health clinic.

**COVID-19 Vaccination Policy (Effective for Fall Semester, 2021)**

a. The University requires that all faculty, staff, and students be vaccinated against COVID-19.

b. The University will follow the CDC guidelines and District of Columbia laws and orders regarding the wearing of a face covering. At present if you are fully vaccinated, you do not have to wear a face covering unless mandated by federal or local laws. You are considered fully vaccinated 2 weeks after your final vaccination. However, the University requires the wearing of a face covering on campus unless you are alone in a space.

c. Students are to submit their proof of vaccination to the University Health Services using the Student Health Portal by August 2, 2021 at https://udc.studenthealthportal.com.

**Reasonable Exemptions**

a. Anyone requesting an exemption from this COVID-19 vaccination policy because of a sincerely held religious belief must submit a completed Religious Exemption Request Form to the University Health Services.

b. The Medical Exemption is available on a case-by-case basis for any medical condition that is contraindicated to the COVID-19 vaccination. The University Health Services will engage in an interactive process to determine whether an exemption can be granted. The Medical Exemption Request Form must be submitted only to Health Services.

c. Employees must return the Religious Exemption Forms to OHR and students must return their Religious Exemption Forms to University Health Services

**Policy Modification**

Government and public health guidelines and restrictions and business and industry best practices regarding COVID-19 and COVID-19 vaccines are changing rapidly as new information becomes available, further research is conducted, and additional vaccines are approved and distributed. This policy may be modified at any time to adapt to changing circumstances and business needs consistent with its commitment to maintaining a safe and healthy workplace.

## Student Health Insurance

To ensure the health and wellness of the University community, the University of the District of Columbia requires health insurance coverage for all students. Proof of adequate personal health insurance coverage must be provided at the beginning of the semester for new, readmit, international or transfer students and once per academic year thereafter for all continuing students. Students unable to demonstrate adequate health insurance coverage are mandated to enroll in the comprehensive student injury and sickness plan sponsored by the University. This requirement assures some relief of the burden of expensive health care and instills within the students the lifetime responsibility of obtaining quality health insurance. A mandatory fee for the student health insurance plan (SHIP)

is automatically charged to students' accounts during the registration period (fall, spring, summer). Enrollment in the SHIP can be waived if a student has other adequate coverage. Students with other adequate coverage may elect to decline the SHIP coverage and receive a credit on their student account by submitting an online waiver form. Students must receive a waiver or enroll in the SHIP between the first and last days of the scheduled registration period. Failure to submit an online waiver providing proof of health insurance coverage will result in the non-refundable insurance premium charge for that semester or academic school year. The health insurance premium charge is subject to change at any time. For more information, visit the University of the District of Columbia website at. http://www.udc.edu/health-services/student-healthinsurance-plan/.

## Textbook Information

In accordance with the Higher Education Opportunity Act, 20 U.S.C. §1015b, textbook information for University courses is available online: https://www.bkstr.com/districtofcolumbiastore/home

The University bookstore is located at 4200 Connecticut Avenue N.W., Building 38 Level A Washington, D.C. 20008. The email address for the bookstore is udcbookstore@udc.edu and the telephone number is 202.284.5110.

## UDC E-mail

All students must activate their e-mail and myUDC accounts. All matriculated students have email accounts established when they register for one or more classes. This email account will be used by faculty to contact students enrolled in their classes and for college staff to inform students of important announcements. Student email accounts are Web-based and can be accessed from any computer with an Internet connection. Students will use their e-mail accounts to activate the myUDC portal that will provide access to key services: registration, student account information, financial aid, email, grades, and official university communications. Once issued, email accounts must be activated by the student.

## Division of Public Safety and Emergency Management/UDC Police Department (UDCPD)– 202.274.5050

Reporting crime, suspicious or unusual activity, medical emergencies, fire and environmental safety hazards: We encourage all students, faculty, staff and visitors to contact and report all suspicious or unusual activity that they observe to the Emergency Communication Center (ECC) at 202.274.5050 or through the LiveSafe Mobile Safety app*. After a person contacts the ECC, an officer(s) will be dispatched to the location of the incident. UDCPD will simultaneously initiate emergency response from other agencies if needed or as required. For direct access to municipal emergency response services (police, fire, ambulance), dial 911 (or 9+911 from a University telephone).

If a person becomes a victim of, or witness to, a crime, the person should immediately contact UDCPD at 202.274.5050 or report in person to Building 39, C-04 (24 hours a day, 365 days a year).

*LiveSafe enables two-way communication between users and the UDC Police Emergency Communications Center. Users can share information—anonymously if they choose—via text, photo and video directly from their smartphones. Download the app from iTunes or Google Play, or use the UDC specific web address: http://bit.ly/UDC-LiveSafe

## Annual Security Report at the University

The Annual Security Report (ASR) is made available in compliance with the Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act on October 1st of each year. The Jeanne Clery Disclosure of Campus Security Policy and Campus Crime Statistics Act (Clery Act) requires colleges and universities to disclose campus safety information, and imposes certain basic requirements for handling incidents of sexual violence and emergency situations. Disclosures about crime statistics and summaries of security policies are made once a year in an Annual Security Report (ASR), and information about specific crimes and emergencies is made publicly available on an ongoing basis throughout the year.

The Annual Security report is available online and may be downloaded from: www.udc.edu/public-safety/chief--of-police/ (under publications). Individual printed copies of the ASR may be requested through the mail, in person at Building 39, C-04 or by calling 202.274.5050.

## Environmental Safety

For non–emergency matters involving environmental safety and management, such as chemical spills, waste management and other compliance and regulatory standards related to environmental safety, please call the Office of Human Resources – Risk Management at 202.274.5020 (during University business hours). Outside of University business hours, and in emergency situations,

contact the UDCPD Emergency Communications Center at 202.274.5050.

## UDC Graduation Rate Information

Graduation rate information is available online at: http://www.udc.edu/irap/. A paper copy of this report is also available by calling the Office of Institutional Research, Assessment and Planning (IRAP) at 202.274.5012

## Office of Judicial Affairs

Students can express concerns about matters related to the University and/or their respective university life experiences. The student should complete a Student Complaint Form to initiate the conflict resolution process. The form can be found online at http://www.udc.edu/docs/student_affairs/student_problem_complaint.pdf, in the Office of Student Life and Services, Building 38, Room A-10 or the Office of the Vice President for Student Affairs, Building 39, 301-J.

## History of the University of the District of Columbia

The University of the District of Columbia is, at once, very old and very new. The seeds of higher education for the District were planted in 1851 when Myrtilla Miner founded a school for colored girls. In 1879, Miner Normal School became a part of the public school system. Similarly, Washington Normal School, established in 1873, as a school for White girls, was renamed Wilson Normal School in 1913. In 1929, by an act of Congress, both schools became four-year teachers colleges, Miner Teachers College and Wilson Teachers College, and the only institutions of public higher education in the city. Years later, after the long awaited Supreme Court desegregation decision, the two colleges united in 1955 to form the District of Columbia Teachers College. However, for many residents who did not wish to become teachers or who were both Black and poor, the opportunity for advanced technical training or study for a liberal arts degree was an unattainable goal. Years of persistent lobbying for comprehensive public higher education by District residents and others caused President John F. Kennedy, in 1963, to appoint a commission to study the District's needs. It was no surprise that the Chase Commission found a definite and compelling need for public higher education in the District of Columbia. There was a demand for instruction that was affordable and an overwhelming desire for learning that would enable residents to participate fully in the unique life of the city.

The Commission's report stimulated congressional action. Under the leadership of Senator Wayne Morse and Congressman Ancher Nelson, the Public Education Act (Public Law 89-791) was enacted in 1966. Two schools were established: Federal City College, with a Board of Higher Education that was appointed by the Mayor of the District of Columbia, and Washington Technical Institute, with a Board of Vocational Education that was appointed by the President of the United States. The mission of both institutions was to serve the needs of the community by directing the resources and knowledge gained through education toward the solutions to urban problems.

As a sign of hope for the future, both schools proudly opened their doors in 1968. There were so many applications for admission to Federal City College that students were selected by lottery. Federal City College and the Washington Technical Institute achieved Land-Grant status in 1968, more than 100 years after the first Morrill Land-Grant Act was passed by Congress. The two schools grew in academic stature. The Washington Technical Institute received its accreditation in 1971, Federal City College in 1974.

Although the schools were in their infancy, thoughts turned to a comprehensive university structure. In 1969, the District of Columbia Teachers College, the city's oldest teacher training institution, was placed under the jurisdiction of the Board of Higher Education. In 1974, the Board established a joint administrative support system and placed the District of Columbia Teachers College and Federal City College under a single president. In 1975, after Congress granted limited home rule to the District of Columbia, D.C. Law 1-36 authorized the mandate for consolidating the three schools.

A new Board of Trustees took office in May 1976, consisting of 11 members appointed by the Mayor and three appointed by the alumni associations. From that moment on, the monumental task of shaping a new University of the District of Columbia began. The Board of Trustees, acting to effect the consolidation, assigned Presidents Wendell P. Russell of Federal City College and Cleveland L. Dennard of Washington Technical Institute to work jointly in identifying, developing, and implementing tasks required to complete the effort. Beginning in February 1977, 22 task forces were formed to develop recommendations for Board action.

On August 1, 1977, the Board of Trustees publicly announced the consolidation of the District of Columbia Teachers College, the Federal City College, and the Washington Technical Institute into the University of the District of Columbia under a single management system.

On the same day, the Board appointed Lisle Carleton Carter, Jr., the first president of the University. In 1977, under the direction of President Carter, academic components began planning for consolidation of academic programs. These efforts culminated in the establishment of five programmatic colleges: Business and Public Management; Education and Human Ecology; Liberal and Fine Arts; Life Sciences; Physical Science, Engineering and Technology; University College; and Continuing Education. The University also had several academic units. All of these entities comprised The University of the District of Columbia.

The University currently offers 47 undergraduate and graduate academic degree programs through the following colleges and schools: College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES); College of Arts and Sciences (CAS); School of Business and Public Administration (SBPA); School of Engineering and Applied Sciences (SEAS); the Community College; and David A. Clarke School of Law. In addition, citizens have access to programs in Work Force Development and Life Long Learning offered at the Community College.

## Accreditation

The University of the District of Columbia is accredited by the Middle States Commission on Higher Education, 1007 North Orange Street, 4th Floor, MB#166, Wilmington, DE 19801. MSCHE is an institutional accrediting agency recognized by the United States Department of Education (USDE). In 2016, the University received an 8-year, unconditional reaffirmation of its accreditation from MSCHE, and UDC's current Statement on Accreditation Status is located here: Middle States Commission on Higher Education.

**Mission**

Embracing its essence as a public historically black urban-focused land-grant university in the nation's capital, UDC is dedicated to serving the needs of the community of the District of Columbia, and producing lifelong learners who are transformative leaders in the workforce, government, nonprofit sectors and beyond.

**Vision**

All students will achieve their highest levels of human potential.

**Core Values**

Excellence, Innovation, Integrity, Collaboration, and Sustainability

**Goals**

The Equity Imperative—Strategic Plan 2022 outlines **THREE** broad goals for the University.

**ONE:**

**UDC will be a public higher education model of urban student success by:**

- Offering effective and affordable academic and workforce programs
- Launching nationally recognized urban research and scholarship
- Strengthening links to government and community stakeholders

**TWO:**

**UDC will award more degrees and workforce credentials by:**

- Charting seamless pathways between training, education, and employment
- Ensuring students succeed by providing coaching, tutoring, and financial aid
- Creating environments conducive to learning

**THREE: UDC will graduate passionate learners and leaders who will transform our lives and urban spaces as we:**

- Encourage multicultural engagement
- Enrich our curriculum with experiential learning
- Equip students with self-awareness tools and senses of empowerment

**Responsibilities of the University**

The University of the District of Columbia strives to ensure that the institution continues its mandated mission to meet the comprehensive post-secondary education needs of the residents of the District of Columbia. Education, across the continuum, is central to the development of the city, not only in the present, but also in planning and building for the future. It is the foundation for the active participation of all of the citizens of the District of Columbia - economically, socially, morally, culturally and politically.

The University places education at the highest priority in plans to revitalize the city, without placing limits on what citizens can achieve and how they can contribute. University students come to the institution with a wide variety of educational interests, and to the extent feasible, every effort is made to meet their needs.

The University shares with the rest of the region the responsibility of building a community of learners, able to access a multitude of educational options, as well as access entry and exit points along the educational pipeline. In this way, the city is assured of a world-class workforce, current in their skills and talents, advancing as rapidly as the industry base demands.

The University reaffirms its commitment to excellence through service, as it prepares its students for the global, technological challenges of life in the 21st Century.

**Location**
The main campus of the University of the District of Columbia is located at 4200 Connecticut Avenue and Van Ness Street in northwest Washington, D.C. The UDC-Community College is located at 801 North Capitol Street NE, just two blocks from Union Station.
Other programs are offered at Bertie Backus: 5171 S. Dakota Ave NE.; Marion Shadd: 5601 East Capitol St, SE; and Regan National Airport. All University buildings are easily reached by public transportation.

The University's location in the nation's capital offers students access to cultural, intellectual, and political activities unequaled anywhere in the U.S. The three branches of the federal government, the Library of Congress, the Smithsonian Institution, the numerous galleries, museums, halls for the performing arts, and other facilities of the nation's capital provide a rich setting for educational endeavors.

The Washington metropolitan area features numerous parks and woodlands, and beaches and mountains are within easy commuting distance of the District. Bicycle paths, hiking and bridle paths and historic sites are found throughout the area. Washington, D.C. offers students a rich sociocultural setting reflecting the diverse ethnic makeup of the city. Museums, radio stations, entertainment events, and community activities oriented to the multicultural community abound.

Opportunities for students to participate in the life of the community are enhanced by the University's commitment to involvement in the life and needs of the city.

## Admission Standards (Undergraduate)*

https://www.udc.edu/admissions/

- Undergraduate applicants may apply to either the Community College to obtain an Associate Degree or to the University to obtain a Bachelor degree.
- Undergraduate applicants seeking admission to the University, but who do not qualify for admission to one of our bachelor programs, will be offered admission to the University's community college, when possible.
- Applicants who apply to the Community College will only receive admission to the University's community college.
- Students cannot be concurrently enrolled and/or admitted into the Community College and Flagship.

**The UDC-Community College**
All applicants who have earned a high school diploma, GED, or equivalent are eligible for admission. Certificate of Completion not acceptable.

**GED General Education Development Test (GED)**
GED applicants interested in gaining admission into one of the University's bachelor programs must submit SAT, ACT and/or ACCUPLACER test scores that meet the bachelor degree admission criteria.

***Note**: Effective Fall of 2020, the university is temporarily SAT/ACT test optional. All admissions and course placement standards are currently undergoing review.

**Freshman Applicants seeking a Bachelor Degree**

Applicants interested in admission to a bachelor's degree program must have earned a high school diploma, GED, or its equivalent. Certificate of completion not acceptable. Also, meet the following:

**An earned GPA of 2.5 or above and score of 890 or better on SAT* or a score of 16 or better on ACT***
**OR**
**Earned GPAs of 2.0 – 2.49 and 1030 SAT* or a score of 19 on ACT or better***

***Note**: Effective Fall of 2020, the university is temporarily SAT/ACT test optional. All admissions and course placement standards are currently undergoing review.

**First Time in College applicants** who do not meet the above requirements may still be eligible for admission to the University's bachelor programs if they achieve minimum scores on the ACCUPLACER.

**Minimum scores for the Classic or ESL Accuplacer**
**English Score: 86**
**Mathematics Score: 85**
**Reading Score: 78**

**Minimum Scores for Accuplacer Next-Gen**
**Writing Score: 250**
**Reading: 263**
**Mathematics Score: 256**

**Non-Traditional**
Applicants who have been out of school beyond three (3) years and who never took the SAT or ACT are admissible to the University's bachelor programs having earned a GPA of 2.5 or better.

**Home-Schooled Applicants:** Applicants interested in gaining admission to one of the University's bachelor programs must provide a transcript with an earned GPA (2.5 GPA for bachelor programs). High school transcripts submitted without GPAs will not be accepted, Accuplacer exam is a required supplement to gain admission to either the University or Community College. Transfer applicants with 24 or more credits are exempt from this requirement.

**Transfer Applicants:**
Transfer applicants must submit a non-refundable application fee and official copies of academic transcripts from **all** previously attended postsecondary institutions. In addition, applicants must submit an official high school transcript or high school equivalency.

**Transfer Applicants to the University**
Applicants wishing to attend the University and who have attended any previous post-secondary college or university are considered as Transfers.

All transfer applicants are eligible for admission to the University if they are not currently on either academic or non-academic suspension or dismissal at a post-secondary institution. Transfer applicants must submit a non-refundable application fee, official copies of academic transcripts from all previously attended postsecondary institutions. In addition, applicants must submit an official high school transcript or high school equivalency.

- All admissible transfer credits earned will appear on the student's permanent academic record. The grades and credit hours earned are not computed in determining term or cumulative-grade-point average, nor will they affect academic standing.
- Transfer credit may also be awarded for such formal course work completed in the armed services, government agencies, and private corporations as identified and evaluated by the Office of Educational credit of the American Council on Education ACE).
- The University of the District of Columbia will accept the Joint Service Transcript (JST) to review for academic credit which come at no cost to the student. The JST provides a description of military schooling and work history in civilian language. For the Army, Navy, Marines, or Coast Guard, go to the Joint Services Transcript (JST) website. Fill out an Official Transcript Request to share your transcript with the University of the District of Columbia online. For the Air Force, go to the Community College of the Air Force website to make request.
- The University of the District of Columbia will maintain a written record of previous education and training of veterans (and all eligible persons for veterans' benefits) which clearly indicates that appropriate credit has been given by the school for previous education and training, with the training period shortened proportionately.
- UDC also awards credit for successful completion of general and subject examinations of the College Level Examination Program (CLEP).
- Students who were academically and non-academically dismissed from their last institution must wait one year before they are eligible for application to UDC.

Failure to list and provide transcripts from all institutions attended will result in the denial of transfer credit. Transcripts should be sent directly to the Office of Undergraduate Recruitment and Admissions.

**International Undergraduate College Applicants**
All international applicants who completed high school outside of the United States must submit an evaluated transcript by the National Association of Credential Evaluation Services, Inc. (NACES), www.naces.org which specifies US high school equivalency. Additionally, student who were awarded college degrees outside the United States must submit both high school evaluated transcript and submit a detailed **course by course evaluation by an NACES** approved agency. Applicants from PSG Institutions of Advanced Studies who are pursuing engineering, computer science and information technology from Peelamedu, Tamilnadu India are exempt from the NACES evaluated transcript requirement.

**Copies of transcripts or evaluations will not be accepted**. Documents must be translated if in a language other than English. Students who do not hold a School-leaving Certificate of a level equivalent to a high school diploma in the United States must take the GED examination or graduate from an accredited high school in

the United States International-Transfer Applicants For students who have attended University, the academic transcript must be evaluated by a member organization of the National Association of Credential Evaluation Services, Inc. (NACES).

**General Information**
Transfer credits are processed by the Office of the Registrar. Academic departments reserve the right to determine those credits that will be used to satisfy discipline-specific degree requirements. **This does not apply to General Education requirements,** which are assessed separately. Transfer credits for any General Education course must be approved by the IGED Director or Assistant Director before they can be counted toward any major's degree requirements. Students are encouraged to meet with Academic Advisors each semester to ensure that degree requirements are being met.

**Language Requirements*:**
**Non-Native English Speakers**
Non-native English speakers or International/foreign citizens with immigrant (resident) visa applicants for whom English is not their primary language, must submit proof of English Proficiency for admission to the Community College or the Flagship in one of the following ways:

**Submit the Test of English as a Foreign Language (TOEFL) www.ets.org/toefl scores:**
- Minimum score of 550 on the written test or 79 on the Internet test are admissible to both the Community College and Flagship campuses.
- Applicants with scores of less than 60 on the Internet test will be denied admission to the Community College
- Applicants with scores 60 -78 on the Internet and having an average score of 86 or better on the ESL Accuplacer exam will be admitted into the Community College.

**Submit Duolingo www.englishtest.duolingo.com/ score: Minimum Score 115**

**Submit International Language Testing System (ILETS) scores:**
- Minimum overall band score of 6 for admission to both the Community College and the Flagship campuses.

**Submit SAT or ACT scores (optional):**
- Minimum SAT I Critical Reading scores of 500 or ACT-English scores of 16 for admission to UDC-CC
- Minimum SAT I Critical reading scores of 600 or ACT-English score of 19 for admission to the Flagship
- International students are not required to submit SAT or ACT test scores for admission.

***Requirement Waiver** This requirement may be waived upon the submission of an official college transcript evidencing the successful completion of one college-level English course at a regionally accredited American college or university (minimum grade of C).

**College-Level English:**
- Submit a transcript indicating a grade of "C" or better in one college-level English course at an accredited post-secondary institution in the United States.
- Graduated from an ELS Educational Services English proficiency program with a minimum proficiency score of 109 for the Community College or 112 for the Flagship undergraduate or graduate programs.

**Non-Degree Applicants (Special Undergraduate)**
A non-degree applicant is one seeking admission to the University to take courses but is not seeking a degree from a program of study and must be in good academic standing. Non-degree undergraduate student applicants are allowed to register for up to two consecutive semesters and must remain in good academic standing. Thereafter, students who wish to continue studying must apply for re-admission. Applying for re-admission requires an online application, the appropriate application fee, and any supporting documents which include but are not limited to official HS and/or college transcripts.

**Non-Degree Applicants with a Degree**
Applicants who are interested in taking courses only should apply as non-degree students. A copy of the official transcript, unofficial transcript, or copy of the degree may be submitted. First Time in College Non-Degree Applicants Non-degree seeking applicants must graduate from high school, and for the Flagship, earned a 2.0 HS GPA, for admission.

**Non-Degree Applicants Enrolled at another Postsecondary Institution**
A student presently enrolled and pursuing a degree at another accredited undergraduate postsecondary institution who wishes to attend UDC or UDC-CC should apply as a non-degree student. A non-degree student applies by submitting an online Application for Undergraduate Admission and paying the nonrefundable application fee by the deadline for the term for which he or she is seeking admission. The UDC Office of Recruitment and Admissions must receive a letter of good academic standing or an unofficial college transcript by the application deadline. The letter must be sent by the

institution where the applicant is enrolled. The Office of Admissions will not accept a letter of permission to attend UDC in lieu of a letter of good academic standing.

**Special Program Descriptions Dual Enrollment Program**
A Special Program Initiative High school senior who have a cumulative 3.0 GPA or higher are eligible to take college classes at either the Community College or Flagship while continuing their high school education. Students apply and pay their application fee as undergraduate non-degree seeking students and submit copies of their transcripts. Students may be required to take the ACCUPLACER. Program Managers must update the applications of participating students every semester.

## Graduate Admissions

**https://www.udc.edu/admissions/graduate/**
**Degree Applicants**
A degree applicant is one seeking admission to a specific graduate degree program.
The requirements for admission are:

- Two official transcripts from each collegiate institution attended;
- Two letters of recommendation;
- Entrance test score(s);
- A 500-word typed essay indicating the reason you chose your particular program;
- Resume; and
- Interview when deemed necessary

**Admission requirements:**

1. Submit an online application and remit the non-refundable application fee and all other required documents as indicated on the application. Former graduate students may apply for readmission by completing and returning an application with the non-refundable application fee and 500-word essay. Submit transcripts for all undergraduate and graduate studies. Official transcripts (i.e., a transcript bearing the seal of an authorized university official) in sealed envelopes issued by the University Registrar, must be submitted along with the application and other supporting materials.

2. International applicants with degrees awarded outside the United States must submit detailed reports of courses taken and grades received, must be evaluated by a member organization of the National Association of Credential Evaluation Services, Inc. **(NACES)**. Students must visit the NACES website: (www.naces.org).

3. International applicants with degrees awarded outside the United States must submit detailed reports of courses taken and grades received. Students must visit the NACES website (www.naces.org). Additionally, students who were awarded college degrees outside the United States must submit both high school evaluated transcript and submit a detailed course by **course evaluation by a NACES** approved agency.

Applicants are required to take the appropriate standardized test specified by the appropriate program of study. The following standardized tests are required:

- MBA - Graduate Management Admission Test (GMAT)
- All other degree programs - Graduate Record Examination (GRE)

4. Applicants must meet any additional departmental requirements, such as a specific grade point average in former academic work, interview, and written essay or prescribed examinations.

5. Admission will be based on the applicant's general preparation for advanced study and specific training in the field of concentration. No action will be taken on an application until all required documents are on file in the Office of Recruitment and Admissions.

**Language Requirements**
In addition to the required documents listed under "Graduate Admission Application Procedures," international applicants must provide evidence of English language proficiency.

**Non-Native English Speakers**
International applicants from countries where English is not the official language or who are non-native English speakers must submit proof of English Proficiency for general admission in one of the following ways:

*Non-Native English Speakers*
Take the Test of English as a Foreign Language (TOEFL), www.TOEFL.org.
*Minimum score on the TOEFL:*

- Paper and Pencil Test – 550
- Computer-Based Test – 213
- Internet-Based Test – 79

Submit Duolingo test results to the Office of Admissions: https://englishtest.duolingo.com/applicants
**Minimum Score: 115**

**Language Requirement Waiver**

- This requirement will be waived upon the submission of an official college transcript evidencing the successful completion of a degree earned in an accredited American college or university.
- Submit a transcript indicating one year completed in good academic standing in an accredited American postsecondary institution

**Graduate Transfer Credit**
Up to nine semester hours earned at another institution may be applied to a master's degree. All transcripts must be provided at the time of application. For transfer credit, individual courses:

- must have been completed with a grade of "B" or better;
- must have been completed within five (5) years of the beginning of the semester for which the student is admitted to a degree program,
- credits received from a previously earned master's degree are not eligible for transfer.

**Graduate Writing Proficiency Requirement**
Demonstrated proficiency in writing is required of all graduate students.

- With the exception of MBA applicants, all other students applying for admission to graduate programs must take the Graduate Record Examination (GRE) Analytical Writing Subtest as a requirement of admission. The minimal acceptable score is a 4.0.

- Students applying for admission to the MBA program must take the Graduate Management Admission Test (GMAT), and earn a minimum score of 3.0 on the Analytical Writing Assessment subtest of the GMAT.

- Students failing to meet the respective criterion score may be admitted conditionally. If admitted conditionally, a student must enroll in and pass the University's graduate writing proficiency course (ENGL 515) during their first semester of enrollment.

**Document Retention**
All documents submitted in support of applications become a part of the permanent records of the University and are not returnable or transferable. Documents submitted by applicants who do not enroll for course work will be purged after one academic year.

**Enrollment in Undergraduate Courses**
A graduate student enrolled at the University may enroll in undergraduate courses to satisfy special needs or prerequisite requirements. However, undergraduate credits earned **do not apply** toward a graduate degree. Additionally, regardless of the level of the course, graduate students are required to pay graduate fees.

**Student Residency Classification**
Policy on Student Residency Classification for Admissions and Tuition Purposes. Residency Definition:

For admissions and tuition purposes, applicants are classified as District, Metro Area, or Out-of-State students, and pay differing tuition rates accordingly. These classifications are defined as follows:

District: Bona fide residents of the District of Columbia

Metro Area: Bona fide residents of one of the following counties:
Montgomery County, Prince George's County, Arlington County, Alexandria County, or Fairfax County

Out-of-State: residents of any state, territory, or county other than those defined by the District and Metro Area

**Burden of Proof**
The person seeking District or Metro Area status has the burden of providing a preponderance of evidence that he or she satisfies the requirements and standards set forth in this Policy. Assignment of District or Metro status will be made by UDC based on the totality of facts known or presented. With the special population exceptions noted below, students who fail to provide UDC with documentation as to their residency status will automatically be classified as Out-Of-State and pay the tuition accordingly.

*District or Metro Area Residency Status Qualification*
To qualify for District or Metro Area status, all students must demonstrate that, for at least ninety (90) consecutive days immediately prior to the start date of the semester/term for which the student seeks in-state tuition status, the student must provide proof of qualifications.

**Proof of Qualifications**
In order to prove that a student meets the qualifications for District or Metro Area status, a student must provide at least two forms of documentation from the listing below:

- A CERTIFIED copy of the state or DC, MD, or VA tax return for the year in which they enroll at the University of the District of Columbia. Note: Federal tax forms (e.g. Form 1040) are not acceptable.
- **W2 Form or Statement** for most recently completed

calendar year.

- **A valid driver's license or state-issued ID** listing the applicant's District or Metropolitan Area address.
- **Utility bill** (water, gas, electric, oil, or cable with name and address, issued within the last 90 days) Disconnection notices/bills are not accepted.
- **Property tax bill:** DC, MD, or VA tax assessment issued within 90 days prior to student's enrollment period reflecting the applicant's name and property address.
- **Homeowners' or renter's insurance policy** (Unexpired policy reflecting name and address with policy effective date 90 days prior to the student's enrollment period)
- **Home security bill** (issued within the last 90 days reflecting name and address)
- A state benefits transcript, such as Temporary Assistance for Needy Families (TANF), from a District, Maryland, or Virginia government agency, showing receipt of 90 days of services rendered and/or public benefits from that agency, and bearing an address within the District, or one of the qualified Metropolitan Area counties. State medical benefits are unacceptable.
- **Voter Registration profile**:

- **DC VOTER REGISTRATION PROFILE:** https://dcboe.org/Voters/Register-To-Vote/Check-Voter-Registration-Status
- **MARYLAND VOTER REGISTRATION PROFILE:** https://voterservices.elections.state.md.us/VoterSearch
- **VIRGINIA VOTER REGISTRATION PROFILE:** https://vote.elections.virginia.gov/VoterInformation

**Special Populations**

• **Recent public DC or Metro high school graduates** who enter the University of the District of Columbia in the fall or spring semester immediately following high school graduation are not required to provide supporting documentation. Your high school transcript will serve as verification of your residency. However, if a student does not enroll the fall or spring semester after graduation student must adhere to document submission requirements outlined in the proof of qualification section.

• **District Government Employee** Employment verification letter and a driver's license or state-issued ID

• **Asylee, Refugee or Permanent Resident** 90 days from the issue date of your green card, with two valid acceptable proof documents from proof of qualification section.

• **Early Childhood Education (ECE) Associate Degree Program** (Students working in community based, Head Start/Early Head Start, DCPS and DCPCS in DC working to fulfill the mandate to receive at least an AA degree in Early Childhood Education (ECE) by 2023. Students who meet this qualification must provide a signed letter on employer's letterhead confirming employment).

• **Dreamers** (Regardless of federal immigration status, District resident Dreamers who within the previous 10 years, attended high school in the District of Columbia for 3 years, graduated from a high school in the District, or received the equivalent of a high school diploma in the District may be eligible to establish residency. Your high school transcript will serve as verification of residency).

• **Military Status** (Active duty and recently discharged members of the military and their dependents may be able to waive the 90-day requirement by verifying their military status with the Office of Veteran Affairs. Verify your status with Ms. Sequoyah Adebayo at military@udc.edu .)

**Non-immigrant Visa Holders**

Non-immigrant VISA holders are ineligible for District or Metropolitan Area residency and are automatically classified as Out-of-State. This includes students on (F) Visas, diplomatic (A) Visas, Foreign organization employees with (G) Visas, and persons having other non-immigrant Visas.

## UDC Financial Aid Policy

Federal student aid recipients must follow a number of guidelines in order to receive and continue to receive financial assistance toward their education expenses.
**UDC students are expected to read all policies and consumer disclosure requirements upon attendance at the University.**

UDC Financial Aid Policies and Procedures are available in the Office of Financial Aid or online at http://www.udc.edu/financial_aid/office_financial_aid.

**Satisfactory Academic Progress (SAP) Policy**

Students who apply for financial aid at UDC are responsible for knowing and complying with the satisfactory academic progress policy. Detailed information for all requirements is available here: https://www.udc.edu/admissions/financial-aid/satisfactory-academic-progress-policy/

Federal regulations require that the Financial Aid Office at the University of the District of Columbia (UDC) ensure financial aid recipients are making measurable academic progress toward their degree or certificate program. SAP is evaluated at the end of each semester.

In general, UDC financial aid recipients must maintain a minimum cumulative Grade Point Average (GPA) of 2.0 (3.0 for graduate students), complete 67% of all attempted coursework, and may not exceed 150% of the timeframe required to obtain a degree or certificate.

Return of Title IV Refund (R2T4)—For Aid Recipients that Stop Attending Classes. Financial aid recipients who officially or unofficially withdraw from the University may owe a percentage or all of the financial aid they received back to the University and/or Federal Government. See complete policy here: www.udc.edu/admissions/financial-aid/repaying-aid-r2t4/

**Refund Policy**
Students who withdraw during the regular academic year from one or more classes, resulting in a reduction of the tuition charged, and students withdrawing from the University are entitled to a refund of tuition according to the following schedule:

*Spring/Fall Terms*

| | |
|---|---|
| Withdrawal during Week 1 | 100% |
| Withdrawal during Week 2 | 80% |
| Withdrawal during Week 3 | 60% |
| Withdrawal during Week 4 | 40% |
| Withdrawal during Week 5 | 20% |

No refund after Week 5

*Summer Terms*
(First Six-Week Session)

Withdrawal before beginning of class thru 4th day 100%

| | |
|---|---|
| Withdrawal during 5th thru 7th day | 60% |
| Withdrawal during 8th or 10th day | 20% |

No refund after 10th day

(Second Six-Week Session)

| | |
|---|---|
| Withdrawals before classes begin thru 4th day | 100% |
| Withdrawal during 5th thru 7th day | 60% |
| Withdrawal during 8th or 10th day | 20% |

No refund after 10th day

***Refunds apply to tuition only. Student fees are non-refundable.**

## Academic Advising

Academic advising is a vital element of undergraduate education at UDC. The academic advising process assists students to take responsibility for developing meaningful educational plans which are compatible with their potential and with their career and life goals. It is a process which involves both students and academic advisors. The sharing of information occurs in a caring and comfortable environment which promotes responsible and appropriate academic choices. Through a quality advising process, academic advisors strive to facilitate a successful academic experience for students.

Ultimately, the student is responsible for meeting degree requirements as listed in the appropriate catalog. Moreover, every student is expected to be aware of the Schedule of Courses for each term and to register each semester during the designated time set forth in the academic calendar.

University policy requires all degree-seeking students to be advised each semester, whether or not a major has been declared. To ensure this policy is met, an Advisor Hold is placed on each student's registration. Students must contact their assigned academic advisor or faculty advisor for the hold to be released.

**Advising Services**
Academic Advising from all levels will assist with the following:

**Plan of Study***:* The Academic Advisor will work with a student to build a Plan of Study. The Plan provides the student with a map indicating the time it will take to complete a plan of study based upon whether the student intends to pursue full-time or part-time studies.

**Degree Checklist***:* The Academic Advisor will help the student monitor academic progress using the "degree checklist" which will include a list of required courses needed to complete a major. Note: the checklist does not constitute a formal degree audit. Rather, it is one tool for tracking the student's objectives and intentions to pursue a major, minor, internship, field experiences, study abroad, and other specialized academic opportunities, and should also be reflected in the Plan of Study.

**Registration and Enrollment:**
New students will be assisted with registration during New Student Orientation. Advisors will conduct a meeting with current students during the Continuing-Student Advisement period to discuss course selections, course load, and to ensure that choices are consistent with University, general education, degree, and graduation requirements. The Continuing-Student

Advisement period is a time during the semester when all students are advised on the courses required for the next semester and have the Advising Hold released to enable registration.

**Academic Standing and Satisfactory Academic Progress:**
Advisors assist with keeping students on track with good academic standing and recommend appropriate academic supports, so that they continue to meet good academic standing and satisfactory academic progress.

**Referrals and Collaboration***:* Advisors and faculty make appropriate referrals concerning academic, career, financial, student life, and other kinds of student support services.
Advisors and Faculty are familiar with all General Education/University-Wide requirements, and are able to assist students in the registration process to complete these requirements.

**Career Planning:**
Faculty Advisors are an essential resource to provide students with career pathway and competency information, tools, and resources to help them map their academic interests to career opportunities and to understand the education and skills requirements for jobs in the 21st century. Advisors will help connect students with the University's Career and Professional Development Center, internship opportunities, service learning programs, program alumni, and other resources to assist in advancing their career interests.

**Early Alert for Associate's and Bachelor's Degree Students:**
The Student Success Center uses an early alert system to track students' academic progress. The Academic Advising Center also tracks students' academic progress. The system facilitates communication between faculty, academic advisors, University support services, and students who show signs of needing additional academic support.

Specific goals of the early alert system are to reach students who need additional help as early in the term as possible, to connect them to college resources to resolve their academic issues, help students maintain or improve their GPA, and to improve student retention rates. At UDC, we want to work closely with students who may be in a tenuous situation, meaning at risk of losing their good academic status and satisfactory academic progress. In order to provide additional learning support, we work to identify students who may have poor attendance, are continually late for class or leave early, have poor quiz/test grades, are missing assignments or, in the opinion of the instructor, have shown evidence that they are unlikely to be successful in a given course.

**New Student Orientation**:
Once admitted to the University, new students seeking an undergraduate degree are **required to attend** New Student Orientation. Prior to New Student Orientation, it is recommended that new students review the University catalog.

New students will receive an initial advising session for their selected major and a plan of study. Once the advising portion of New Student Orientation is completed the Advising Hold will be removed, and if eligible, the student will be able to register for classes. **Students who do not attend New Student Orientation may experience delays with the course registration process.**

**First Year Experience – Freshman Common Reading Program**
**Building 38, Floor A, Room A13, 202.274.6989**
**https://www.udc.edu/student-success-center/freshman-book-series/**
The First-Year Experience (FYRE) at the University of the District of Columbia is an engagement practice that combines intentional co-curricular programming and access to opportunities beyond the classroom focused on the positive transition, navigation, and holistic development of new students, to promote their retention and academic success. The vision is that all students will achieve their highest levels of human potential, feel confident navigating their Firebird experience to the second year and beyond, and graduate.

The University of the District of Columbia (UDC) Freshman Common Reading Program is a strategic approach to supporting the successful transition and engagement (curricular and cocurricular) of first-year students. It is designed to send an intentional message to incoming, First-Time-in-College (FTIC) students that this is an intellectual community they are joining, and that as the next generation of transformative urban leaders, they are expected to think and talk about books as preparation for participation in civic life. "Leaders are readers" is the fundamental basis for the Freshman Common Read Program at UDC.

**Student Assignment to an Advisor**
Students seeking an undergraduate degree at UDC will be assigned to an advisor based on where they are along the path toward completing their degree. Students are required to see their advisor each semester to ensure that degree requirements are being met and to have the Advising Hold released to enable registration.

Establishing a working relationship with the advisor is essential to student success. Thus, it is strongly recommended that students first consult with their advisor about issues or concerns that could potentially be a barrier to success prior to seeking alternative resources of assistance.

**Associate's Degree-Seeking Students**
If a student is pursuing an associate's degree, the student will have an advisor in the Student Success Center, a division of the UDC-Community College.

**Bachelor's Degree-Seeking Students**
Upon enrollment, students pursuing a bachelor's degree with fewer than 60 credit hours will have an assigned academic advisor in the *Academic Advising Center* who will assist students with pragmatic and specific steps to navigate course registration procedures, campus policies, and guide students to appropriate resources.

When students complete 60 credit hours, they are assigned to a Faculty Advisor. Faculty advisors facilitate student learning through an exchange of ideas allowing the student to express, support, and discuss individual goals and ideas and in which the faculty advisor guides the learner towards the completion of a degree in the program of study. Faculty advisors will also guide students in developing strategies for critical learning, program specific requirements and mentoring in the field of study.

Both the Academic Advisors and Faculty Advisors facilitate a link for students to become 21st century learners, responsible citizens, critical thinkers, and liberally educated persons.
Each college has specific guidelines for Faculty Advising and use this system to help students decide which courses to take, stay on track with good academic standing and satisfactory academic progress, and move toward completing the degree in a timely fashion.

**Graduate Degree Students**
All graduate students are assigned to a graduate advisor by the department in which they study.

**Choosing a Major**
When choosing a major program of study, students are encouraged to consider their interests, abilities, work and/or volunteer experiences. Also, they are encouraged to discuss their educational and career goals with their academic advisor, faculty, and administrators. UDC is committed to helping students determine a suitable major program of study for all enrolled at the institution.

Student's seeking an associate's degree must declare a major after successfully completing 12–15 college-level credit hours or two full semesters.
Student's seeking a bachelor's degree must declare a major by the time they have successfully completed 60 credit hours.

Students who remain undeclared have an opportunity to take courses in various majors, and take advantage of interest inventories and additional career resources available from academic advisors, career counselors, and other faculty and staff at UDC in order to determine a major.

Students are required to discuss their intentions to declare a major with their present academic advisor and the chair of the program of interest. Students must email the Office of the Registrar at uregistrar@udc.edu to request the Transition/Change of Major Form. The form will be completed electronically.

**Undeclared Associate's Degree Students**
All UDC Community College students who are undeclared degree majors will receive academic advising from the Student Success Center.

**Undeclared Bachelor's Degree Students**
All UDC students who are undeclared bachelor's degree majors will receive academic advising from the Academic Advising Center. All undeclared students at the bachelor's level will be placed as an undeclared student in the College of Arts and Sciences unless they designate another college.

**Academic Minor Guidelines**
Students seeking to declare a minor should consult with the Chairperson of the department offering the program. A minor adviser will be assigned and a plan of study developed. The student should email the Office of the Registrar at uregistrar@udc.edu to request the Transition/Change of Major Form. The form will be completed electronically. The major advisor will be provided an electronic copy of the minor study plan. The student will be advised by the major advisor who will consult as necessary with the minor department. When the student applies for graduation the audit will verify completion of all courses in both the declared major and minor. The School/College offering the minor will clear the student's minor and verify completion of all minor requirements. A copy of the minor clearance is sent to the major advisor. The School/College that offers the student's major clears the student for graduation. Successful completion of the minor will be noted on the student's transcript and diploma upon graduation.

**Academic Concentrations**
A concentration is a specific area of thematic focus that a student can pursue within certain major programs of study. A concentration provides students an opportunity to organize a combination of academic and practical experiences in a specific disciplinary area. Concentrations encompass a minimum of nine (9) credit hours at the graduate level and twelve (12) credit hours at the undergraduate level. Concentrations are not formal degree designations awarded by the University but are noted on student's transcripts if declared, and completion verified during the graduation audit. To declare a concentration, students must email the Office of the Registrar at uregistrar@udc.edu to request the Transition/Change of Major Form. The form will be completed electronically.

Non-Degree Students (Special Undergraduate)
Students not seeking a degree are not required to see an academic advisor. Non-Degree students will be contacted via e-mail verifying eligibility to register.

- *Non-Degree* students taking courses in the Community College should contact the UDC-CC Student Success Center for any assistance.
- *Non-Degree* students taking undergraduate courses at the Bachelor's degree level should contact the ***Academic Advising Center*** for any assistance.
- *Special Students* ***check with advisors***

**Current Students**
Current students can access their *myUDC* portal for current directory and academic calendar information.

Prospective and new students can access current directory and academic calendar information on the UDC website:

The University directory can be accessed on line at: http://directory.udc.edu/. It gives addresses and telephone numbers of University offices faculty, and staff members.

The University Calendar can be accessed on line at: http://www.udc.edu/registrar/academic_calendars

**Transfer Student Advising Process**
Once admitted to the University, new transfer students seeking an undergraduate degree are required to attend New Student Orientation. During New Student Orientation, Student Development and Success staff will orient transfer students to specific administrative processes to complete their matriculation and course registration.

**Students who do not attend New Student Orientation may experience delays with the course registration process.**

The transfer credit evaluation process can take up to 21 business days from the processing of the student's Confirmation of Enrollment form. Students may check Degree Works or Banner Student Self Service to see how their credits transferred.

Transfer students must meet a program Chair, Director, or Faculty Advisor appointed by the students' program of study to have possible applicable degree transfer credits evaluated.

The program Chair, Director, or Faculty Advisor appointed by the students' program of study will determine which courses apply to the students' program of study only. For general education courses, the IGED Director or Assistant Director review and approve any transfer credit It is possible that some prior course work will not meet UDC's general education course requirements.

**Transfer Credit Evaluation Reports and Academic Advising**
General Education credits are coded on Transfer Credit Reports with a subject code of "IGED" and the equivalent General Education course name.

| General Education Courses | Possible Substitute Courses |
|---|---|
| Foundation Writing I *IGED 110* | • Any first semester university level (non-developmental) writing, composition, rhetoric, or composition/rhetoric course or the equivalent. |
| Foundation Writing II *IGED 111* | • Any second semester university level (non-developmental) writing, composition, rhetoric, or composition/rhetoric course. |
| Foundation Quantitative Reasoning I *IGED120* | • Any first semester university level (non- developmental) mathematics courses or the least advanced of any higher level mathematics course accepted for transfer. |

| | |
|---|---|
| Foundation Oral Communications *IGED 130* | • Any introductory or higher university level speech course or any communications studies course that required students to give speeches. |
| Foundation Ethics *IGED 140* | • Any course in philosophy, religious studies or a related discipline that addresses questions of meaning and value from a normative perspective. Courses in Ethics strongly preferred but Introduction to Philosophy, courses in history of philosophy, or metaphysics or the philosophy of religion are acceptable. Logic is NOT generally acceptable. Professional Ethics courses must show significant engagement with ethical theory and with issues beyond those covered in professional code of ethics. |
| Discovery Writing *IGED 210* | • Any third semester university level (non-developmental) writing course with an interdisciplinary focus and writing. Requires review of General Education administration. |
| Writing Intensive Course in the Major | • The course fulfilling this requirement and which transferred courses may be substituted for it is determined by the student's major program. |
| Discovery Quantitative Reasoning II *IGED 220* | • Any second semester university level (non-developmental) mathematics courses or the second least advanced of any higher level mathematics course accepted for transfer. |
| Discovery Technology *IGED 250* | • Any university level course teaching significant technological skills and engaging students in reflection on the effective and ethical use of technology in their professional and civic life. |
| Discovery Science + Lab *IGED 260* | • Any laboratory science (minimum of 3 credits lecture; 1 credit lab) |
| Discovery Diversity *IGED 270* | • Any course which engages students in the application of principles and methods from the fine arts, humanities, or social sciences to the study of human cultures and civilizations. |
| Discovery Civics *IGED 280* | • Any university level course which prepares students for effective participation in the public arena and which includes a significant civic engagement component with Fifteen (15) hours of dedicated civic engagement. |
| Frontier Capstone *IGED 391/2* | • No substitute unless the student's major program has approval to substitute a senior project or capstone in the major for the IGED capstone AND grants the student credit for that course based on coursework elsewhere. |

This list of possible substitutions is not meant to be exhaustive. A detailed list of courses from local institutions which will be accepted for transfer is under development.

**Please Note:**
All transfer credits are processed by a transfer processor in the Office of the Registrar. Academic departments reserve the right to determine those credits that will be used to satisfy degree requirements. **Please refer to UDC's Transfer credit policy for detailed information.**

**Transferring in with a Degree:**

**Bachelor's Degree-bearing Student**

If a student possesses a bachelor's degree from an accredited institution and wishes to pursue a second bachelor's degree at UDC, the student is exempt from General Education requirements; however, the student must meet all program requirements for the bachelor's degree existing at the time of admission to the program.

**Associate Degree-bearing Student**

Students who have completed an Associate of Arts or Associate of Science degree, or another degree intended to prepare them for study at the baccalaureate level, at another accredited institution shall be exempt from all General Education requirements except Discovery Writing (IGED 210) and the Frontier Capstone (IGED 391/392). This includes students from the UDC-Community College. The waiver **does not** exempt students from satisfying the credit hours required for graduation.

**Transitioning**

Degree-seeking students in the Community College are guaranteed general admission to a bachelor's degree program at any point during their studies if specific requirements are met (although specialized admissions requirements may apply to certain programs).

**Requirements**

To transition from the Community College to a bachelor's degree program, students must have an overall GPA of at least a 2.0, and must have completed at least one 100-level or higher course in English Composition and Math with at least a "C" in both courses. (Developmental courses cannot be applied toward meeting bachelor's degree credit requirements.)

Bachelor's degree-seeking students who are in good financial standing and not facing suspension or dismissal from UDC are eligible to transition to the UDC-Community College.

**Changing Majors**

Students wishing to change a major course of study must obtain the written approval of the new department chairperson as well as the release of the former department chairperson. Students must email the Office of the Registrar at uregistrar@udc.edu to request the Transition/Change of Major Form, which will be completed electronically. Requests should be submitted by the deadline provided on the Academic Calendar. After this time, transition/change of major requests will be processed for the next semester of enrollment. Students should be aware that the time required to obtain a degree may be lengthened as the result of a change of major; therefore, they should change their major only after consulting an academic advisor, as they are subject to the program requirements in effect at the time that they changed the major. Students cannot begin registering for courses at the new college for the next semester until the Transition/Change of Major Form has been processed.

Students will continue to pay the current tuition rates and are bound by all academic policies of the college they are attending until the transition is approved.

**Please Note**

- Students can log into myUDC.edu to check the status of the transition process after the Change of Major Form has been submitted to the Registrar's office.
- Grades earned in an associate's degree program are included in GPA calculations for a bachelor's degree and vice versa.

## Office of Career Services

Building 38, Floor A, Room A22, 202.274.6920
https://www.udc.edu/careerservices

The Office of Career Services (OCS) prepares undergraduate and graduate students as well as alumni for career success through career planning, career readiness, and career opportunities services in partnership with employers/recruiters and faculty and staff.

**Career Counseling and Career Workshops**

Career counselors meet individually and in group career workshops with students and alumni to help with a variety of career development topics including career exploration assessments, career readiness assessments, resumes, cover letters, interview clothing, mock role-play interviews, jobs, internships, and professional development opportunities.

**Career Programs and Employment Events**

The Office of Career Services offers students and alumni a variety of career programs for professional development as well as employment events such as career fairs, employer information sessions, interview sessions, and moreCareer Management System (Handshake) Handshake is the university's career management system that connects students and alumni to employment opportunities and career development resources. Through the Handshake system student and alumni can apply for exclusive jobs, internships, and other positions offered by our employer partners as well as register for career fairs, employer information sessions, interview sessions, and career development workshops.

Additionally, student and alumni can schedule appointments to meet with your career counselor, download career information resources, network with fellow UDC students/alumni, report your job hires, and more.

Handshake accounts are automatically pre-generated for students after confirmation of admission to the university and alumni who graduated 2005 forward have access to Handshake. Student and alumni may access and login to their Handshake account through the single sign-on button found in their MyUDC account or download the Handshake app.

**Career Exploration Assessments System (Focus2)**
Focus 2 is the university's career exploration assessment system that helps students and alumni to explore career and college major options. Students and alumni can take free career assessments and inventories to explore your interests, leisure, personality, skills, values to identify their best fit career pathways and occupations as well as college majors offered at the university. Additionally, students and alumni can take a free career planning involvement assessment to learn where they are at with their career planning process and career satisfaction. Furthermore, students and alumni can take a career readiness assessment to learn where they are at with achieving work competencies required by employers. You may create a Focus 2 account by using the free access code "firebirds" and your university email address.

## Office of the Registrar

**Building 39, A level, 202.274.6200**
**https://www.udc.edu/registrar/**
The Office of the Registrar supports teaching and learning at UDC by maintaining the integrity of academic records, policies, and the student information system from application to degree conferral and in perpetuity.

The Office is responsible for consistently implementing District, Federal, and University policies and procedures, adhering to the Family Educational Rights and Privacy Act (FERPA) standards, the American Association of Collegiate Registrars and Admissions Officers (AACRAO) guidelines, maintaining institutional credibility through the proper maintenance of student biographic and academic records, and certifying students for graduation.

Services provided by the Registrar's Office include registration and scheduling adjustments, transcript maintenance and appropriate distribution, enrollment verification, and dissemination and maintenance of all student demographic data and directories.

**Registration**
Continuing Students can access registration information at my.udc.edu. Only students who are officially enrolled may attend classes, take examinations, and receive academic credit for instruction.

**Graduation: Application Requirements (All Students)**
Students who expect to complete their academic requirements during any given semester should complete an Application for Graduation the semester before they expect to graduate or no later than the deadline date indicated in the Academic Calendar, and pay the required graduation fee. Submission of an application *does not* guarantee graduation.. **Only those students who have met ALL academic requirements and who have satisfied ALL financial obligations will be cleared for graduation**.

In the event that a student does not complete graduation requirements in the designated term, a new Application for Graduation must be submitted for the term when all requirements will be met; however, no additional fee is required. Students are strongly encouraged to meet with their academic advisors each semester to ensure that academic requirements are being met for the appropriate degree, and that they are on target for graduation. Currently, the diploma replacement fee is $50.00.

**Satisfying the Degree Requirements**
Undergraduate courses (courses numbered below 500) may not be used to satisfy graduate degree requirements. Similarly, graduate courses (courses numbered 500 and above) may not be used to satisfy bachelor's or associate's degree requirements. Exceptions are made for approved accelerated programs and/or articulation agreements.

### Graduation Requirements: Associate's Degree

All students must meet the following requirements to earn an associate's degree from UDC:

**Residency**
The University confers the associate's degree upon students who complete the last 15 semester credit hours of study in residence at the University of the Columbia. Additionally, students must attain a minimum cumulative grade point average of 2.00.

Listed below are the university-wide requirements needed to complete an associate's degree at the University of the District of Columbia Community College. Please consult with your academic advisor to confirm course selections and major requirements for your chosen degree.

A minimum of 60 credit hours of college-level courses is required, including specific courses identified in the departmental program of study and the applicable University-wide requirements.

Once admitted and registered as a student at the University of the District of Columbia Community College, it is expected that the student will be enrolled every semester until the student has completed the degree objective. Any student who is not continuously enrolled, exclusive of the summer term, is subject to the requirements in effect at the time of re-enrollment.

**Community College Honors**

If you are pursuing a two-year degree, you are eligible to graduate with honors if you have received 60 percent of the credits earned for graduation at the University of the District of Columbia, and earned a 3.30 cumulative grade point average in all attempted hours.

**Associate Degree General Education Requirements**

Specific University-wide requirements for all two-year programs are as follows:

*Note: University-wide requirements are under review and are subject to change.*

IGED 110C Foundation Writing I* 3 credit hours
IGED 111C Foundation Writing II* 3 credit hours
Social Science** 3 credit hours
Mathematics*** 6 credit hours
Natural Science**** 4 credit hours
Foundation Writing I must be taken prior to Foundation Writing II.

**Select courses from Psychology, Sociology, Economics, History, Social Work, Geography, and Political Science. Students enrolled in two-year technology programs may elect to take one three-credit-hour course in philosophy to satisfy this requirement.

***Only Mathematics courses numbered 100 and above satisfy this requirement.

****Lab courses only. Natural science lecture (3 credit hours) and lab (1 credit hour) must be taken concurrently.

## Graduation Requirements: Bachelor Degree

All students must meet the following requirements to earn a bachelor's degree from the University of the District of Columbia:

**Time to Degree Completion**

Students in bachelor's degree programs are expected to complete all graduation requirements within eight calendar years from the date of first enrollment. If the student fails to complete the degree within the prescribed period, the student may become subject to new requirements, which have been established since first being admitted into the program of study.

**Satisfying the Bachelor's Degree Requirements**

The bachelor's degree programs require a minimum of 120 credit hours, including specific courses identified in the departmental program of study and the applicable General Education requirements. Many departmental programs of study require more than the minimum hours designated above. Students should consult this catalog and their advisors when determining graduation eligibility. Only college-level courses numbered 100 and above are counted in the GPA and total credits earned.

**Residency and GPA Requirements**

The University confers the bachelor's degree upon students who complete the last 30 semester credit hours of study in residence at UDC. Additionally, students must complete all General Education requirements, as well as degree requirements, and attain a minimum cumulative grade point average of 2.00.

**Undergraduate Requirement**

Once admitted and registered as a student at UDC, it is expected that the student will be enrolled every semester until the student has completed the degree objective. Any student, who is not continuously enrolled, exclusive of the summer term, is subject to the requirements in effect at the time of re-enrollment.

Students who enrolled in the University before fall 2010 are expected to complete the "university-wide" requirements specified in the course catalog governing their program of study. The "university-wide" requirements were phased out, and all students were transitioned to the newly adopted standards. Waivers and/or substitutions may be requested by students through their program chairs with approval at the dean level.

**University Honors**

To graduate with University honors, undergraduate students pursuing a bachelor's degree must have received 60 percent of the credits earned for graduation at the University of the District of Columbia. The honors standards for bachelor's students are:

**3.8/higher In all hours attempted: summa cum laude**

**3.60 In all hours attempted: magna cum laude**

**3.30 In all hours attempted: cum laude**

**Granting Degrees and Commencement**
Degrees are granted at the close of each semester. Annual commencement convocations are held at the end of the spring semester (or at other times of the year in the event of emergencies). Only students who have met all academic requirements and satisfied all financial obligations will be permitted to participate in commencement exercises.

**Second-Degree Candidates**
Students who have a bachelor's degree from an accredited institution and wish to pursue a second bachelor's degree at UDC are exempt from General Education Requirements; however, these students must meet all other program requirements for the bachelor's degree existing at the time that they were admitted to the program.

Students who have an applied associate's degree (i.e. Applied Associate of Science – A.A.S.) from an accredited college or university and wish to pursue a bachelor's degree must meet the General Education Requirements and program requirements for the bachelor's degree existing at the time they were admitted to the program. Students who have completed an Associate of Arts or Associate of Science degree, or another degree intended to prepare them for study at the baccalaureate level, at another accredited institution, shall be exempt from all General Education requirements except Discovery Writing (IGED 210) and the Frontier Capstone (IGED 391/392). This includes students from the UDC-Community College. The waiver does not exempt students from satisfying the credit hours required for graduation.

**Classification of Associate Degree Students**
A student who has been admitted to the University in pursuit of an associate's degree is classified for the purposes of academic rank according to the number of credit hours completed as follows:

Freshman: less than 30 credit hours
Sophomore: at least 30 credit hours
Junior and Senior classifications do not pertain to students pursuing Associate degree programs.

**Classification of Bachelor's Degree Students**
Students who have been admitted to the University to pursue a bachelor's degree are classified for the purposes of academic rank according to the number of credit hours completed as follows.

| | |
|---|---|
| Freshman: | less than 30 credit hours |
| Sophomore: | at least 30 but less than 60 credit hours |
| Junior: | at least 60 but less than 90 credit hours |
| Senior: | 90 or more credit hours. |

**Enrollment Status**
The University assigns enrollment full-time status to assess whether students are meeting minimum course load requirements and maintaining satisfactory academic progress. Enrollment status also determines financial aid eligibility. Note: To be eligible for maximum benefits from the financial aid programs, veteran's benefits, Social Security benefits and other student benefit programs, students may need to be full-time. More information about enrollment time status can be found on the Office of the Registrar's page, here: https://www.udc.edu/registrar/verification-of-enrollment-service/.

**Course Registration Policies**
**Undergraduate Course Load Limitations**
Undergraduate students can take a maximum course load of 18 credit hours per fall and spring term, and 12 credit hours per summer term. If students are in good academic standing, and with the approval of the dean of the college in which they are enrolled, they may take a maximum of 21 credit hours within a semester. Students on academic probation have course load limitations until reinstated to good academic standing. In applying the course load limitations, the University counts audited courses as a part of the student's course load; however, for regulations that require full-time status, audited courses are not counted as part of the course load.

**Graduate Course Load Limitations**
Graduate students can take a maximum course load of 15 credit hours per fall and spring term, and 12 credit hours per summer term. Students on academic probation are limited to 9 semester hours or less. In applying the course load limitations, the University counts audited courses as a part of the student's course load; however, for regulations that require full-time status, audited courses are not counted as part of the course load.

**Add/Drop Procedures**
Continuing students may change their schedule any time during the Continuing Student Registration period. Continuing students may also change their schedule during the official Course Adjustment period. (Check the dates in the academic calendar.) These changes may be made online. Students may also change their schedule during the official Add/Drop period.

If a student officially drops credit hours during the designated Add/Drop period, they are entitled to receive a refund if the change leaves a balance less than the original amount. Changes made after the designated Add/Drop period may not qualify for full refund (See Refund Policy).

**Please note: when a course is closed the student must obtain permission to enroll ONLY from the chair of the department offering the course. Once approved, the chairperson will place the student in the course**.

**Withdrawal from a Course**

Students may officially withdraw from a course without penalty up to five weeks prior to the beginning of the scheduled final examination. Students should consult the current academic calendar for the specific dates. Once the withdrawal is processed online or in the Office of the Registrar, a grade of "W" will be entered on the student's transcript. If a student stops attending class, or fails to withdraw online by the posted deadline date, the student may receive a failing grade.

If applying for or receiving any form of financial aid, the student must contact the Financial Aid Office before withdrawing from any course since withdrawals may affect eligibility for current or future aid. Students may still be responsible for payment of classes after withdrawing. Refunds for withdrawals are for tuition only and based on the date of withdrawal. Please see the Refund Policy.

**Total Withdrawal from the University**

Students may withdraw totally from all classes up to and including the last day of classes prior to the beginning of the final examination period. Students who wish to withdraw from the University must email the Office of the Registrar at uregistrar@udc.edu to request the Total Withdrawal Form. The form will be completed electronically. Students who complete a total withdrawal and plan to return to the University have up to two semesters to sit out before being required to apply for readmission. Students who complete a total withdrawal and do not plan to return to the University will immediately have their account inactivated and will be required to apply for readmission if they decide to return in the future.

Total withdrawals do not affect the cumulative GPA but will affect academic suspension/dismissal. Because withdrawals may affect current or future eligibility for financial aid, the Financial Aid Office will review all Total Withdrawal request forms. The withdrawal date is defined as the date that the Total Withdrawal Form is received in the Office of the Registrar. Students may still be responsible for payment of classes after withdrawing. Refunds for withdrawals are for tuition only and based on the date of withdrawal. Please see the Refund Policy.

## Military Leave of Absence

The University of the District of Columbia recognizes that students who serve in the U.S. armed forces may encounter situations in which military obligations force them to withdraw from a course of study; this can sometimes happen with little notice. This policy applies to all University schools and programs and is intended to recognize and make appropriate allowances for students who find themselves in such situations. Specific inquiries regarding the Military Leave of Absence process should be directed to your Academic Advisor, the Director of Veterans Affairs and the University Registrar.

**A. Definition**

For purposes of this policy, a "military service leave" is a University-approved withdrawal from all in-progress University classes that is necessitated by service, whether voluntary or involuntary, in the United States Armed Forces, including service by a member of the National Guard or Reserve, active duty, active duty for training, or full-time National Guard duty under Federal authority, for a period of more than 30 consecutive days under a call or order to active duty of more than 30 consecutive days.

**B. Student Responsibilities**

A student who is called to active duty or active service in a branch of the United States Armed Forces (Army, Navy, Air Force, Marines, Coast Guard, Space Force, National Guard or Reserve) and wishes to take a military service leave must :

Provide the University with advanced notice of such service and the intention to take a leave of absence. As soon as possible, after receiving military orders that require withdrawal from a program or course of study, a student must contact his or her academic advisor to request a formal leave of absence and attach a copy of the military orders or other appropriate documentation to the request. This advanced notice can be made by the student or may be made by an appropriate officer of the U.S. Armed Forces or official of the U.S. Department of Defense to the University Registrar, but the student is responsible for making sure the Academic Advisor receives notice. The notice need not include a statement of an intention to return to the University. If military necessity renders it impossible to provide advance notice to their academic advisor, the student may initiate a military service leave by providing notice at the first reasonable opportunity, in writing, personally signed, and with a copy of the military orders attached.

**C. University Procedures**

Upon receiving notice of a student's request to withdraw from the University or a program or drop all enrolled courses because of military obligations, the Academic Advisor and/or the Director of Veterans Affairs shall promptly contact the University Registrar. The University Registrar will review the request and initiate the military service leave of absence by notifying the Office of Student Financial Aid and the Office of Student Accounts. The Office of Student Financial Aid will review the student's eligibility for financial aid funds received before the time of withdrawal and inform the student about the

status of his or her financial aid and actions required to defer loan repayments based on military obligations. Students who are granted a military service leave will receive a 100% refund of tuition and fees charged for the semester or academic term in which they withdraw but will be charged for housing expenses already incurred. If the University determines that it is appropriate to award academic credit for work completed in the semester or academic term in which a student takes military service leave, the student shall not receive a refund for the portion of the course of study for which academic credit is awarded. No refund will be provided until the University receives a copy of the military orders necessitating the withdrawal. Students who are granted a military service leave may be on leave for up to five academic years, after which an extension may be granted with approval. To apply for an extension, students must contact the registrar. Students who do not request an extension will be withdrawn from the University and at a later date may choose to seek readmission. To seek readmission at a later date, students must contact Enrollment Services.

**Military Re-Enrollment Policy**

**A. Definition**

For purposes of this policy, a "military re-enrollment" is a University-approved re-enrollment after a military service leave.

**B. Student Responsibilities**

A student who has taken military service leave from the University or has had studies interrupted because of active duty or active service in a branch of the United States Armed Forces and wishes to re-enroll must notify the University of the intent to return to resume a course of study upon conclusion of duty or service and present appropriate documentation prior to the semester in which the student is requesting re-enrollment. To qualify for military re-enrollment, a student must provide notice to the University of the intention to re-enroll within three years of the time he or she is discharged from military service or is placed on inactive duty. Notice should be provided in writing to the appropriate academic dean in accordance with the program's re-enrollment leave of absence process and should include documentation (including an official certificate of release or discharge, a copy of duty orders, or other appropriate documentation) to verify that the student's withdrawal was related to service in the uniformed services and that the student is able to resume studies. Military re-enrollment guarantees a student who meets these requirements access to the same program of study he/she was in at the time of withdrawal without incurring a re-enrollment fee, unless a student receives a dishonorable or bad conduct discharge or has been sentenced in a court-martial. In the event that the university is no longer offering the student's original program of study, the student will be advised of alternatives available. Reasonable effort will be made by the university to enable the student to complete the original degree, but the student is not guaranteed the ability to complete the original degree when that degree has been discontinued. Any student who, because of military necessity, did not give written notice of service to their academic dean or the campus Registrar prior to withdrawal, may, at the time the student seeks readmission, submit documentation that the student served in a branch of the U.S. Armed Services that necessitated the student's absence from the University.

**C. University Procedures**

A student who meets the notice requirements set forth herein will be granted military re-enrollment in the semester following the notice of intent to return, or, if the student chooses, at the beginning of the next full academic year. Upon returning to the University, the student will resume his or her program of study without repeating completed coursework and will have the same enrollment status and academic standing as before the military leave—unless the program of study, due to accreditation or other requirements has instituted revised curricular requirements, in which case a student will be required to fulfill those new requirements. This may mean that a course previously taken no longer counts toward the degree, and the student may be required to take a new course in its place to meet graduation requirements. If the student is readmitted to the same program, during the first academic year in which the student returns, the student will be assessed the same tuition and fee charges that the student was or would have been assessed during the academic year in which the student left the institution. However, for the first academic year in which the student returns, the University may assess an amount up to the amount of tuition and fee charges that other students in the program are currently assessed for that academic year if the student's veterans' education benefits or other service member education benefits will pay the amount in excess of the tuition and fee charges assessed for the academic year in which the student left the institution.

If, in the judgment of the University, a student is not academically prepared to resume a course of study in which he or she was previously enrolled, or is unprepared to complete a program, the University will determine whether reasonable means are available to help the student become prepared. The University may deny the student re-enrollment if it determines that reasonable efforts are not available, or that such efforts have failed to prepare the student to resume the course of study or complete the program. A student who has been away from the University on military service for more than five years (including all previous absences for military service obligations after initial enrollment but including only time the student spends actually performing service in the uniformed services) will not be guaranteed military re-enrollment, but may petition his or her dean for consideration of military re-enrollment. A student who chooses at the conclusion of military service to enroll in a different program of study than the one the student was in at the time of military withdrawal must complete the

regular admission and enrollment process for that program of study.

**Midterm Progress Reports**
A midterm progress report is prepared for all students each semester. The reporting period is listed in the Academic Calendar. Students should check with their instructors to determine when their reports will be complete and available for viewing through myUDC.edu. These progress reports, which appear in myUDC.edu as "Midterm Grades," do not become part of the student's official record. They are not calculated in any GPA, and they do not appear on any official or unofficial transcript.

**Final Examinations**
Final examinations are held during the last week of the term. All students are required to take examinations according to the schedule issued by the Office of the Registrar. Final examinations are to be administered on the dates published in the Academic Calendar.

**Class Attendance Policy**
The University expects all students to attend classes on a regular basis. Students who find it necessary to be absent from class because of illness or other personal reasons are required to provide official notification to the instructor. This notification is for the instructor's information only and in no way excuses the absence, nor does it relieve the student of the responsibility for assignments covered during the period of absence. Extenuating circumstances which may force a student to be absent should be reported to the departmental office and to the instructor**.**

**Instructors, in Course Syllabi, will identify the impact of student absences in a class or on grades. The instructor** also determines the amount of assistance a student will need to complete the course requirements.

**Instructors are required to keep strict records of attendance and to verify each student's attendance record** in the Student Information System (Banner) each semester and summer term.

Students who withdraw from courses, do not attend at least one class before the end of the Add-Drop period, **or fail to meet the minimum attendance requirements as specified in the instructors' syllabi,** may face any or all of the following consequences:

- may not receive financial aid refunds;
- may have to repay some or all of their "unearned" funds; or
- must pay a portion of tuition, fees, and book charges not covered by financial aid.

Federal Regulations require institutions that do not take attendance to have alternative procedures to determine that a Title IV recipient began attendance in each class during a payment period or period of enrollment. Prior to disbursing Title IV funds, an institution must first determine that the student is eligible to receive the funds. If disbursement occurs on or after the first day of classes, the institution must ensure that the student began attendance. For students who began attendance in some but not all of the classes, the institution is required to recalculate the student's Federal Pell Grant Program award based on the student's actual enrollment status. 34 C. F. R. § 690.80 (b) (2) (ii)

**Academic Integrity Policy**
When students enroll at UDC, they assume the obligation to maintain standards of academic integrity. Violations of academic obligations include unethical practices and acts of academic dishonesty, such as cheating, plagiarism, falsification, and the facilitation of such acts.

Cheating includes the actual giving or receiving of any unauthorized aid or assistance or the actual giving or receiving of any unfair advantage on any form of academic work.

Plagiarism is the use of another's ideas or words, or both, as if they were one's own. Ideas or direct quotations from others are acceptable only when the source is appropriately cited.

Students are subject to dismissal from a degree program for unethical practices and acts of academic dishonesty. Ignorance of the policy will be no excuse. Refer to the Student Handbook for prescribed policies and procedures that specify acts that violate UDC's policy of academic integrity as well as possible sanctions imposed for violation of academic integrity policies.

**Special Requests**
***Repeating a Course***
Students who intend to improve their cumulative grade point average (CGPA) by repeating a course for which the student earned a grade of less than a C may do so by re-registering and paying for the course. Students may repeat a course twice, with the first repeat being automatically allowed in Banner when students register. To repeat a course a second time, however, students must fill out a Request to Repeat a Course Form, which must be completed and approved by the Academic Chair or Director **and the Dean of the student's program. Completed forms must be submitted to the Office of the Registrar by the end of add/drop for each term for processing.**
**NOTE:** If the student is requesting to repeat a course a **third time, Deans may petition the CAO where extreme extenuating circumstances are determined to have prevented the student from achieving the passing grade.**

Those **extenuating circumstances** must be documented and articulated in any request for a third repeat. The CAO may deny requests, regardless of the circumstances that led to the third non-passing grade. **Students are not permitted to repeat more than fifteen (15) credits.** The lower grade remains a part of the student's permanent record; however, the higher grade is computed into the CGPA. If a student repeats a course after failing it and receives a second or third failing grade, the failing grade is counted only once in computing the GPA. Graduate students should refer to their program director if interested in repeating a course. Consult the Graduate Academic Standing policy as well.

**Auditing**

Students who wish to audit a course must register for the course in the academic department offering the course and must have approval from the appropriate instructor. The grade assigned to courses that are audited is "AU." A previously audited course may be taken again for credit in a later term. Also, students may audit a course taken and passed previously; however, the status of a course may not be changed from credit to audit or from audit to credit after the end of the Add/Drop period. Usual tuition and fees apply to audited courses.

**Independent Study**

Students who wish to enroll in independent study courses must have the approval of the academic department. To qualify, students must be in the second year of an associate's degree program or in the third year or higher of a bachelor's degree program with a cumulative GPA of 2.8. Graduate students must have completed a minimum of 15 semester hours and have a 3.0 cumulative GPA.

**Cross Registration**

Special permission from the appropriate academic dean is necessary for Associate Degree students enrolled at UDC-CC to take courses offered in the University and, conversely, for University students to take courses offered in UDC-CC. Such approvals are limited to a specific course that a UDC-CC student may need for graduation that is not offered during the semester the student will graduate or a Flagship student who desires to take a UDC-CC course that is not offered at the Flagship. Tuition and fees are determined by the school/college where the student was admitted initially.

**Graduate Study as a Senior**

Students who are within nine (9) semester credit hours of completing the final requirements for the bachelor's degree and are in good academic standing at UDC may enroll in a maximum of two graduate courses (not to exceed 6 semester hours). Prior to enrolling, students must secure written authorization from the chairperson of the student's major department, the department chairperson of the graduate program offering the course the student wishes to take, and the dean of the College/School in which the course is taught. If such courses are to later apply to a graduate degree program, graduate fees will be assessed on these courses.

**Concurrent Enrollment Policy**

Concurrent Enrollment means a UDC student is taking a class at another institution—a college or university that is **not** in the Consortium **during fall and spring terms** (see "Consortium of Universities")—in order to transfer those credits toward the student's degree at UDC.

**During summer terms, when consortium registration is not available, concurrent enrollment may utilized for all institutions—including colleges and universities in the Consortium**.

Students enrolled at the University who intend to take a course at another college or university and earn transfer credits at UDC must submit a Concurrent Enrollment Approval Form and receive written approval BEFORE enrolling in the course (enrollment through the Consortium of Universities is not considered concurrent enrollment).

No transfer credit will be granted if a student fails to receive written approval BEFOREHAND from ALL required approving authorities. In all cases, the University Registrar is the final authority for approving concurrent enrollment requests. Students who fail to gain prior approval will NOT be reimbursed tuition money they spend at the other college or university. Students seeking to earn transfer credits for General Education courses must receive approval from the General Education Director and the Registrar for concurrent enrollment. Students seeking to earn transfer credits towards required courses in their major (core or elective) must receive approval from the Department Chair, Dean (or Assistant Dean), and the Registrar for concurrent enrollment.

Students are NOT authorized to seek transfer credits for elective courses outside of the major through concurrent enrollment. Current UDC students who desire to enroll concurrently in UDC and at another institution and earn transfer credit towards an associate, bachelor's, or master's degree must meet the following eligibility criteria:

- Have completed a minimum of 15 credit hours (toward associate or bachelor's degrees) and 9 credit hours for graduate students
- Be in good academic and financial standing
- Have prior approval by all required parties for taking credits at another institution while enrolled at UDC (concurrent enrollment approval form)

The University will only approve transfer credits earned at other colleges/universities through concurrent enrollment that meet the criteria outlined under Transfer Credit Policies. Students must submit an official transcript from the university in which the credits were earned to the Office of the Registrar to ensure that the credits earned comply with the transfer credit criteria identified above and are officially applied towards their credits earned toward graduation.
*Note: See section on Transfer Credit Policies (below) for further requirements.*

**Transfer Credit Policies**
UDC has no maximum in the number of credits allowed for transfer, but consistent with UDC's residency policy, students—including post-baccalaureate students—can apply a maximum of 90 transfer credits towards a Bachelor's degree and a maximum of 45 credits towards an Associate's degree.

Additional credits towards the degree must be earned in residence at UDC.

Academic departments reserve the right to determine those credits that will be used to satisfy degree requirements.

UDC accepts academic coursework from regionally accredited colleges and universities.

UDC does not accept vocational, developmental, independent study, internships/practicum, pass/fail, or other specialized courses that are specific to the institution from which the student has transferred. Transfer credit is approved only for courses passed with a minimum grade of "C" or better or a 2.0 on a 4.0 grade point average scale, or a "B" or better for graduate students, however, the University does not recognize or give credit for either a plus or a minus (i.e., B+, C-).

A student's GPA at UDC is calculated solely on the basis of work taken at UDC.

If courses have a co-requisite component (i.e., Natural science lecture and lab) in which the major component (i.e., Biology lecture) does not meet the grade requirement needed for transfer, the co-requisite (e.g., Biology lab) would not be eligible even if the co-requisite course was completed with the grade requirement.

College-level work given in or under the direction of an accredited college or university as part of the armed services program is accepted for credit on the same basis as other transfer work.

UDC uses the American Council on Education's Guide to the Evaluation of Educational Experience in the Armed Forces to evaluate military experience and education experiences unaffiliated with accredited institutions of higher education.

UDC will approve transfer credit earned at institutions of higher education outside of the U.S. and Canada that are fully recognized by the Ministry of Education, provided that such credits are earned through university-level coursework and are presented with equivalent grades of "C" or higher.
All academic work completed outside of the U.S. at the post-secondary levels must be evaluated by a member organization of NACES before UDC will evaluate the coursework for a determination of transfer credit. Please visit the NACES website for more information.

**Transfer Credit: Examinations**
The following key policies govern the transfer of credit by examination for admitted students:

Community College students can earn a maximum of 15 credits by examination and Flagship students can earn a maximum of 30 credits combined from the following examinations:

**Advanced Placement (AP), College Level Examination Program (CLEP), the DANTES Subject Standardized Tests (DANTES), SAT Subject Tests (SAT II), and the International Baccalaureate (IB)**

Students who seek to earn credit through examination are required to submit official exam results and/or official transcripts directly to UDC from the testing agencies. Students earn credit by examination at UDC for elective credits. Students earn credits by examination towards degree requirements only if separately approved by the student's Academic Departments. UDC uses the American Council on Education's standards and guidelines to evaluate and approve testing credits.

**College Board Advanced Placement (AP) International Baccalaureate (IB)** Students may receive credit for scores on the Advanced Placement Standardized tests for AP courses while taken in high school. Receipt of credit is also acceptable by students who have earned credits toward an International Baccalaureate (IB). The University will only consider grades received at levels 3, 4 and 5, for AP credits and a score of 5 or above for IB credits.
Such evaluation will solely be accepted within the first two semesters of enrollment at the University. Further, academic departments reserve the right to determine the acceptable grade for courses offered in their departments.

**College Level Examination Program (C.L.E.P.)**
The University of the District of Columbia awards course credits to eligible students for acceptable scores (as reflected on the Grade Report), made on the College Level Examination Programs of the Educational Testing Service prior to admission to the University. After enrolling in the University, a student cannot use this credit by examination option unless prior authorization has been given by the chairperson of the department offering the course that credit is to be awarded

**Transfer Credit Evaluation Reports**
The transfer credit evaluation process can take up to 21 business days from the processing of the student's Confirmation of Enrollment form. Students may check Degree Works or Banner Student Self Service to see how their credits transferred.

The Office of the Registrar provides an initial evaluation of credits toward a student's identified degree. The office will determine transfer courses meeting general education requirements. The student's academic department has the final authority on credits accepted for degree requirements as well as associated course substitutions."

General Education credits are coded on Transfer Credit Reports with a subject code of "IGED" and the equivalent General Education course name. The Office attempts to identify course substitutions for all courses. When an equivalent course can't be identified, courses are coded with a 900-999 code credit; begin with a 1-4 signifying whether the course is a freshman, sophomore, junior, or senior level course (1900, 2901, etc.); and include the transferring course name.

All credits approved for transfer that do not have an IGED code or that are not part of a student's degree program of study can be used towards meeting the University's overall credit requirements for graduation (minimum of 120 credits).

Students are strongly encouraged to contact their academic advisor with any questions about their transfer evaluation.

**Transfer Credit Appeal**
Students who wish to appeal the evaluation of transfer credit may do so within 21 business days of completion of the transfer credit evaluation.

Appeals should be sent via email to the department chair/assigned academic advisor and cc'd to the Office of the Registrar at uregistrar@udc.edu for initial review.

All decisions will be communicated to the student via the student's UDC email address and, if approved, sent to the Registrar for any updates. Students should include the course catalog description and syllabus or course outline (from the appropriate year) for each course in question, which if possible, should include the course's learning outcomes.

**Second Degree Applicants**
Candidates for a second degree can receive a maximum of 45 transfer credits towards an Associate's degree or 90 credits towards a Bachelor's degree consistent with the University's residency policy.

## Consortium of Universities

UDC is a member of the Consortium of Universities of the Washington Metropolitan Area. Other affiliates are

- American University
- The Catholic University of America
- Gallaudet University
- George Mason University
- The George Washington University
- Georgetown University
- Howard University
- Marymount University of Virginia
- Montgomery College
- National Defense University
- National Intelligence University
- Northern Virginia Community College
- Prince Georges Community College
- Trinity Washington University
- Uniformed Services University of the Health Sciences
- University of Maryland (College Park)
- University of Maryland Global Campus

The Consortium was formed to facilitate coordination of resources among its affiliates. Currently enrolled UDC students may be eligible to take courses at any of the member institutions. Courses taken through the Consortium must be required for a student's program of study and not offered in the given semester at UDC. Students are limited to six hours per semester (fall and spring only) through the Consortium; however, graduate students who have previously been granted nine transfer credits from non-Consortium arrangements may enroll and receive resident credit in only one of the Consortium's institutions. Eligible students in associate degree programs should have completed 30 credit hours, students in bachelor's degree programs should have completed 60 credit hours, and graduate students should have completed 50 percent of their program in residence.

To be eligible for participation in the Consortium (fall and spring), a student must:

- Be enrolled in a degree-granting program and registered for the current semester at UDC;
- Receive approval from the major department and the dean;
- Be in good academic standing with a cumulative GPA of 2.00 (3.0 GPA for graduate students); and
- Be in good financial standing with UDC.

Consortium cross-registration information is available by emailing the Office of the Registrar at uregistrar@udc.edu. The student must pay UDC tuition and fees for the current semester before becoming eligible to attend institutions in the Consortium. Official registration in UDC is a prerequisite for the Consortium registration. Participation in the Consortium is not available to students during summer sessions.

**Credit by Examination**

Students may receive credit for specific courses when they successfully complete a departmental examination and are approved by the appropriate chairperson/dean.

The following rules apply:

- Students must receive prior permission from the chairperson of the department offering the course.
- After registration begins, and before the midterm grading period in the semester the examination is to be administered, the student must submit the approved Credit by Exam form to the Office of the Registrar, Bldg. 39, A-Level.
- Students seeking credit by examination must be currently enrolled in a degree program and be in good academic standing. Students may seek credit by examination only for courses in which the student has never enrolled, and the examination may be taken only once per course.
- Students may not be registered for the maximum number of hours for the term in which credit by examination is requested.
- A fee of $50.00 per credit hour and any additional tuition must be paid prior to the administration of the examination.
- The examination must be administered before the end of the final examination period, listed in the Academic Calendar, for the semester the credit by examination was administered.
- Upon successful completion of the examination, the credit must be approved by the department chairperson and the dean.
- The grade earned through the credit by examination process must be submitted to the Office of the Registrar by the end of the Final Examination period, listed in the Academic Calendar, for the semester the credit by examination was administered.
- Credit earned by examination will appear on the students' transcripts as "CR" and will not be included in computing the GPA.

**Records**

**Transcript of Grades**

A UDC student's academic record is known as a transcript. All course work in which the student has enrolled is recorded on the student's transcript. Students may download an unofficial transcript from their myUDC.edu account, if enrolled; however, official transcripts must be requested from the Office of the Registrar.

Official copies are sent directly to institutions and individuals upon the written request of the student in accordance with Public Law 93-380, Family Education Rights, and Privacy Act of 1975 (FERPA).

**Requesting a Transcript**

Requests for an official UDC transcript will be processed only after all financial requirements to the University have been met. Academic transcripts reflect ALL levels of course work completed at UDC. All transcript requests require the signature of the requestor. All official transcript requests carry a charge of $5.00 per transcript. If ordering online, there is an additional nominal per transcript service charge. Students may order transcripts through several methods:

**Online:** UDC has an agreement with the National Student Clearinghouse (NSC) to provide a 24/7 transcript service to our current and former students. This service allows students to request, track, and verify the delivery of their official electronic transcript without calling or coming to campus. Using the NSC Transcript Service requires the requestor to submit an electronic signature to the Clearinghouse to authorize the release of the transcript. Transcripts are generally processed the same business day. Students should allow additional time (5 – 7 business days) if they attended the University or one of its predecessor schools prior to 1980. Electronic transcripts are generally not available for students who attended UDC ***prior to*** 1985 (*including DC Teacher's College, Washington Technical Institute, and Federal City College*). Students who attended UDC ***prior to*** 1985 may receive an official paper transcript in lieu of an electronic transcript.

**Postal Service:** Mailed requests should be addressed to the Office of the Registrar. Students should complete and print the Transcript Request Form. Mail the Transcript Request Form and the appropriate fee (a $5.00 per transcript fee in the form of a personal check and/or money order, made payable to the University of the District of Columbia) to the address below. **Do not send cash through the mail.**

Mailing Address:
University of the District of Columbia
Office of the University Registrar
Building 39, Level A
4200 Connecticut Avenue, NW
Washington, DC 20008

**In Person:** Students may order a transcript in person by going to the Office of the Registrar, Building 39, Level A. In-person requests generally require 2 – 3 business days to process. Students may order a transcript in person by going to the Office of the Registrar, Building 39, Level A.

## Academic Standing, Performance, and Grading

### The Semester Credit Hour

The semester credit hour is designated as the University's official unit of academic credit. A semester credit hour requires the completion of one 50-minute period of lecture or two laboratory hours a week for one semester (15 weeks).

### Semester Grades

Semester grades are available online, through myUDC.edu. Students may print a grade report for their own records or to issue to a third party. Students may also order an official transcript.

### The Undergraduate Grading System

The following grades will be used to designate levels of achievement and will appear on official transcripts:

A Excellent 4 quality points per semester hour of credit
B Above Average 3 quality points per semester hour of credit
C Satisfactory 2 quality points per semester hour of credit
D*Below Average 1 quality point per semester hour of credit
F Failure 0 quality points per semester hour of credit

**The University considers the grade of "D" as the lowest passing grade.*

### The Graduate Grading System

A Excellent 4 quality points per semester hour of credit
B Above Average 3 quality points per semester hours of credit
C Satisfactory 2 quality points per semester hour of credit
F Failure 0 quality points per semester hour of credit

### Grade Codes

For courses where no letter grade is awarded, UDC uses the following grade codes:

*P/**F* Pass/Fail
Note: For a pass/fail course, the grade **F must be used, not the standard F.

*CR* Credit

*NC* No Credit
The symbols CR and NC are available for use in those courses designated by the academic department. The CR symbol will count toward the hours completed.

*AU* Audit: When students audit a course, UDC uses the "AU" symbol. Students may register to audit a course during the period of registration and late registration only. "AU" will be preprinted on the class roster and the official transcript.

*W* Withdrawal: UDC uses the symbol "W" to designate official withdrawals. Students may officially withdraw from a course or the University up to five weeks prior to the beginning of the scheduled final examination period.
If a student fails to withdraw in the required manner, the student will receive the grade of "F" (failure).
Students may withdraw from the University (all courses) at any point up to the beginning of the final examination period for which the student is enrolled. Students who withdraw from the University will not be considered as an enrolled student during the semester of withdrawal. If they wish to enroll in the next consecutive semester, they must reapply for admission.

*I* Incomplete: An instructor may give a student an incomplete ("I") only if the student is passing the course at the end of the term, has not completed required course assignments, and signs a contract to complete the assignments. Incomplete grades are removed by the appropriate dean after the student has completed the course requirements and submitted the work to the appropriate professor in the next regular semester after the term in which the "I" is earned. If the student does not complete the unfinished work in the next consecutive term, the grade will become an "F" automatically.

*IP* In Progress (undergraduates): Under certain contingency situations (such as the coronavirus pandemic of 2020), the IP grade **may** be authorized to be used for students who need more time to complete the course work but do not meet the eligibility requirements for an incomplete. The

Instructor and student must complete the Incomplete/In-Progress Grade Contract to complete the missing assignments. IP grades are removed by the appropriate dean after the student has completed the course requirements and submitted the work to the appropriate professor in the next regular semester after the term in which the "IP" grade is assigned. The IP grade option will be announced during the semester for which it is applicable.

*X* In Progress (graduate students): The symbol "X" is used for thesis preparation or directed study. This grade is applicable only for graduate study.

**Grade Point Average**
The grade point average (GPA) is the measure of general scholastic achievement upon which honors, awards, probationary regulations, and graduation are based. For the purposes of graduation and academic honors, only college-level courses are counted in the GPA and credits earned. In order to graduate, an undergraduate student must have a cumulative GPA of at least 2.0, and a graduate student must have a cumulative GPA of at least 3.0.

To compute the GPA, the credit value of each course is multiplied by the quality points of the grade earned in the course. The sum of these products is divided by the number of credits for which the student was enrolled during the semester. Similarly, the cumulative GPA is determined by dividing the sum of all quality points earned by the sum of all quality hours attempted. When a course is repeated, only the higher grade earned is considered in computing the cumulative GPA. Other grades received will remain on the transcript

**Example:**
In one semester, a student receives the following grades:

English 3 credit hours A quality points = 12
Math 3 credit hours C quality points = 6
History 3 credit hours B quality points = 9
Biology 4 credit hours A quality points = 16
French 4 credit hours C quality points = 8
17=Total credit
Total quality=51 points hours attempted
51 quality points divided by 17 credit hours = 3.00

**How to Access Grades**
Final grades are available online only. To access grades, students should login to their myUDC portal and go to Banner Student Self Service.

**Undergraduate Academic Standing**
Whether a student is successful depends upon both the creativity and effectiveness of the institution of higher education and the student's academic performance. The failure of either one of these parties to meet its responsibilities can result in lower levels of institutional performance and student achievement.

The institution reaffirms its Community College and Flagship admission policies for students who seek to pursue undergraduate study, and the University also confirms its responsibility to recognize the level of performance of each student. Therefore, the University will make every effort to identify student needs and clarify the responsibilities of each unit in the University to help students fulfill their educational goals. Nonetheless, students are responsible for having the initiative to take advantage of the University's support services.

**Dean's List**
A Dean's List of all undergraduate students who have a cumulative grade point average of 3.00 and a term GPA of 3.30 or higher is certified by the Chief Academic Officer at the end of each semester.
To qualify for the Dean's List, students must have registered for a minimum of 12 credit hours. A student who fails, fails to complete, or withdraws from any course will be ineligible for the Dean's List for that semester. Note: qualifying for the Dean's List does not automatically qualify a student for University Honors' eligibility.

**High Honors**
Undergraduate students who earned a cumulative GPA of 3.60 – 3.79 while enrolled full-time during sequential Fall, Spring, and Fall semesters in college-level courses with no I's, F's, or W's.

**Highest Honors**
Undergraduate students who earned a cumulative GPA of 3.80 – 4.00 while enrolled full-time during sequential Fall, Spring, and Fall semesters in college level courses with no I's, F's, or W's.

**Top Student** (annual—named in Spring semester) (Transfer students are ineligible to receive honors in this category.)

• Freshman – student(s) who earned the highest cumulative GPA in college level courses among full-time students and who have completed 12 – 29 hours and were enrolled full-time in the Fall semester.

• Sophomore – student(s) who earned the highest cumulative GPA in college-level courses among full-time students and who have completed 30 – 59 hours and were enrolled full-time in the Fall semester.

• Junior – student(s) who earned the highest cumulative GPA in college-level courses among full time students and who have completed 60 – 89 hours and were enrolled full-time in the Fall semester.

• Senior – student(s) who earned the highest cumulative GPA in college-level courses among graduating full-time students and who have completed 90 or more credit hours and were enrolled full-time during the Fall semester.

• Straight A – Undergraduate student(s) who were enrolled full-time during the Spring and Fall semesters of the same calendar year, completed a minimum of 60 credit hours, and earned all A's for both semesters in college-level courses.

**Academic Performance Requirements**
The University requires each candidate for an associate or bachelor's degree to have earned a minimum cumulative grade point average of 2.0. Additionally, a student must complete all General Education requirements and all requirements of the degree program elected.

**Academic Probation and Suspension**

- Any enrolled student whose cumulative GPA is less than 2.00 is placed on academic probation.
- A freshman student enrolled in the University must achieve a cumulative GPA of 2.00 or a term GPA of better than 2.00 by the end of the third term of enrollment (summer terms included).
- A freshman student who earns less than a 2.00 cumulative GPA after three terms must achieve a GPA of better than 2.00 each subsequent term of enrollment.
- A freshman student enrolled for three terms, including summer, who has a cumulative GPA of less than 2.00 and who fails to achieve a term GPA of better than 2.00 will be subject to suspension from the University.
  Until a student in the University achieves a 2.00 cumulative GPA, the student must abide by the course load restrictions placed by the University upon the freshman student with academic deficiencies, as follows:
  - If the GPA is below 1.6 after the first semester of enrollment, the student is limited to a course load of nine credit hours during the next semester of enrollment.
  - If the GPA is 1.6 to 2.0 after the first semester of enrollment, the student is limited to a course load of 12 credit hours during the second semester of enrollment.
  - If the cumulative GPA is below 1.8 after the second semester of enrollment, the student is limited to a course load of nine credit hours during the next semester of enrollment.
  - If the cumulative GPA is 1.8 to 2.0 after the second semester of enrollment, the student is limited to a course load of 12 credit hours during the next semester of enrollment.

After three semesters, or the completion of 30 credit hours, whichever comes first, a student enrolled in the University will be governed by the following policies:

- The student must maintain a cumulative GPA of 2.00.
- In the absence of a 2.00 cumulative GPA, the student must achieve a semester GPA of 2.10 or better each term of enrollment until a cumulative GPA of 2.00 is achieved.
- Failure to meet this standard will result in the suspension of the student for one semester.
- A student who has a cumulative GPA of less than 2.0 is limited to a course load of nine credit hours. The dean may grant permission for a course load of 10 credit hours.

A **transfer student** admitted as a probationary student must achieve a term GPA of 2.0 during the first term of enrollment. Thereafter, the student is subject to the academic policies applicable to: (a) Freshman students, as described above, if the student has completed fewer than 30 credit hours; or (b) All other students, as described above, if the student has completed 30 or more credit hours.

**Probation and Suspension**
When a student's cumulative grade point average falls below 2.00, the student is placed on academic probation. Notification will be sent from the Office of the Registrar informing the student that the grade point average is below the acceptable level. During the next term of enrollment, if the student fails to achieve a term grade point average of 2.10, the student is subject to suspension.

Academic probation and academic suspension will be entered on the official permanent record of the student. A student who has completed 30 credit hours with a cumulative GPA of less than 2.00 will be restricted to a nine-semester hour course load (10 credit hours with the Dean's approval).

If a student is subject to suspension and has registered for course work, their registration will be cancelled. A student enrolled in the University with fewer than 30 credit hours will be subject to the conditions and regulations placed by the University upon freshman students, as described above.

**Dismissal**
If a student's cumulative GPA is below 2.00 and the student fails to successfully complete at least 50 percent of the hours

attempted and fails to achieve a term GPA of 2.10 or better each term of enrollment following a second academic suspension, the student will be dismissed from the University. All courses for which the student was enrolled after add/drop are considered in determining 50 percent of the hours attempted. Reinstatement for such students will be considered at least two calendar years from the date of dismissal. If a student is subject to dismissal and has registered for course work, the registration will be cancelled.

### Graduate Academic Standing

To remain in good academic standing as a graduate student, students must maintain a 3.0 cumulative grade point average (CGPA) each semester and meet all requirements of the chosen degree program. Also, students must earn at least a grade of B in all major courses. In the event a student earns a grade of "C" in a major course, the student must repeat the course. Students should consult the respective programs to determine how many times a course may be repeated.

### Completing the Graduate Degree

Students have five years to complete a Master's degree. If an extension is needed, the student must request this in writing to the Dean's Office through the department chairperson. Extensions may not exceed one academic year. If a student exceeds the five-year limit, the student will be subject to any new program requirements established since the time the student was admitted to the program.

### Graduate Academic Probation

Graduate students must maintain a 3.0 cumulative grade point average (CGPA) each semester and meet all requirements of the chosen degree. When a student's CGPA falls below the required 3.0, the student will be placed on academic probation. During this time, the student is restricted to nine (9) semester hours (including audited courses) during the regular semester and three (3) semester hours during the summer term. The academic dean will notify the student that he or she is on probation and that the student: a) is required to reduce the course load and b) will be suspended unless the student achieves a 3.0 CGPA by the end of the first semester of probationary status.

Notwithstanding the CGPA requirement, a graduate student who has earned two grades of C cumulatively will be placed on academic probation.

Undergraduate courses taken by graduate students are not included in the computation of graduate GPA, nor are they counted toward degree progress. However, a graduate student who earns a grade below C in an undergraduate course will be placed on academic probation.

### Graduate Dismissal

A graduate student on academic probation, who earns a term GPA below 3.0, will be dismissed. Notwithstanding the cumulative GPA requirement, a graduate student who earns a third C or a grade of F in any course will be dismissed. A dismissed student may apply for readmission after one year (two academic terms) of absence.

## General Education Program Overview

### Our Mission

The mission of UDC's General Education Program at UDC is to provide all students with the knowledge, skills, and abilities that will serve them in their efforts to become lifelong learners, community leaders, and fruitfully engaged professionals in rewarding and evolving careers and endeavors. The General Education Program is rooted in both the classical ideals of undergraduate liberal education and UDC's unique history, mission, and student population. It gives students a solid foundation in the liberal arts and sciences, helping them develop the intellectual tools needed to excel in any endeavor they pursue. It exposes students to the wisdom and perspective of a variety of disciplines, and it builds fundamental skills that they will be able to use no matter what their ultimate major or career.

In an increasingly complex world in which our graduates may change careers multiple times, a strong general education foundation is needed more than ever. When students finish the GE program, they will:

- Be intellectually curious;
- Communicate orally and in writing with proficiency and ease; choose appropriate platforms for communicating their ideas;
- Know about a wide variety of subjects and their applied knowledge reflects insights gained from exposure to the arts, humanities, social sciences, natural sciences, and business;
- Be able to cope with unfamiliar material and approach new situations analytically, logically, and creatively;
- Be aware of the ethical implications of actions and make values-driven decisions;
- Be able to access information using a variety of formal and informal methods;
- Use technology efficiently to obtain and evaluate information;
- Embrace service, civic responsibility, and teamwork;
- Champion environmental consciousness;
- Be economically literate;
- Be tolerant of and can adapt to the natural diversity of peoples, their ideas, and cultures; and
- Consider learning to be a lifelong process.

**Program Requirements**

Over the course of their studies, all degree-seeking bachelor degree students entering the University in Fall 2010 or thereafter are required to complete 13 courses for a total of 40 credits (37 credits within the stand-alone General Education Program, plus 3 required credits in a writing intensive course in the major). Students complete the General Education core in a developmental sequence.

The four-year prototype for the General Education curriculum is as follows, with the number of credit hours for each course shown. In order to be eligible to graduate, every undergraduate major at the University must fulfill the General Education program requirements listed below.

| Term | Course # | Course Titles | Credits |
|---|---|---|---|
| 1st | IGED 110 | Foundation Writing I* | 3 |
| | IGED 120 | Foundation Quantitative Reasoning* | 3 |
| | IGED 130 | Foundation Oral Communications | 3 |
| 2nd | IGED 111 | Foundation Writing II | 3 |
| | IGED 220 | Discovery Quantitative Reasoning** | 3 |
| 3rd | IGED 140 | Foundation Ethics | 3 |
| | IGED 250 | Discovery Technology | 3 |
| | IGED 210 | Discovery Writing | 3 |
| 4th | IGED 260 | Discovery Science + Lab ** | 4 |
| | IGED 270 | Discovery Diversity | 3 |
| 5th | IGED 280 | Discovery Civics | 3 |
| 7th & 8th | IGED 391/2 | Frontier Capstone I & II | 3 |
| Writing Intensive Course in your Major. Please consult with your departmental advisor for details. Taken upon completion of Discovery Writing. | | | 3 |

***Courses by skill area***

*English*

IGED 110: Foundation Writing I
IGED 111: Foundation Writing II
IGED 210: Discovery Writing

*Science/Math/Technology*

IGED 120: Foundation Quantitative Reasoning
IGED 220: Discovery Quantitative Reasoning
IGED 250: Discovery Technology
IGED 260: Discovery Science

***Communications***

IGED 130: Foundation Oral Communications

*Humanities/Social Sciences*

IGED 140: Foundation Ethics
IGED 270: Discovery Diversity
IGED 280: Discovery Civics

***All areas***

IGED 391-392: Frontier Capstone

*Total Courses*

• Number of required credits to complete General Education: 40 (37 within GE + 3 in a Writing Intensive course within the major) • Number of GE courses: 13

**IGED Table of Substitutions:**

This table shows what program-level courses serve as substitutes for certain IGED requirements. Students should always verify with their Advisors that the courses listed here are still valid IGED substitutes. Please note that this table is subject to review and possible revision and does not represent a contract (see **Disclaimer**).

| IGED Course | CAUSES | CAS | SEAS | SBPA |
|---|---|---|---|---|
| IGED 110<br>Foundation Writing I | IGED 110 | IGED 110 | IGED 110 | IGED 110 |
| IGED 120<br>Foundation Quant. Reasoning | MATH 105<br>MATH 113 (NUDT) | MATH 113 (BIO)<br>MATH 151/155 (CHEM)<br>MATH 151/155 (MATH) | MATH 151 (CS, CE, BME, ME)<br>MATH 116 (IT) | MATH 105 |
| IGED 130<br>Foundation Oral Communication | IGED 130 | IGED 130 | IGED 130 | IGED 130 |
| IGED 111<br>Foundation Writing II | IGED 111 | IGED 111 | IGED 111 | IGED 111 |
| IGED 220<br>Discovery Quant. Reasoning | MATH 113<br>MATH 185 (NUDT) | MATH 114 (BIO)<br>MATH 152/156 (CHEM)<br>MATH 152/156 (MATH) | MATH 152 (CS, CE, BME, ME, EE)<br>MATH 215 (IT) | MATH 116 |
| IGED 140<br>Foundation Ethics | NURS 307<br>ARCP 411 | IGED 140 | IGED 140 | IGED 140 |
| IGED 210<br>Discovery Writing | IGED 210 | IGED 210 | IGED 210 | IGED 210 |
| IGED 250<br>Discovery Technology | AETC 205 (ARCH) | APCT 231 (MATH) | APCT 115 (CS)<br>APCT 231 (EE)<br>BMEG 235 (BME)<br>CSCI 135 (CE)<br>MECH 302 (ME) | IGED 250 |
| IGED 260<br>Discovery Science | PHYS 101/103 (ARCH)<br>BIOL 101/103<br>ENSC 145/146<br>CHEM 105/106<br>CHEM 111/113 (NUDT) | CHEM 111/113 (CHEM)<br>BIOL 101/103 (ELED)<br>BIOL 101/103 AND BIOL 102/104 (OR) BIOL 111/113 AND BIOL 112/114 (BSW) | CHEM 105/106<br>BIOL 101/103<br>CHEM 111/113 (EE, CE, BME, ME) | IGED 260 |
| IGED 270<br>Discovery Diversity | IGED 270<br>ARCH 321 | IGED 270 | IGED 270 | IGED 270 |
| IGED 280<br>Discovery Civics | ENSC 225, 357<br>ARCP 412 | IGED 280 | IGED 280 | IGED 280 |
| IGED 391-392<br>Frontier Capstone | NURS 497<br>NUDT 490<br>ARCP 401 | IGED 391-392 | CSCI 498/499<br>ELEC 495/496<br>CVEN 491/492<br>BMEG 491/492<br>MECH 491/492 | IGED 391-392 |
| Writing Intensive Course (WI) | ENSC 470<br>HLTH 494<br>NURS 455 | CAS offers a range of WI Courses: Consult with Advisor | Senior Capstone Project I & II | BGMT419 |

## IGED Course Descriptions

**Foundation Writing (IGED 110 and 111) (3 + 3)**
The Foundation Writing sequence consists of two 3-credit Interdisciplinary General Education courses that focus on improving students' critical reading and writing skills while exploring a given academic theme. The goals of these courses are to teach students how to read and write with skill and ease. Students learn to express ideas and thoughts using a range of written forms that consider content, audience, and professional standards. They study a variety of graphic and textual material using multiple approaches to reading, interpretation, and comprehension.

**Foundation Quantitative Reasoning (IGED 120) (3)**
Foundation Quantitative Reasoning seminars focus on improving students' quantitative reasoning skills while exploring a given academic theme. The goal of this course is to teach students how to reason using the language and strategies of mathematics. Students analyze data, find connections among and between quantitative relationships, and communicate their findings using a variety of formats within different settings and to diverse audiences. By using a variety of strategies, students solve problems in a variety of real-world contexts.

**Foundation Oral Communication (IGED 130) (3)**
Foundation Oral Communication seminars focus on improving students' interpersonal communication skills while exploring a given academic theme. The goal of these courses is to teach students how to communicate orally with confidence, proficiency, and ease in professional and interpersonal interactions. Students engage in extensive communication practice, with a focus on public speaking. They study the relationship between speech genres, performance, and the different cultural, institutional, ethical, and professional expectations for proficient communication.

**Foundation Ethics (IGED 140) (3)**
Foundation Ethics seminars focus on improving students' ethical reasoning skills while exploring a given academic theme. The goal of these courses is to teach students how to make values-based decisions that are grounded in an awareness of the ethical implications of one's actions. Students grapple with 21st Century ethical problems and learn to argue from multiple perspectives to demonstrate that there is not always an absolute answer to every ethical question. They study an array of moral concepts, principles, and codes used frequently in the discussions of ethics and apply them to everyday issues. Pre-requisite: IGED 111.

**Discovery Writing (IGED 210) (3)**
Discovery Writing seminars build on the critical reading and writing skills attained in the Foundation Writing sequence. The goal of this course is to teach students how to do scholarly research to answer questions and formulate arguments within a given academic subject. Students review, synthesize, and present rigorous and appropriately cited research in a variety of written and technical formats. Pre-requisite: IGED 111.

**Discovery Quantitative Reasoning (IGED 220) (3)**
Discovery Quantitative Reasoning seminars focus on improving students' quantitative reasoning skills while exploring a given academic theme. The goal of these courses is to teach students how to reason using the language and strategies of mathematics. Students solve problems and analyze data in various contexts including applications demonstrating personal economic literacy. Pre-requisite: IGED 120.

**Discovery Technology (IGED 250) (3)**
Discovery Technology seminars focus on improving students' technological skills. The goal of these courses is to teach students how to use technology effectively to obtain, evaluate, organize, and present information. Students study how to locate, retrieve, and evaluate information obtained from a variety of sources. They learn how to apply strategies for secure and ethical use of the Internet, as well as how to apply appropriate technology to solve problems.

**Discovery Science (IGED 260) (4)**
Discovery Science seminars focus on improving students' scientific reasoning skills and raise their environmental consciousness. The goal of these courses is to develop students' awareness of the interrelationships of humanity and the natural world and the impact of those relationships on a sustainable planet. Students study the relationship between humans and the natural environment. They use scientific inquiry to collect, analyze, and evaluate information related to practices and policies that affect the environment.

**Discovery Diversity (IGED 270) Credits: 3**
Discovery Diversity seminars focus on exposing students to the rich diversity of our city and the world. The goal of these courses is teach students to understand and appreciate the global and local diversity of people, ideas, languages, and cultures. Students examine diverse social groups and compare cultural variations among them. They learn to identify and critique ideas and behaviors based on stereotypes, as well as recognize cues that signal intercultural misunderstanding. Pre-requisite: IGED 210.

**Discovery Civics (IGED 280) (3)**
Discovery Civics seminars are Interdisciplinary General Education courses that give students the opportunity to practice good citizenship. The goal of these courses is teach students to understand the importance of civic responsibility and demonstrate the ability to engage in teamwork and community service. Students study the role and impact of the institutional structures, powers, and practice of government at all governmental levels. They learn about the rights, liberties, and intrinsic value of all persons living in a free society. Pre-requisite: IGED 210.

**Frontier Capstone (IGED 391-392) (3)**
Frontier Capstone seminars offer students the opportunity to pursue an in-depth project on a subject of deep interest. The goal of these courses is to teach students how to cope effectively with new situations, information, and experiences, using skills in critical thinking, problem solving, and creativity. Following exposure to a wide variety of scholarly subjects, students demonstrate through academic work the ability to obtain and appropriately use information retrieved through many formal and informal methods. Pre-requisites: Minimum of 75 credits and completion of all Foundation and Discovery General Education classes.

# The Learning Resources Division

**Building 41, Library , 202.274.6370**
The Learning Resources Library is the gateway to a wide array of print resources and electronic information. It also offers many services to support student and faculty research. The UDC library collections consist of more than 600,000 print volumes, more than 540,000 e-books, access to over 135,000 online periodicals, and approximately 22,000 media materials. The collection is housed in modern facilities with reading rooms, open stacks, and individual study carrels.

Primary access to the collection is retrieved through summons of the online catalog within the Washington Research Library Consortium (WRLC), of which UDC is a member. The WRLC is made up of nine libraries in the District of Columbia and Virginia. UDC students and faculty may borrow materials from all members of WRLC.

Students and faculty have access to several services including reference assistance, use of multimedia and computer laboratories, computers for the visually impaired, individual study rooms, a 125-seat auditorium equipped with video display and sound amplification, and local as well as remote access to our online public access catalog. The library provides access to 64 public computer workstations which are located throughout the library single floor location. Access is reserved for UDC students, faculty and staff who log in using their UDC OneCard. Visitor access is provided via two standup computers. Each computer workstation has Wi-Fi access and is connected to one of three printers via UDC's universal print (through Pharos).

The Learning Resources Division library aims not only to provide information, but also to create learning spaces that offer opportunities for dialogue and exchange that expand minds and cultivate values necessary for success as scholars and citizens.

# Center for the Advancement of Learning (CAL)

**Building 41, Room 108, 202.274.6591**
**https://www.udc.edu/cal/**
The CAL mission is to promote evidence-based instructional practices that advance learning and professional development. To fulfill the mission, CAL partners across the University to develop and sustain a culture that values learner-centered instruction, acknowledges the diversity of learners, and creates learning environments where all can achieve. Through collaboration, hands-on training, and individualized support, the Center furthers UDC's mission of producing lifelong learners who will fulfill their maximum potential in the classroom and beyond.

Housed in the Learning Resources Division, CAL accomplishes its mission using the following formats:

CAL offers professional development opportunities to help faculty provide high quality learning experiences for learners, including Online Teaching Certification and Online Course Build certification.

CAL assists academic departments and faculty in the exploration and use of new and emerging technologies to enhance teaching and learning in all course modes of delivery.

CAL provides workshops for hands-on practice with a variety of technology tools and teaching approaches.

CAL supports the institution with the use of our Learning Management System (Blackboard) and facilitates a 24/7/365 Blackboard Help Desk.

# College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES)

**Building 4250, Office 5243, (202) 274-5495**
**https://www.udc.edu/causes/**

The College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES) embodies the Land-grant tradition of UDC. In addition to offering cutting-edge academic programs that focus on improving the quality of life and economic opportunity of people and regions, CAUSES also offers a wide range of community education programs. Academic programs in CAUSES are listed under Department of Architecture and Urban Sustainability and the Department of Health Nursing and Nutrition. Community education programs are listed under the heading "Land-Grant Programs."

**CAUSES Academic Programs**
Academic programs within CAUSES are offered at the Bachelor's, Master's and Ph.D. Degree level. The academic programs within CAUSES offer courses that are designed to prepare students for both success in their chosen field of study and long-term success in their careers and lives. What follows is a list of the academic degree programs offered within the college as well as an overview of program requirements and course descriptions for each of the degree programs.

**Department of Architecture and Urban Sustainability**
Bachelor of Arts in Urban Sustainability
Bachelor of Science in Architecture
Master of Architecture
Professional Science Masters in Water Resource Management
Professional Science Masters in Urban Agriculture
Professional Science Masters in Urban Sustainability
Ph.D. in Urban Leadership, concentrations in:
Urban Sustainability & Resilience Leadership
Urban Political & Governmental Leadership
Urban Entrepreneurship
Urban Health Leadership
Urban Education Leadership

**Department of Health Nursing and Nutrition**
Bachelor of Science in Health Education with a Public Health concentration

Bachelor of Science in Nursing (RN to BSN)

Bachelor of Science in Nutrition and Dietetics
Master of Science in Nutrition and Dietetics

**Land-Grant Programs**
The Land-Grant Programs of CAUSES offers research-based community education and professional certification programs that are delivered through five centers and three institutes: the Center for Urban Agriculture and Gardening Education; the Center for Sustainable Development and Resilience which includes the Water Resources Research Institute; the Center for 4-H and Youth Development; the Center for Nutrition Diet and Health, which includes the Institute of Gerontology; and the Center for Architectural Innovation and Building Science, which includes the Architectural Research Institute.

The five CAUSES Centers also offer a range of assessment services to residents and community groups in the District of Columbia. CAUSES' centers collectively provide over 2,000 programs and serve more than 180,000 participants annually.

Each of the CAUSES centers houses a number of programs and services that are designed to engage the communities and neighborhoods where we are located and to enrich the lives of District of Columbia residents. What follows is a description of each center's programs and services.

*Center for Urban Agriculture and Gardening Education*
- Gardening and Urban Agriculture
- Master Gardening
- Specialty and Ethnic Crops
- Urban Forestry

*Center for Sustainable Development and Resilience*
- Green Entrepreneurship
- Small Business Development
- Green Technology
- Green Infrastructure
- Urban Forestry

*Water Resources Research Institute*
- National Capital Region Section AWRA Annual Water Symposium
- Flash flood risk management training
- Environmental Quality Testing Laboratory Services: Soil and Water Quality Testing
- Soil and Water Quality Testing Training
- Geographic Information System (GIS) Training

*Center for Nutrition, Diet and Health*
- DC Professional Food Managers/Food Handler Certification Program
- District of Columbia Water Blind Taste Testing Research Project

- Expanded Food and Nutrition Education Program (EFNEP)
- Farmers' Market Nutrition Education Program
- Food Demonstrations and Cooking Classes
- Food Safety Education
- Kids Cooking Classes
- Nutrition, Diet and Health Seminars
- Nutrition on Demand
- Supplemental Nutrition Assistance Program-Education (SNAP-Ed)
- Team Nutrition Project

*Institute of Gerontology*

- Senior Companion/Respite Aid
- Bodywise program
- Senior Tuition Program

*Center for 4-H and Youth Development*

- 4-H Clubs
- 4-H Living Interactive Family Education (4-H LIFE)
- 4-H International Networks
- 4-H Summer Camp

4-H STEM
EnvironMentors Program
Life Smarts Consumer Education for Teenagers
Operation Military Kids

*Center for Architectural Innovation and Building Science*
Building Rehabilitation
Green Building Codes
Lead Abatement Program

## Architecture and Urban Sustainability

### Bachelor of Architecture

*Program Core Requirements (in addition to **IGED courses**):*

| | | |
|---|---|---|
| ARCP 101 | Basic Design and Communication I | 4 |
| ARCP 102 | Basic Design and Communication II | 4 |
| ARCP 105 | Intro to Computer Technology I | 3 |
| ARCP 106 | Intro to Computer Technology II | 3 |
| ARCP 115 | Materials & Methods of Construction I | 3 |
| ARCP 116 | Materials & Methods of Construction II | 3 |
| ARCP 123 | Architecture and Planning Graphics | 3 |
| ARCP 201 | Architectural Studio I | 4 |
| ARCP 202 | Architectural Studio II | 4 |
| ARCP 206 | CAD Docs/Specs and Estimating | 3 |
| ARCP 231 | Statics and Structural Design (elective) | 3 |
| ARCP 241 | Advanced Computer Simulation | 3 |
| ARCP 244 | Environmental Systems I | 3 |
| ARCP 246 | Environmental Systems II | 3 |
| ARCP 256 | Built Environment | 3 |
| ARCP 301 | Architectural Studio III | 5 |
| ARCP 302 | Architectural Studio IV | 5 |
| ARCP 321 | History & Theory of Architecture I | 3 |
| ARCP 322 | History & Theory of Architecture II | 3 |
| ARCP 331 | Theory of Structures | 3 |
| ARCP 332 | Design of Steel Structures | 3 |
| ARCP 401 | Architectural Studio V | 5 |
| ARCP 402 | Architectural Studio VI | 5 |
| ARCP 411 | Professional Ethics & Practice | 3 |
| ARCP 412 | Preservation Rehabilitation Tech I | 3 |
| ARCP 432 | Design of Concrete Structures | 3 |
| MATH 105 | Intermediate Algebra | 3 |
| MATH 113 | Pre-Calculus with Trigonometry I | 3 |
| PHYS 101/103 | Introduction to College Physics I Lecture/Lab | 4 |
| PHYS 102/104 | Introduction to College Physics II Lecture/Lab | 4 |

## Master of Architecture (M.Arch.)

*Total Credit Hours Required: 49*

| *Program Core Requirements:* | | |
|---|---|---|
| ARCP 501 | Professional Studio Lab VII | 5 |
| ARCP 502 | Thesis Studio Lab I | 5 |
| ARCP 503 | Urban and Community Design I | 3 |
| ARCP 504 | Urban and Community Design II (elective) | 3 |
| ARCP 505 | Sustainable Design I | 3 |
| ARCP 506 | Sustainable Design II | 3 |
| ARCP 507 | Graduate Seminar | 3 |
| ARCP 512 | Critical Issues | 3 |
| ARCP 514 | Prof Ethics and Practice | 3 |
| ARCP 520 | Architectural Design Theory | 3 |
| ARCP 521 | Architectural Systems and Environment | 3 |
| ARCP 550 | Thesis Studio II | 5 |

**Master of Architecture Advanced Standing**

| Fall Semester – Year 1 | | |
|---|---|---|
| Course | Title | Credits |
| ARCP 501 | Professional Studio Lab VII | 5 |
| ARCP 521 | Architectural Systems & Environment | 3 |
| ARCP 505 | Sustainable Design I | 3 |
| ARCP 507 | Graduate Seminar | 3 |
| | **Total** | **14** |

| Spring Semester – Year 1 | | |
|---|---|---|
| Course | Title | Credits |
| ARCP 502 | Thesis Studio I | 5 |

| | | |
|---|---|---|
| ARCP 514 | Professional Ethics & Practice | 3 |
| ARCP 520 | Architectural Design Theory | 3 |
| | Elective | 3 |
| | **Total** | **14** |
| | Fall Semester – Year 2 | |
| ARCP 503 | Urban & Community Design I | 3 |
| ARCP 505 | Sustainable Design I | 3 |
| ARCP 512 | Critical Issues Architecture | 3 |
| ARCP 550 | Thesis Studio II | 5 |
| | **Total** | **14** |
| | Spring Semester – Year 2 | |
| ARCP 506 | Sustainable Design II | 3 |
| | Elective | 3 |
| | Elective | 4 |
| | **Total** | **10** |
| *Master of Arch. Degree Advanced Standing Program Total Credit Hours* ***(49 + 3 Credits for ENGL 515, if required)*** | | **49** |

## Master of Architecture (M.Arch.)

**Non-advanced standing: 85 credits (+3 credits for ENGL 515, shown below) Total: 88**

*Master of Architecture non-advanced standing*

| Fall Semester—Year 1 | | |
|---|---|---|
| Course | Title | Credits |
| ARAC 601 | Design Studio I | 4 |
| ARAC 615 | Materials & Methods Studies | 3 |
| ARAC 633 | Theory of Structures | 3 |
| ENGL 515 | Writing Proficiency | 3 |
| | **Total** | **13** |
| Spring Semester—Year 1 | | |
| ARAC 602 | Design Studio II | 4 |
| ARAC 632 | Design of Steel Structures | 3 |
| ARAC 646 | Environmental Studies | 3 |
| | Elective | 3 |
| | **Total** | **13** |
| Fall Semester---Year 2 | | |
| ARAC 603 | Design Studio III | 5 |
| ARAC 621 | History & Theory Architecture | 3 |
| ARAC634 | Design of Concrete Structures | 3 |
| | **Total** | **11** |
| Spring Semester—Year 2 | | |
| ARAC 604 | Design Studio IV | 5 |
| ARCP 520 | Architectural Design Theory | 3 |
| | Elective | 3 |
| | Elective | 4 |
| | **Total** | **15** |
| Fall Semester---Year 3 | | |
| ARCP 501 | Professional Studio Lab VII | 5 |
| ARCP 521 | Architectural Systems & Environment | 3 |
| ARCP 505 | Sustainable Design I | 3 |
| ARCP507 | Graduate Seminar | 3 |
| | **Total** | **14** |
| Spring Semester---Year 3 | | |
| ARCP 502 | Thesis Studio I | 5 |
| ARCP 514 | Professional Ethics & Practice | 3 |
| ARCP 506 | Sustainable Design II | 3 |
| | **Total** | 11 |
| Fall Semester – Year 4 | | |
| ARCP 550 | Thesis Studio II | 5 |
| ARCP 503 | Urban & Community Design I | 3 |
| ARCP 512 | Critical Issues in Architecture | 3 |
| | **Total** | **11** |
| | **Program Total (85+3)** | **88** |

Note: Students are required to take a writing proficiency course and a writing proficiency test before graduating (ENGL-515 3 credits)

### COURSE DESCRIPTIONS: ARCHITECTURE AND URBAN SUSTAINABILITY (ARCP) & (ARAC)

**ARCP 101 Basic Design and Communication (4)**

Are you interested in learning how designers communicate their ideas through sketches and formal drawings? Do you wonder about how drawings relay the message of what you are visualizing in your mind? Do you wonder how famous architects related their theories about the built environment? This course will introduce you to all of this and more. You will learn sketching techniques; formal drawing and drafting techniques; and how to communicate your ideas through architectural working drawings.

**ARCP 102 Basic Design and Communication II (4)**
Prerequisite: ARCP101. Were you intrigued by the ideas and concepts learned in ARCP101? Then you are ready for this course. You will continue to develop skill in graphic communication and drafting. You will get a further understanding of the role of detailing in representing solutions to construction problems related to light construction. A scale model will be constructed as part of this course.

ARCP 105 Introduction to Computer Technology I (3)
In this course, you will learn how to use SketchUp and Revit, and other types of drawing and rendering tools that help you visualize and present your ideas. In the process you will learn how building components come together into a building envelope.

ARCP 106 Introduction to Computer Tech II (3)
Prerequisite: ARCP105. This course is a continuation of ARCP105, with a more detailed exploration of Revit as a tool for building information modeling (BIM). The student will learn to develop 3D model representations of how building components interface with each other as well as how Revit interfaces with other programs, including AutoCAD. Students will learn about importing/exporting and manipulating other files with Revit.

ARCP 115 Materials & Methods of Construction I (3)
Do you wonder how so many different materials come together to form a building? Are you curious about how it is that a tree becomes the wood used for building a house? Would you like to understand how various materials are stacked, glued, screwed and nailed together to make the interior of a building dry and warm when the outdoors is wet and cold? If you are wondering about any of these things this class is designed to help you solve the mystery. You will learn how wood, masonry, cement and more come together in a building. You will also learn many of the words, phrases, and names used to describe the building and building process.

ARCP 116 Materials & Methods of Construction II (3)
Prerequisite: ARCP115. Did you learn about the materials and the varied uses of them in a building? Are you intrigued by how cement turns to concrete? Are you curious about the process by which bricks or concrete blocks are made? Are you curious about how green architecture and sustainable construction affects the environment and the building's life span? These and many other concepts will be explored in this course. Field trips to various sites will be undertaken to get a firsthand understanding of how materials are used in construction. At the end of this class you will be conversant in the language used in the building industry to describe process, methods and material use. Lecture 2 Hours; Lab 3 Hours.

ARCP 123 Architecture and Planning Graphics (3)
How do you convince the viewer through drawings and models that a scene is real? This is the question that will be explored in this first year first semester. The course is intended to prepare the students to use the graphic language for communicating ideas in architecture and planning. Students learn the formal drawing conventions utilized by architects to include axonometric, orthographic projection, and perspective drawings and other foundational graphic techniques and principles for conveying ideas.

ARCP 201 Architectural Studio I (4)
This is a continuation of ARCP102 Basic Design and Communication II. The student will learn the graphic skills needed to organize and develop a set of 'working' drawings and the communication skills to present it.

ARCP 202 Architectural Studio II (4)
Prerequisite: ARCP201. By the end of the semester the student will learn how to develop 'working' drawings. As a part of this development the student will learn how the zoning and building codes inform the production of a building. The end product is a set of construction document drawings that accounts for code, structure and construction rules and good practice.

ARCP 206 CAD Documentation, Specifications, and Estimating (3)
Prerequisite: ARCP106, ARCP201. This course develops the student's skill in construction document coordination detailing; discipline's coordination; specification writing and cost estimating. Students are expected to have a general/overview knowledge of AutoCAD, and a detailed knowledge of Revit, and how they form the basis for preparing construction documents and building information management (BIM) systems.

ARCP 231 Statics and Structural Design (3)
This elective course studies the concepts of stresses and strength of materials; moment, shear, equilibrium, inertia, static loading versus dynamic loading, and torque. This course allows the student to develop the necessary skills to understand the primary elements of load calculation, load transfer, and load tables.

ARCP 241: Advanced Computer Simulation (3)
Prerequisite: ARCP106. This course will explore the CADD program as a presentation tool. The integration of the 3D software output with software for enhancing the visual presentation objects will be learned. The student will be expected to understand and develop skills in the following

areas: Solid Modeling, Animation, and Orthographic drawing presentation.

ARCP 244 Environmental Systems I (3)
In this course you will learn how plumbing systems are designed to manage waste disposal from the building; how power is supplied and controlled in a building envelope; and how illumination elements are designed to minimize environmental effects.

**ARCP 246 Environmental Systems II (3)**
Prerequisite: ARCP244. This course will focus on Heating, Air Conditioning, Ventilation and Conservation of Energy. The student will learn methods of load calculations done manually, using tables to calculate heat transfer coefficients for any type of construction, determine temperature differences required by codes or by good practice, compute the size of equipment, piping and ducts which will be appropriate to the building type and use and available fuels. Simple residences or small commercial buildings will be analyzed for HVAC systems and plans will be prepared to guide the contractor for installation.

**ARCP 256 Built Environment (3)**
This course provides a holistic introductory treatment of architecture and the built environment for architecture and non-architecture majors. The emphasis is on the examination of world-wide cultural belief systems and other factors that have had a major impact on the man-built world. The organized design professions are reviewed and their value systems examined. The course also exposes the student to the issues of sustainability and climate change, and the role those factors are playing.

**ARCP 301 Architectural Studio III (5)**
Prerequisite: ARCP202. This course builds on the first two years of technical design studios. Are you interested in a more in-depth analysis process for arriving at a solution for a building design? How does the designer decide on which is the best plan layout and three dimensional shape of a building? This course will offer challenging design problems crafted to expose the student to the design analysis process used to study design situation in the urban context. The application of zoning and building codes to the building outcome is expected.

ARCP 302 Architectural Studio IV (5)
Prerequisite: ARCP301. The analysis process will be applied in the development of a design concept. The students are expected to learn how to integrate the various disciplines that affect the shape, form and structure of the building. Life safety issues and the architectural responses will be learned and applied to given design problems. Students are expected to understand how the structural systems are applied in the context of the given building type.

ARCP 321 History & Theory of Architecture (3)
Have you ever wondered why the National Cathedral or the Basilica at Catholic University looks the way it does? Have you wondered how the pyramids were built? These and many other questions about the influences of people their actions and choices on the built environment will be discussed in this course. The development of shelter, architectural space and sacred places from prehistoric times to the Gothic Cathedrals will be explored, along with cultural, economic, technological, and political influences on construction and design.

ARCP 322 History & Theory of Architecture II (3) (this course is taught online)
Prerequisite: ARCP321. This course will study the built environment; the design of buildings and spaces from the Gothic Period through modern times. The development of the major schools of architectural thought will be explored. The shaping of the built environment by technology will be explored. The student will learn how the major design philosophies and schools of thought influenced our modern day treatment of the built environment.

ARCP 331: Theory of Structures (3)
Prerequisite:, PHYS102/104. Analysis of statically determinate beams and trusses, methods of determining deflection of structures, influence lines and application for moving loads and indeterminate structures including continuous beams and frames are pursued. The course presents the classical methods of structural analysis needed to analyze statically determinate and indeterminate structures. It aims at providing the necessary analysis foundation for the design courses that typically follow this course in the traditional architectural engineering curriculum.

ARCP 332 Design of Steel Structures (3)
Prerequisite: ARCP331. This course reviews the concepts of stresses and strength of materials: moment, shear, equilibrium, inertia, static loading versus dynamic loading, and torque. This course allows the student to develop the necessary skills to understand the primary elements of load calculation, load transfer, and load tables as it relates to steel construction and specifically steel frame construction. The AISC codes are employed in computations.

ARCP 401 Architectural Studio V (5)
Prerequisite: ARCP302. This studio is a continuation of Laboratory IV with the emphasis shifting to the cost and time management control aspects of building design and production. The student will undertake two architectural

designs of mid-size building types on primarily urban sites located in the Washington, D.C. metropolitan area. The architectural design problems will be set to assure that the student reaches a basic level of competence in addressing the problems associated with architecture within an urban context. The two projects will vary in time and scope.

ARCP 402 Architectural Studio VI (5)
Prerequisite: ARCP401. This course is the culmination of architectural design studio course sequence in the Bachelor of Science in Architecture Degree program. The student is expected to demonstrate a firm grasp of the skills required for undertaking comprehensive, sustainable and inclusive building design. The communication and illustration of the design solution is of paramount importance in demonstrating the acquisition of design skills. The semester is devoted to the undertaking of an urban-scale design project with minimum faculty supervision.

ARCP 411 Professional Ethics & Practice (3)
This course undertakes a general review of: the profession of Architecture; historic developments; relation to other professions and disciplines; the changing role of the Architect; architectural and related professional societies; state and national registration boards; education accreditation; federal, state and municipal agencies and legal and ethical questions relating to the practice of architecture and emerging forms of practice.

ARCP 412 Preservation Rehabilitation Tech I (3)
The course utilizes the Secretary of the Interior's Certification application, preservation guidelines and technical specifications as the base of case study analysis of the planning and design of historic structures in Washington, D. C. Non-historic rehabilitation techniques in housing, cost control and recycle/retrofit techniques for various structures are also analyzed through community planning.

ARCP 432 Design of Concrete Structures (3)
Prerequisite: ARCP331, ARCP 332. The Design of Concrete Structures covers the analysis and design of reinforced concrete rectangular and T-beams, one-way slabs, short and slender (long) columns, spread footings, and wall footings. The concepts of stresses and strength of materials: moments, shear, equilibrium, inertia, static loading versus dynamic loading and torque are reviewed. This course allows the student to develop the necessary skills to understand the primary elements of load calculation, load transfer, and load tables as it relates to concrete and concrete frames. The ACI codes are employed in computations.

ARCP 501 Professional Studio Lab VII (5)
Co-requisite: ARCP521. This course is the final guided design studio of the architecture program curriculum and serves as the design portion of the curriculum on integrated practice. The course provides hands-on experience, and seeks to prepare students for the self-guided thesis project, as well as working in a professional office. The course also provides critical preparation for professional licensure. The student undertakes the design of a substantive building project in this semester with special attention to sustainability and building technology. Concurrent coursework in ARCP521 Architectural Systems & Environment completes the technical, systems, documentation and financial portions of the project.
**NOTE:** Students without prior exposure to REVIT are strongly advised to enroll concurrently (or audit ARCP595: Computer Tech- Revit)

ARCP 502 Thesis Studio I (5)
Prerequisites: ARCP501, ARCP507. This course is the first part of an integrated and largely self-guided two-semester studio sequence in the Master of Architecture degree program. Work completed in thesis course, along with the Graduate Seminar, is the foundation for the capstone thesis project. Students will program, research, and design a project of their choosing as a means of demonstrating the knowledge acquired in previous semesters or select a theoretical problem. Basic competency in BIM/CAD/ computer graphic skills is required. The semester is devoted to making significant progress on the design statement envisioned in the pre-design/research document prepared in ARCP507 Graduate Seminar during the preceding semester.

ARCP 503 Urban and Community Design I (3)
This class is intended to promote understanding of public space and public life through readings and discussions in urban design and planning through observation and analysis of urban conditions in Washington, D.C. Students will learn the practical tools of urban design as well as graphic communication techniques. Student will expand and refine their skills using spatial analysis via drawing and diagramming urban conditions.

ARCP 504 Urban and Community Design II (4)
Prerequisite: ARCP503. This elective class is intended to delve deeper into understanding how public space and public life come about through readings and discussions in urban design and planning through observation and analysis of urban conditions in Washington, D.C. Field trips to local sites will be included in the in depth study of the urban landscape. Students are expected to have a grasp of the practical tools of urban design illustration as well as graphic communication techniques. Student will be expected to be

able to communicate their ideas using spatial analysis via drawing and diagramming urban conditions.

ARCP 505 Sustainable Design I (3) (this course is taught online). Buildings account for approximately 50-60% of the energy usage in the United States. What can be done to make buildings more energy efficient? This course will introduce students to the USGBC LEED rating system, as well as other programs, which facilitates the design, review, and maintenance of new and existing buildings through the incorporation of "green" technologies. Students will examine the benefits of designing sustainable buildings and understand the process involved in achieving LEED certification.

ARCP 506 Sustainable Design II (3)
Prerequisite: ARCP-505. How does the design process change when designing energy efficient buildings? Does applying LEED credits to a building change the shape of the final design? Using the LEED program, students will design an energy efficient building. Sustainable design technologies will be reviewed and applied to an actual building via a design studio program. Lectures will examine other aspects of sustainability that do not include building design and discuss how students can apply sustainable practices to their own lives.

ARCP 507 Graduate Thesis Seminar (3)
Successful completion of this course is the prerequisite for enrollment in the spring semester ARCP 502 Thesis Studio. Graduate school level scholarly writing proficiency and research skills are required. Extensive critical reading and written reviews occur, along with a review of research methodologies. The student selects a master's thesis topic in consultation with the course instructor; develops the research protocol; documentation; pre-design program and problem statement. The approved document is the basis for ACRP 502 Thesis Studio I..

ARCP 514 Professional Ethics & Practices II (3)
This course focuses, via the case study method, on the business and financial tools of professional practice including real estate development and other emerging entrepreneur opportunities. The student is expected to understand the ethics associated with the practice of Architecture of Architecture as a business and profession that is responsible for health safety and welfare of the public.

ARCP 516 Adv. Topics in Preservation Rehabilitation Technology I (4)
This elective course utilizes the Secretary of the Interior's Certification application, preservation guidelines and technical specification as the base of case study analysis of the planning and design of historic structures in Washington, D.C. Non-historic rehabilitation techniques in housing, cost control and recycle/retrofit techniques for various structures also are analyzed through community planning.

ARCP 520 Architectural Design Theory (3)
Have you ever wondered how architects come up with their design ideas? What determines the aesthetics of a project? How do existing structures – both historic and contemporary – influence the design of a project? How does context impact the design? What other ordering systems guide the final design of a building? This class will explore the theory underlying many
design principles and provide the student with a strong foundation to enhance the knowledge gained in the history class.

ARCP 521 Architectural Systems & Environment (3)
Co-requisite ARCP501. This course complements the design studio, and provides the students with a detailed background on the criteria, including financial criteria, by which an architect selects all of the building service systems and materials appropriate for a complex building. Students will review and expand on previous courses related to thermal transfer, environmental conditions, lighting, plumbing, electrical, communication, vertical transportation, security, and fire protection systems. The course also provides critical preparation for professional licensure. Concurrent coursework in ARCP501 will provide the design project for which the student will research and create the technical documentation.

ARCP 550 Thesis Studio II (1-5)
Prerequisites: ARCP502, ARCP507. This course is the final part of an integrated and largely self-guided two-semester studio sequence in the Master if Architecture degree program. Work completed in this course, along with ARCP507 and ARCP502, results in the capstone thesis project. Students will refine and complete the documentation for the program, research, and design of the project of their choosing envisioned in the previous courses of the sequence or address a theoretical problem. In doing so, the student will demonstrate the ability to synthesize and apply the knowledge acquired in previous semesters.

The following courses are designed for students who have a non-architecture degree and wish to pursue architecture at the graduate level.

ARAC 601: Design Studio I (4)
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-101 and ARCP-102. This course covers principles and theory of drawing

types and techniques of three dimensional modeling. The SketchUp software program will be used in developing three dimensional visualization skills. Because a building will be produced the student will also learn about building components and how they come together to construct a building. Since design involves the bringing together of a group of activities into one envelope, the student will learn the fundamentals of design analysis. How to present your work in the architectural graphic language will also be studied. Mastering the vocabulary related to light frame construction is expected. Scale models will be constructed. Lecture 2 hours, laboratory 3 hours.

ARAC 602: Design Studio II (4)
Prerequisite: ARAC-601. This course is for graduate students who need to catch up on fundamental skills covered in ARCP-201 and ARCP-202. By the end of the semester the student will learn how to develop 'working' drawings. As a part of this development the student will learn how the zoning and building codes inform the production of a building. The end product is a set of construction document drawings that accounts for code, structure and construction rules and good practice.

ARAC 603: Design Studio III (5)
Prerequisite: ARAC-602. This is a continuation of ARAC-602. This course is for graduate students who need to catch up on fundamental skills covered in ARCP-301 and ARCP-302. It offers challenging design problems crafted to expose the student to the design analysis process used to study design situations in the urban context. The application of zoning and building codes to the building outcome is expected. Students are expected to learn how to integrate the various disciplines that affect the shape, form and structure of the building. Students learn about architectural responses to life safety issues and apply them to design problems. Students learn how the structural systems are applied in the context of the given building type.

ARAC 604: Design Studio IV (5)
Prerequisite: ARAC-603. This is a continuation of ARAC-603. This course is for graduate students who need to catch up on fundamental skills covered in ARCP-401 and ARCP-402. The student is expected to demonstrate firm grasp of the skills required undertaking comprehensive, sustainable and inclusive building design. The communication and illustration of the design solution is of paramount importance in demonstrating the acquisition of design skills. The semester is devoted to the undertaking of an urban-scale design project with minimum faculty supervision.

**ARAC 605: Building Information Modeling I (3)**
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-105 and ARCP-106. Are you wondering how the computer is used in design and the exploration of idea? What does CADD mean? If you are curious about these questions and have many more about AutoCAD and SketchUp in this class you will learn how to use these and other types of drawing and rendering tools that help you visualize and present your ideas. In the process you will learn how building components come together into a building envelope.

ARAC 615: Materials & Methods Studies (3)
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-115 and ARCP-116. The course teaches students one of the most critical skills required to practice architecture – understand the detailing and assembly of building materials. Students learn how wood, masonry, cement and more come together in a building; how green architecture and sustainable construction affects the environment and the building's life span; and the details of what makes a well-designed building. Lecture 2 Hours; Lab 3 Hours.

ARAC 621: History & Theory of Architecture (3)
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-322. The student is expected to independently review the material covered in ARCP-321. The development of shelter, architectural space and sacred places from prehistoric times to the Gothic Cathedrals will be explored. The influences of economics, politics, culture, technology and philosophy shaping the built environment throughout thousands of years of human civilization will be explored.

ARAC 623: Design Communication Graphics (3)
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-123. The course is intended to prepare the students to use the graphic language for communicating ideas in architecture and planning. Students learn the formal drawing conventions utilized by architects to include axonometric, orthographic projection, and perspective drawings and other foundational graphic techniques and principles for conveying ideas. Methods of hand drawings and computer generated drawings will be used to explore formal drawing, drafting and rendering systems and techniques as they relate to the conventions used to represent space and objects.

ARAC 631: Statics & Structural Design (3)
This elective course is for graduate students who need to catch up on fundamental skills covered in ARCP-231. The course provides the student with skills necessary to understand the primary elements of structural systems load calculations, load transfer, and load tables. The student shall become familiar with light frame, heavy timber, light steel,

and concrete systems and calculating wood, steel and concrete beams and columns and concrete slabs.

ARAC 634: Design of Concrete Structures (3)
Prerequisite: ARAC-633, ARAC 632. This course is for graduate students who need to catch up on fundamental skills covered in ARCP-432. The Design of Concrete Structures covers the analysis and design of reinforced concrete rectangular and T-beams, one-way slabs, short and slender (long) columns, spread footings, and wall footings. The concepts of stresses and strength of materials: moments, shear, equilibrium, inertia, static loading versus dynamic loading and torque are reviewed. This course allows the student to develop the necessary skills to understand the primary elements of load calculation, load transfer, and load tables as it relates to concrete and concrete frames. The ACI codes are employed in computations.

**ARAC 633: Theory of Structures (3)**
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-331. Analysis of statically determinate beams and trusses, methods of determining deflection of structures, influence lines and application for moving loads and indeterminate structures including continuous beams and frames are pursued. The course presents the classical methods of structural analysis needed to analyze statically determinate and indeterminate structures. It aims at providing the necessary analysis foundation for the design courses that typically follow this course in the traditional architectural engineering curriculum.

ARAC 632: Design of Steel Structures (3)
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-332. Prerequisite: ARAC-633. This course reviews the concepts of stresses and strength of materials: moment, shear, equilibrium, inertia, static loading versus dynamic loading, and torque. This course allows the student to develop the necessary skills to understand the primary elements of load calculation, load transfer, and load tables as it relates to steel construction and specifically steel frame construction. The AISC codes are employed in computations.

ARAC 641: Computer Simulation & Graphics (3)
This course is for graduate students who need to catch up on fundamental skills covered in ARCP 241. This course will explore the CADD program as a presentation tool. The integration of the 3D software output with software for enhancing the visual presentation objects will be learned. The student will be expected to understand and develop skills in the following areas: Solid Modeling, Animation, and Orthographic drawing presentation.

ARAC 646: Environmental Studies (3)
This course is for graduate students who need to catch up on fundamental skills covered in ARCP-244 and ARCP-246. This course focuses on Heating, Air Conditioning, Ventilation and Conservation of Energy. The student will learn methods of load calculations done manually, using tables to calculate heat transfer coefficients for any type of construction, determine temperature differences required by codes or by good practice, compute the size of equipment, piping and ducts which will be appropriate to the building type and use and available fuels. Simple residences or small commercial buildings will be analyzed for HVAC systems and plans will be prepared to guide the contractor for installation. Specifications for the work will be studied and written. Costs of fuels will be compared to optimize selection. Energy recovery and conservation will be practiced in the system designs.

## Urban Sustainability (BA):

**(120 credits) See Also IGED Requirements (37 cr.)**
**Program Core Requirements:**

| | | |
|---|---|---|
| ENSC 105 | Environmental and Sustainability | 3 |
| ENSC 145 | Introduction to Environmental Science Lecture | 3 |
| ENSC 146 | Introduction to Environmental Science Lab | 1 |
| ENSC 470 | Senior Project (*Satisfied Writing Intensive course)* | 3 |
| ENSC 225 | Environmental Studies and Sustainability | 3 |
| ENSC 250 | General Ecology Lecture | 3 |
| ENSC 251 | General Ecology Lab | 1 |
| ENSC 352 | Sustainable Agriculture Lecture | 3 |
| ENSC 353 | Sustainable Agriculture Lab | 1 |
| ENSC 357 | Urban Sustainability Lecture | 3 |
| ENSC 359 | Urban Water Quality Management | 3 |
| ENSC 488 | Environmental Field Problems | 4 |
| ENSC 450 | Environmental Health Lecture | 3 |
| ENSC 456 | Research Methodology | 3 |
| ENSC 460 | Climate Change and Carbon Reduction Lecture | 3 |
| ENSC 471 | Internship or Elective | 4 |
| ENSC 495 | Internship (continuation) | 4 |
| ENSC 488 | Environmental Field Problems | 4 |
| NUDT 104 | Intro to Nutrition Lecture | 3 |
| NUDT 106 | Intro to Nutrition Lab | 1 |

**Approved Program Electives:**
*A total of 12 directed or free elective credits are required; program advisors will provide guidance on course selections.*

## COURSE DESCRIPTIONS: URBAN SUSTAINABILITY ENVIRONMENTAL SCIENCE (ENSC)

**ENSC105 Environment and Sustainability (3)**
This elective course focuses on the development of essential skills necessary to prepare high school seniors or 1st year college students for college success in science and engineering curriculum. The purpose of the course is to develop critical thinking and problem solving skills for science and engineering majors through hands-on experiential activities. The curriculum includes environmental sciences, sustainability, water quality, climate change, data analysis, computer application and engineering design modules. Students will gradually build core skills and knowledge and demonstrate competences in environmental processes and applying basic scientific principles to solve problems.

**ENSC145 Introduction to Env. Science Lecture (3)**
Co-requisite: ENSC146. A course in which students will investigate the atmosphere, hydrosphere, lithosphere, biosphere, and the natural cycles which influence man. Students will be engaged on the impact of humans on these spheres through water and air pollution, solid waste disposal and noise. The course examines urban sustainability, environmental, social and economic development and policies, politics and practices as well as the role of cities in global environmental change.

**ENSC146 Intro to Environmental Science Lab (1)**
Co-requisite: ENSC145. A course which provides students with a hands-on experience on what was covered in the lecture of ENSC145. Topics include measurement, density, moisture and dry matter content of leafy vegetables, seed germination, respiration, cell structure, acids and bases, soils, and the student's own environment.

**ENSC221 Wastewater Technology Lecture (3)**
Co-requisite: ENSC223. This elective course details the fundamental principles of wastewater collection, treatment, and disposal. It emphasizes advanced treatment methods for producing effluents and solid matter of the quality required for disposal or reuse in agricultural and urban settings. The course also provides discussions of problems encountered in wastewater distribution as well as environmental and human health issues related to disposal and reuse of treatment products. The laboratory session will focus on the principles of wastewater collection and wastewater aeration as well as the calculations required for water plant operations.

**ENSC223 Wastewater Technology Lab (1)**
Co-requisite: ENSC221. This elective course details the fundamental principles of wastewater collection, treatment, and disposal. It emphasizes advanced treatment methods for producing effluents and solid matter of the quality required for disposal or reuse in agricultural and urban settings. The course also provides discussions of problems encountered in wastewater distribution as well as environmental and human health issues related to disposal and reuse of treatment products. The laboratory session will focus on the principles of wastewater collection and wastewater aeration as well as the calculations required for water plant operations. Students will have opportunities to go on field trips to local water treatment facilities.

**ENSC225 Env. Studies and Sustainability (3)**
The introduction to environmental science and sustainability course is an interdisciplinary course designed for non-majors. It introduces students to how the wellbeing of humans is integrally linked to the wellbeing of the other species with which we share the planet. The course focuses upon the fundamental principles of environment and sustainability concepts. The course content includes environmental impact, water quality, energy and water use efficiency, transportation, built environment, ecosystem services, biodiversity, climate change and green business. It will enable students to make an informed decision on their day-to-day activities to protect the environment.

**ENSC250 General Ecology Lecture (3)**
Co-requisite: ENSC251. An elective study and survey of those concepts which define and explain the interrelationships between organisms and the ecosystem. Students will be able to examine the campus ecology. With a focus on the human impact on environmental processes, the class will consider the living (biotic), non-living (a biotic), and the interdisciplinary nature of ecological problems and their resolutions. While considering sustainability and stewardship, the course topic will include water resources, energy, forests, and biodiversity. The course will also discuss the relationships between human society and natural ecosystems as they relate to the sustainability of both. Examines the effect of human populations and socio-cultural variables on contemporary environmental changes at global and local scales with an emphasis on sustainable use, management, and conservation of natural resources, biodiversity, and ecosystem services.

**ENSC251 General Ecology Lab (1)**
Co-requisite: ENSC250. The elective course is an interactive learning course in which the students conduct and participate in processes designed to enhance skill and knowledge development. Students will examine and

describe their own ecology as well as the Van Ness campus ecology.

**ENSC324 General Soils Lecture/Lab (4)**
Prerequisite: ENSC145. This elective course will instill awareness of soils as a basic natural resource, the use or abuse of which has a considerable influence on human society and life in general. Students are made aware of the concept that we grow with soil. It is an introductory course that presents basic concepts of all aspects of soil science including: soil genesis and classification; physical, chemical, and biological properties; soil – water relationship; soil fertility and productivity, soil conservation and soil management. It also discusses soil's role in environmental science and non-agricultural land uses.

**ENSC352 Sustainable Agriculture Lecture (3)**
Prerequisite: ENSC145; co-requisite: ENSC353. This elective course is designed to teach students the principles of sustainable agriculture and the use of these principles to replace today's agricultural practices that are dominated by high inputs of inorganic synthetic chemical fertilizers and toxins in attempts to control disease and insects, which at the same time pollute our air and water resources. This course will instruct students how to implement the sustainable agricultural approach of environmental, economic, societal and intergenerational sustainability by adopting an integrated system of agricultural production that lessens the dependence upon synthetic chemicals such as inorganic fertilizers and toxic pesticides.

**ENSC353 Sustainable Agriculture Lab (1)**
Prerequisite: ENSC146; co-requisite: ENSC352. This elective course is designed to give students hands-on knowledge on how soil-plant relationships are affected by environmental factors such as air, water and light. It is also designed to show students how agricultural practices such as soil and soil components, adding soil amendments for maintaining soil fertility and comparing the sustainable agricultural principles of growing plants with organic composted materials in lieu of inorganic commercial nitrogen, phosphorus and potassium.

**ENSC354 Environmental Toxicology Lecture (3)**
Prerequisite: CHEM-111; co-requisite: ENSC355. Elective course. Students learn how toxic materials can impact their health and the health of plants and animals around them. We can be exposed to toxic materials through many routes and they can affect us in a variety of ways such as acute and chronic diseases, reproductive failure, or low survival in animal and plant populations. There are a wide range of materials that can be toxic to humans, from industrial chemicals, lead in water, radioactivity, pesticides, and pollutants in our air, food or water. By contrast fish can find changes or levels of salinity changes to be toxic. We will examine these impacts and the various ways that our society seeks to reduce these risks, including work with the District (of Columbia) Department of Health.

**ENSC355 Environmental Toxicology Lab (1)**
Pre-requisite: CHEM-113; co-requisite: ENSC354. The elective Environmental Toxicology Lab engages students on the modes of action of toxic materials and ways to test for the toxicity of materials. Students are exposed to a range of techniques from computer models, testing protocols in environmental chemistry labs, as well as procedures used in the District (of Columbia) Department of the Environment and the District Department of Health; there will be field trips to these facilities. Topics include water quality, lead in the human diet, and pesticides in our homes and gardens.

**ENSC357 Urban Sustainability Lecture (3)**
Rapid urbanization has resulted in environmental problems such as air and water pollution. In addition it can also create a problem of economic and social justice. This course will explore the socio-economic and environmental dimensions of sustainability in cities. The course will analyze the contemporary urban environmental crisis in the context of global population growth, global climate change, and critically evaluate government policies, and economic development. The course will examine programs that address the challenges of sustainability in both developed and developing countries. Relevant issues such as environmental justice will be discussed.

**ENSC359 Urban Water Quality Management (3)**
This elective course is a team-oriented, experiential and problem based interdisciplinary course open to majors and non-majors alike. This course is designed to enhance student's competence in theoretical and practical application of urban water quality sciences and related technologies to address the urban water quality problems and management. The course content includes environmental regulation, water quality, urban runoff, data mining, information technology, dynamic interactive online course delivery, and sustainable development of interest to students from all majors. This course will be team-taught by faculty mainly from school of engineering and applied sciences and CAUSES.

**ENSC448 Environmental Field Problems (4)**
An internship course with the District (of Columbia) Department of the Environment. Students are engaged in the daily activities of the District of Columbia Department of the Environment. The course is open to Bachelor of Science in Environmental Science Degree Program students with junior or senior standing.

**ENSC450 Environmental Health Lecture (3)**
Prerequisite CHEM-111. A course which examines the effect of gaseous and particulate pollutants on human health. The epidemiology, pathogenesis, diagnosis, and etiologic agents of diseases are discussed. Students will analyze environmental toxic chemicals and discuss their effect on human health. Other topics include hazardous wastes, pests, pest control, food additives, and air-, water-, and soil-borne organisms. The course will introduce students to a full continuum of analytical perspectives on global climate change and its documented and projected implications for human health. The course will also examine the relationships between the health of populations and health determinants in the context of environmental sustainability. Sustainability necessitates balance between natural capital and uses of natural capital for human and non-human ends.

**ENSC452 Air Pollution Lecture (3)**
Prerequisite: CHEM-111; co-requisite: ENSC453. The students in this course will be prepared to examine complex interactions between society and industry. An example of that is electricity where humans cannot sustain their present state of civilization without it. Particulate and gaseous emissions are the by-product of such endeavor. This course involves geopolitical aspects of technology and economy and will provide information about the human impact on the environment. In this course students will be taking samples and analyzing them. The course generates awareness about available natural resources and propels students toward future studies in environmental science and engineering.

**ENSC453 Air Pollution Lab (1)**
Prerequisite: CHEM-113; co-requisite: ENSC452. The course provides information of human impact on the environment. The course generates awareness of the subject of sustainability and students learn the specific nature of pollution sources and their effects on atmospheric pollution. Students analyze particulates, gaseous pollutants, plume dispersion and the global effect of air pollution. Introduces thermodynamics as it relates to air pollution. At the end of this course the student must demonstrate dispersion modeling of Gaussian distribution up to 4 dimensions.

**ENSC456 Research Methodology (3)**
This is an introductory course to study the application of research methods appropriate to professional studies. The course will provide a general introduction to research methods, as well as providing practical exposure to problem statements, literature reviews, writing the research proposal, and organization of the research report. Quantitative and qualitative research methodologies will be briefly covered in preparation for the later courses in these areas.

**ENSC457 Aquatic Ecology Lecture (3)**
Prerequisite ENSC145; Co-requisite: ENSC458. This elective course will acquaint the student with the fundamental principles of marine and fresh water ecology. Emphasis will be placed upon the biological, physical and chemical processes affecting marine and fresh water life in the inter-tidal waters, rivers, streams, the open ocean, and the benthic habitats. The taxonomy and characteristics of aquatic creatures will be investigated. The course will also discuss features of aquatic habitats the dynamic interactions between organisms and their environment.

**ENSC458 Aquatic Ecology Lab (1)**
Pre-requisite: ENSC146; co-requisite: ENSC457. The elective lab portion is designed to complement and expand on topics discussed in lectures while providing students with hands-on experience in sampling, analyzing, and interpreting features of fresh water and marine ecosystems.

**ENSC459 Hydrodynamics and Water Quality Lect. (3)**
This elective course explores a quantitative approach to describing physical, chemical, and biological processes in the environment. It focuses on development of the fundamental equations of fluid mechanics and their simplifications for several areas of surface water hydrodynamics and the application of these principles to the solution of environmental or water quality problems. Topics include water quality regulations, mathematical modeling of hydraulics and water quality in stream, rivers, and wastewater treatment plants, fate and transport of toxic organic contaminants. This course links engineering aspects with theoretical analysis of environmental science and water quality.

**ENSC460 Climate Change and Carbon Reduction Lecture (3)**
An introductory course presents and explores the impact of anthropogenic activities on the global climate change and mitigation measures. Course topics include the climate system, greenhouse effect, assessing carbon foot print, carbon reduction, and science and politics of global warming and climate change impacts on the environment. The focuses on the cause and effect of global climate change, and ways to reduce greenhouse gas emissions.

**ENSC461 Environmental Policy Lecture (3)**
Students work with environmental science and environmental regulations in order to understand how these are used to translate environmental policy into action. It builds on knowledge of science, as well as major development and pollution issues to analyze what laws and

regulations have worked well and where changes are needed in both behavior and the rules of society. Comparisons are made at the local District of Columbia level, as well as for States, National and International levels. Thus, the course provides a basis for understanding the relationships between politics and science. It allows the student participant an opportunity to become versed in the policy view as a whole while becoming skilled in an environmental area of choice.

**ENSC470 Senior Project (3)**
Students undertake a project in which they explain five major environmental problems, their cause, and their environmental impact.

**ENSC471 Internship (4)**
Students undertake an internship with local or national environmental agencies in which they are engaged in the daily activities of these agencies.

**ENSC- 488: Environmental Field Problems (4)**
An internship course with the District (of Columbia) Department of the Environment, Students are engaged in the daily activities of the District of Columbia Department of the Environment. The course is open to Bachelor of Science in Environmental Science Degree Program students with junior or senior standing.

## Professional Science Master's Degree (PSM) in Applied Sciences

**Three Degree Options:**
Water Resources Management
Urban Sustainability
Urban Agriculture

### PSM in Water Resources Management

*Total Credit Hours Required: 35*

| First Semester | | |
|---|---|---|
| Course | Title | Credits |
| WTRM 500 | Water Quality Assessment, Monitoring & Treatment | 3 |
| WTRM 501 | Surface & Ground water Hydrology | 3 |
| ULAE 620 | R Studio | 3 |
| ENGL 515 | Writing Proficiency Course—graduation requirement (Depends on GRE Score) | 3 |
| | **Total** | 12 |
| Second Semester | | |
| Course | Title | Credits |
| WTRM 504 | Quantitative and Qualitative Research Methods (Statistics studio) | 3 |
| WTRM 504 | Ethics, Responsible Conduct of Research & Prof. Responsibility | 1 |
| WTRM 505 | GIS for Water Resource Management | 3 |
| WTRM 601 | Water Quality Modeling | 3 |
| | **Total** | 10 |
| **Third Semester** | | |
| Course | Title | Credits |
| WTRM 600 | Stream Restoration | 3 |
| WTRM 690 | Internship | 3 |
| ENSC 595 | Entrepreneurship and Business Incubator | 3 |
| | **Total** | 9 |
| Fourth Semester | | |
| Course | Title | Credits |
| WTRM 699 | Capstone Seminar | 1 |
| WTRM 502 | Public Communication for STEM Professionals | 3 |
| ENSC 595 | **Professional Project Management** | 3 |
| | **Total** | 7 |

Total Credits for Water Resource Management 35 credits

### PSM in Urban Agriculture

*Total Credit Hours Required: 36*

| **First Semester** | | |
|---|---|---|
| WTRM 500 | Water Quality Assessment, Monitoring & Treatment | 3 |
| ENSC 512 | Food Production and Agro-Ecology | 3 |
| ULAE 620 | R Studio | 3 |
| | **Total** | 12 |
| **Second Semester** | | |
| WTRM 504 | Ethics, Responsible Conduct of Research & Prof Responsibility | 1 |
| ENSC 511 | Advanced Sustainable Urban Agriculture | 3 |
| ENSC 509 | Special Topic (Independent study) | 2 |

| | | |
|---|---|---|
| WTRM 506 | Quantitative and Qualitative Research Methods | 3 |
| ENGL 515 | Writing Proficiency Course—graduation requirement (Depends on GRE Score) | 3 |
| | **Total** | 11 |
| | **Third Semester** | |
| ENSC 510 | Urban Land Use Planning | 2 |
| ENSC 595 | Entrepreneurship-Business Incubator | 3 |
| ENSC 509 | Advance Climate Science | 3 |
| | **Total** | 8 |
| | **Fourth Semester** | |
| WTRM 699 | Capstone Seminar | 1 |
| WTRM 690 | Internship | 3 |
| BGMT 509 | The Systems Approach and Project Management | 3 |
| WTRM 502 | Public Communication for STEM Professionals | 3 |
| | **Total** | 10 |

Total Credits for Urban Agriculture 36 credits

## PSM in Urban Sustainability

*Total Credit Hours Required: 36*

| | | |
|---|---|---|
| | **First Semester** | |
| ULAE 620 | R Studio | 3 |
| ARCP 505 | Sustainable Design I | 3 |
| | Elective | 3 |
| ENGL 515 | Writing Proficiency Course—graduation requirement (Depends on the GRE Score) | 3 |
| | **Total** | 12 |
| | **Second Semester** | |
| WTRM 504 | Ethics, Responsible Conduct of Research & Prof Responsibility | 1 |
| ENSC 508 | Ecological Economics | 3 |
| ENSC 595 | Special Topic (Independent study) | 2 |
| WTRM 506 | Quantitative and Qualitative Research Methods | 3 |
| | Total | 9 |
| | **Third Semester** | |
| ENSC 509 | Advanced Climate Sciences | 3 |
| ENSC 595 | Entrepreneurship-Business Incubator | 3 |
| ENSC 510 | Urban Land Use Planning | 2 |
| | Total | 8 |
| | **Fourth Semester** | |
| WTRM 699 | Capstone Seminar | 1 |
| WTRM 690 | Internship | 3 |
| ENSC 595 | The Systems Approach and Project Management | 3 |
| ENSC 502 | Public Communication for STEM Professionals | 3 |
| | **Total** | 10 |

Total Credits for Urban Sustainability 36 credits

## COURSE DESCRIPTIONS: PROFESSIONAL SCIENCE MASTER'S PROGRAM

**WTRM-500 Water Quality Assessment, Monitoring & Treatment**

This course is designed to introduce students to the principle and practical aspect of water and wastewater quality assessment, monitoring and treatment. Students will be able to analyze the definite (water quantity)
and indefinite (water quality) characteristics of water, including water quality standards, water quality monitoring, water quality assessment tools, regulations and the basics of water and wastewater treatment processes and their limitations in the context of integrated river water resources management requirements. Students will be engaged in rigorous field studies, site tour of water and wastewater treatment plants, laboratory analysis using state-of-the art lab technologies ranging from DR2800 Spectrophotometer through Gas Chromatography Mass Spectrophotometer and Inductive Couple Plasma Mass Spectrophotometer.

**WTRM-501 Surface & Ground Water Hydrology**

This course concentrates on the analysis and quantification of surface and groundwater hydrological processes, such as rainfall, evapotranspiration, runoff, groundwater recharge, groundwater storage,

groundwater movement and management of the water environment. The course provides a conceptual and quantitative understanding of hydrology and the basic principles of hydraulics as a basis for later applied studies of water quality assessment, water resources engineering and management. Hydrology laboratory exercises, field study and term project are included.

**WTRM-502 Public Communication for STEM Professionals**
This course focuses on the principles of effective strategic communication skills, including oral and written, scientific presentation skills, as well as improving general speaking skills and communication with non-specialist policy makers. The course is designed to help lower anxiety about public speaking and to further develop individual delivery and style**.**

**WTRM-504 Ethics, Responsible Conduct of Research and Professional Responsibility**
This course is designed to explore ethical rules and constraints, to provide students with an understanding of the standards of professional responsibility. Through a case-based approach, students will consider various ethical issues within the often competing demands imposed by the operation of the "rule of law" and concerns for public safety & security.

**WTRM-505 GIS for Water Resource Management**
This course equips the student with a set of spatial data management and analysis tools, which can be applied to different water resources problems. The course focuses on the principle and application of the Geographical Information System to water resource management.

**WTRM-600 Stream Restoration**
This course is designed to provide a technical understanding of the theoretical and practical principles of stream restoration used to return an impaired or degraded river corridor ecosystem to a close approximation of its remaining natural potential. The course explores the scientific basis of stream restoration programs through interdisciplinary theories and practice and presents principles of hydrology, sedimentation engineering, geomorphology, and ecology relevant to the design and evaluation of stream restoration projects. Students will be exposed to a variety of stream restoration concepts through lectures, seminars, field trips, and independent project assessments.

**WTRM-601 Water Quality Modeling**
This course is designed to give graduate level students an overview of water quantity and quality aspects of surface water characteristics and the analytical methods used in the development of water quality models and the application of these models to stream and river systems, lakes and reservoir systems and estuaries. Students will develop and apply mathematical conceptualization and formulation of physical, chemical, biological processes to predict hydrological, water quality constituent transport and fate in the bodies of water. Student will be able to assess and predict current and future water quality status for both conventional pollutants and toxic organic contaminants. Water quality modeling and simulation tools include SWMM, QUAL2K and AQUATOX.

**WTRM-690 Internship**
Students will be engaged in supervised work-and-learning experiences in water resources management, under the direction of a University faculty members and employees of participating firms. Students are expected to dedicate (10) ten to (20) twenty hours a week to their internships during the academic year and (20) twenty to (40) forty hours a week during a five week summer term. The internship program will have students involved in data collection, analysis and interpretation, field and/or laboratory experiences and writing reports.

**WTRM-699 Capstone Seminar**
This course is designed for the senior level graduate students to gain coherence in their knowledge of their previous course studies and professional development. Students will practice and be able to critically review and analyze the latest research findings, write technical reports, prepare a grant proposal in the area of their concentration.

**ENSC-508 Ecological Economics**
A new sub-discipline called “Ecological Economics” is the most recent effort to combine the thoughts of economists and ecologists, as well as combine the scientific, political an ethical issues. In contrast with

neo-classical economics, ecological economics are primarily concerned with the relationship between socio-economic systems and the biological/physical world, and put the environmental and ecological systems at the forefront of their thinking. This course will be organized in a seminar format including lectures, guest lecturers, student presentations and discussions, and a final term paper. The major objectives are to train students in the following major perspectives: (1) historical perspective on the coupled human and natural systems; (2) the relationship between economic growth, environment and human well-being; (3) conceptual foundations and principles of ecological economics; and (4) empirical application of ecological economics. The Ecological Economics course is designed to bring students to the interface of natural sciences and social sciences. This course should be of interest to a variety of students in such fields as forestry, wildlife, biology, soil/agronomy, economics and sociology as long as they have some training or motivation in ecology, economics and interaction between human and nature. As an interdisciplinary course, students from several departments and colleges (e.g. School of Forestry and Wildlife Sciences, College of Agriculture, College of Business, Dept. of History) can take this course.

**ENSC 509 Advanced Climate Science**
This course is designed to explore the science of climate change and carbon accounting in terrestrial systems, against the background of the policy context for climate change mitigation and adaptation. The principles and practice of carbon accounting are explored by applying current scientific understanding of the factors influencing carbon in the environment, based on a range of modeling approaches. Students will be able to explore global climate change as a result of human activities; assess the effect of enhanced greenhouse gas emissions on climate change, and describe the social, economic and political implications of climate change, and evaluate ways in which we attempt to manage and adapt to this change.

**ENSC-512 Food Production and Agro-ecology**
The goal of this course is to give students a broad introduction to agroecology including aspects of both the natural and social sciences. The lecture portion of the course will focus on natural sciences relating to agriculture including food production, population, community, and ecosystem ecology, and the environmental impacts of both conventional and sustainable agricultural management systems. Lectures will also touch on the social, political, and economic forces that relate to farming communities, food distribution, transportation, and consumption. All of these issues will be further examined in hands-on experiences during several field trips and a film series included in the course.

**ENSC 510 Urban Land Use-Planning**
This course is designed to explore the techniques, processes, and personal and professional skills required to effectively manage growth and urban land use change. While primarily focused on the planning practice in the United States, the principles and techniques reviewed and presented may have international application. By the end of the quarter, students should be able to (1) discern the merits and demerits of the many critiques of land use planning, (2) evaluate the value of various innovations in contemporary land use planning practice, (3) contemplate about land use policies in relation to the market, and the institutional and social context in which they intervene, and (4) enable better and more just patterns of urban development and growth.

**WTRM 506 Quantitative and Qualitative Research Methods**
The Research Methods course provides comprehensive study of research methods, both quantitative and qualitative. An overview is presented of the quantitative and qualitative research methods and designs applicable to the systematic analysis of the varieties of human behaviors. Scientific problem solving will be emphasized to include observational techniques and measurement tools, coding, analytic strategies, and reporting of research. Reviews of applications within the psychological literature will be covered. The course will encourage students to focus on research that has been used in their appropriate fields. This course will help in preparing students for their analytical courses and will facilitate understanding of research in later work as a practitioner in the field.

**ENSC-511 Advanced Sustainable Urban Agriculture**
This course will explore the place and potential of urban agriculture in environmental planning,

management, and development. Topics to be covered include fundamentals of a sustainable food system, horticultural principals and techniques, the place of food systems in urban planning, how urban agriculture can be accommodated within the urban built fabric, and contemporary examples of community gardening and urban agriculture locally and in other parts of the country. The principles of stormwater and solid waste management, nutrient and water cycles, and sustainable material sourcing will be explored as well.

**Ph.D. in Urban Leadership & Entrepreneurship**

| First Semester | |
|---|---|
| ULAE 631 Research Methods | 3 |
| ULAE 632 Leadership Theories & Methods | 4 |
| ULAE 633 Foundations in Urban Leadership | 3 |
| ULAE 634 R-Studio or Concentration Course | 3 |
| ULAE 640 Graduate Research Seminar | 1 |
| **Total** | **14** |

| Second Semester | |
|---|---|
| ULAE 636 Foundations of Social & Ecological Justice | 4 |
| ULAE 635 Statistics & Quantitative Methods | 3 |
| ULAE 636 PhD Level Writing | 3 |
| Concentration Course | 3 |
| ULAE 640 Graduate Research Seminar | 1 |
| **Total** | **14** |

| Third Semester | |
|---|---|
| ULAE 738 Systems Approaches to Leadership, Organization & Society | 3 |
| Concentration Course | 3 |
| Elective Course | 3 |
| ULAE 640 Graduate Research Seminar | 1 |
| **Total Credit Hours** | **10** |

| Fourth Semester | |
|---|---|
| ULAE 739 Disruptive Innovation Theory for World Problems | 3 |
| Concentration Course | 3 |
| Elective Course | 3 |
| ULAE 640 Graduate Research Seminar | 1 |
| **Total Credit Hours** | **10** |

| Fifth Semester and all Subsequent Semesters | |
|---|---|
| ULAE 840 Dissertation Research & Writing | 3-12 |
| ULAE 640 Graduate Research Seminar | 1 |
| **Total Credit Hours** | **4-13** |

| Sixth Semester and all | |
|---|---|
| ULAE 840 Dissertation Research & Writing | 3-12 |
| ULAE 640 Graduate Research Seminar | 1 |
| **Total Credit Hours** | **4-13** |
| **Total Credit Hours for the Ph.D. Program** | **72** |

## COURSE DESCRIPTIONS: URBAN LEADERSHIP & ENTREPRENEURSHIP (ULAE) (Hybrid)

Offered in partnership with Fielding Graduate University, the UDC Ph.D. in Urban Leadership & Entrepreneurship seeks to equip students to become scholar-practitioners through advanced, doctoral-level empirical research and practical applications with a focus on solving urban problems.

The PhD Program consists of 72 credit hours of course work and dissertation research and writing. Full-time students typically complete their 44 credits hours of course work comprised of core courses, concertation courses, and electives, in two years. Core courses should be taken in sequence.

The 28 dissertation credits are comprised of a mandatory graduate research seminar (four 1-credit hour seminars) plus dissertation research and writing (24 credit hours) culminating in two articles accepted for publication in two peer reviewed journals.

The program offers five concentrations: 1) Urban Sustainability & Resilience Leadership, 2) Urban Political/Governmental Leadership, 3) Urban Entrepreneurship, 4) Urban Health Leadership and 5) Urban Education Leadership. Students select their concertation courses from a list of pre-approved courses offered through UDC and Fielding Graduate University.

For further details regarding the dissertation requirements, please refer to the ULAE PhD Course of study.

**ULAE 631 Research Methods**
This course provides an opportunity for participants to establish or advance their understanding of research through critical exploration of research language, methodologies, ethics, and approaches. The course introduces the language of research, ethical principles, and questions associated with different research approaches and scholarly communities, as well as elements of the

research process associated with quantitative, qualitative, mixed methods, and participatory research approaches.

**ULAE 632 Leadership Theories & Methods**
Students explore various theories and methods of leadership as well as their own leadership skills and styles. In describing leadership models and theories students will consider the contexts, values, and cultures within which organizations have evolved, and the practices and theories appropriate for successful leadership in different contexts. This course is designed to reflect upon and compare traditional leadership theories and methods with more contemporary models that have evolved to address leadership in networked organizations, virtual organizations, and global organizations.

**ULAE 633 Foundations of Urban Leadership & Entrepreneurship**
The goal of this course is to assist students in developing their own leadership potential. Students will learn that what separates leaders from average managers is a set of skills, such as the ability to make sound decisions under ambiguous circumstances, and a set of social skills, such as the ability to build productive working relationships among team members. This course identifies these critical individual and social skills and illustrates how they may be used to build success and gain advantages including for the common good.

**ULAE 634 R-Studio**
R-Studio is an Integrated Development Environment (IDE) for R, a programming language for statistical computing and graphics. It is an open-source platform that allows users the freedom to share the code and has a wide range of applications that continue to evolve as users add to its applications. The R-Studio course prepares students for Statistics and Quantitative Research Methods as well as for a range of applications in various professional setting.

**ULAE 635 Statistics & Quantitative Research Methods**
The course reviews methods of data analysis, descriptive statistics, graphical presentation, estimation, hypothesis testing, sample size, regression analysis and other statistical and quantitative research methods. The primary software used to explore these methods through practical applications is R-Studio. The course emphasizes learning through hands-on explorations of statistical and quantitative research methods using real data.

**ULAE 636 PhD Level Writing**
The PhD level writing course of the ULAE program prepares students for their candidacy exam and research publications and presentations. Given the cumulative dissertation requirement of the program, the course explores differences among publication outlets, including refereed academic journals, refereed practitioner journals, and refereed book chapters. All significant aspects of the writing process will be addressed including planning, preparation, composition/development, the actual writing process, and the review/revision process. Students can come prepared with a draft dissertation outline plan or candidacy paper based on the actual dissertation work they plan to complete, or they can use a fictional research question as basis for the course.

**ULAE 637 Foundations of Social & Ecological Justice**
This course explores how different societies and cultures define social, economic, and ecological justice and how different cultural lenses influence perceptions of economic, social, and environmental justice. The course reviews both theocratical concepts and their practical applications.

**ULAE 738 Systems Approaches to Leadership, Organization & Society**
This course challenges students to embrace a systems perspective on leadership and organizational change at the organizational level. Students will compare, contrast and critique historical and modern theories and models of organizational learning, knowledge creation, and organizational capacity building and apply them to the organizational settings they intend to explore for their dissertation research. The course will enhance students' ability to think systemically and develop a comprehensive understanding of core competencies required to initiate and sustain change in organizations.

**ULAE 739 Disruptive Innovation Theory for World Problems**
Students will develop and/or refine their research question, review seminal readings, and critically reflect on their research as a foundation for exploring approaches to disruptive change. Starting with Christensen's seminal work on Disruptive Innovation, the course explores extensions of the concept to disruptive thinking,
a disruption mindset, and ultimately disruptive social innovation. Students will explore these concepts by applying them to their own research questions and interests.

**ULAE 640 Graduate Research Seminar**
The Graduate Research Seminar of the Urban Leadership and Entrepreneurship (ULAE) program meets monthly to offer students the opportunity to learn about ongoing research under way at the College, the University, and with research partners from across the United States and around the world. Students will gain insights into current

research topics and methodologies and meet active researchers from a wide range of fields relevant to the ULAE program.

**ULAE 840 Dissertation Research & Writing**
Students will be guided through the process of finalizing their research questions, and selecting their dissertation committee with the goal of completing their cumulative dissertation proposal, developing a candidacy paper incl. a literature review for their chosen research topic, and description of the methodology(ies) necessary to carry out their research. Students will work with their dissertation advisor and committee to defend their cumulative dissertation proposal in their candidacy exam, and progress toward their cumulative dissertation to ultimately defend their dissertation and meet all dissertation requirements.

**ULAE 698 Special Topics & Concentration Courses**
Students will be exposed to a variety of concentration courses offered on special topics of interest. These concentration courses will allow students to explore a wider range of leadership concepts, current topics, and advanced technical skills. The concentration courses provide additional options that enhance a student's program of study.

**ULAE 699 Independent Study**
Students will have the opportunity to explore a subject of specific interest to their dissertation research with a subject matter expert. An independent study course is best suited to the second or third year of study as students begin to formulate their research question and work toward their candidacy exam. The independent study format will also provide an opportunity for students to share their own research with fellow students and faculty in a colloquium format. An independent study course cannot substitute for a ULAE core course or concentration course.

**ULAE Program Concentration Course Options**:
The courses listed will count toward meeting the concentration requirements of the program. Concentration courses may change due to availability and student interest.

**Urban Sustainability & Resilience Leadership Concentration**

| | |
|---|---|
| ULAE-634 | R-Studio |
| ENSC-508 | Ecological Economics |
| ENSC-509 | Advanced Climate Change |
| ENSC-595 | Project Management in Water Resources |
| ENSC-511 | Sustainable Urban Agriculture |
| ARCP-505 | Sustainable Design |
| ENSC-510 | Urban Land Use Planning |
| HOD-833 | Global Systems |

**Urban Governance & Policy Leadership Concentration:**

| | |
|---|---|
| ULAE-634 | R-Studio |
| ENSC-508 | Ecological Economics |
| PGMT-503 | Intro. to Public & Nonprofit Management |
| PGMT-514 | Management of Government Organizations |
| PGMT-512 | Political Economy and Public Administration |
| PGMT-519 | Public Policy Develop. And Implementation |
| LAW-645 | Systems Change |
| HOD-835 | Structural Inequality & Diversity |

**Urban Entrepreneurial Leadership Concentration**

| | |
|---|---|
| ULAE-634 | R-Studio |
| ENSC-508 | Ecological Economics |
| BGMT 511 | Leadership and Ethics |
| MKTG0507 | Marketing Strategy |
| BMGT-506 | Organizational Behavior and Development |
| ENSC-595 | Professional Project Management |
| BMGT-510 | Sustainability Entrepreneurship |
| HOD-805 | Foundations of Organizational Studies |

**Urban Health Leadership Concentration**

| | |
|---|---|
| ULAE-634 | R-Studio |
| ENSC-508 | Ecological Economics |
| PGMT-514 | Management of Government Organizations |
| CNSL 557 | Human Growth & Development |
| BIOL 556 | Cancer and Infectious Disease |
| ENSC 512 | Food Production & Agroecology |
| ENSC 509 | Advanced Climate Change |
| HOD-833 | Global Systems |

# Department of Health, Nursing, and Nutrition

## Health Education (BS)*

**Public Health Concentration**

The Health Education Program prepares competent entry-level public health practitioners to meet the public health-related needs of the diverse citizenry of the District of Columbia and for society at large. Graduates are able to practice in a variety of settings in the public health domain from public health educators to wellness center directors.

The Bachelor of Science Degree in Health Education, public health options requires a minimum of 120 semester hours, the final 30 of which must be in residence at the University. Students must complete all Interdisciplinary General Education (IGED) requirements and all courses identified in the program of study. Students cannot earn lower than a "C" in any major or ancillary course and must achieve a cumulative 2.5 for all program courses **(foreign language and science courses are a part of the major courses)** ***Applications no longer accepted as of Fall 2020**

| | | |
|---|---|---|
| **IGED Requirements (37 credits)** | | |
| **Program Core Requirements:** | | |
| HLTH 104 | Introductions to History and Philosophy of Health Physical Education | 3 |
| HLTH 105 | Personal and Community Health | 3 |
| HLTH 204 | Prevention First Aid EMS | 3 |
| HLTH 214 | Survey of Public Health | 3 |
| HLTH 314 | Public Health Planning | 3 |
| HLTH 324 | Organizations/Administration of School & Community Health Programs | 3 |
| HLTH 390 | Health Education Practicum | 2 |
| HLTH 404 | Mental Health | 3 |
| HLTH 405 | Health and Safety in Community Populations | 3 |
| HLTH 406 | Consumer Health | 3 |
| HLTH 417 | Health Education Internship | 4 |
| HLTH 424 | Sex Education | 3 |
| HLTH 426 | Drug Use and Abuse | 3 |
| HLTH 465 | Measurements and Evaluation | 3 |
| HLTH 493 | Seminar: Health Issues | 3 |
| HLTH 494 | Senior Project (intensive writing course) | 3 |
| | **Skills Electives (4 skills required)** | |
| BIO111/ 113 | Human Anatomy & Physiology I Lec./Lab | 4 |
| BIO112/ 114 | Human Anatomy & Physiology II Lec./Lab | 4 |
| BIO241/ 204 | General Microbiology Lec./Lab | 4 |
| ENSC450 | Environmental Health Lec. | 3 |
| NUDT104 /106 | Introduction to Nutrition Lec./Lab | 4 |
| PSYC 201 | Principles of Psychology | 3 |
| SPAN 101 | Beginning Spanish I | 3 |
| SPAN 102 | Beginning Spanish II | 3 |
| | **Business Elective** | 3 |

## COURSE DESCRIPTIONS: HEALTH EDUCATION (HLTH)

**HLTH104 Introductions to History and Philosophy of Health Physical Education**
Examines the fields of health, physical education, and leisure studies in terms of historical development, philosophical foundations, professional standards, roles, and ethics. Discussion focuses on the disciplines' value and contributions to various community populations, including K-12 and senior citizens.

**HLTH105 Personal and Community Health**
Examines primarily sound health knowledge, attitudes and behavior as they apply to the individual. Content covers the spectrum of health problems of concern to the individual from
childhood through the senior years with special attention given to the urban environment.

**HLTH111 Tennis I: Beginning Tennis**
Designed to provide instruction in the fundamental strokes, rules, regulations, scoring, etiquette, and strategy of tennis for both singles and doubles. The students will be expected to play points, games, and sets.

**HLTH112 Tennis II: Intermediate Tennis**
Continues and reviews Tennis I, with special emphasis on strategy for singles and doubles.

**HLTH118 Weight Management and Conditioning**
Designed to improve cardiovascular and muscular fitness through progressive exercise. Emphasis is placed on dynamic health, dietary analysis, and caloric intake adjustment.

**HLTH119 Golf**
Emphasizes skills, techniques, regulations, rules, and strategy. Practical experience on public golf course is provided.

**HLTH121 Swimming: Beginning Water Safety**
Offers opportunities for non-swimmers to develop basic strokes and to alleviate psychological problems centered on aquatic activities.

**HLTH122 Swimming: Intermediate Swimming**
Continues beginning swimming and safety skills.

**HLTH143 Yoga**
Deals with broad yoga concepts, with special emphasis on how one can personally apply these teachings to bring about desired changes in one's life.

**HLTH165Weight Training and Conditioning**
Covers overall body development through progressive weight resistance and running programs. Individual fitness profiles developed.

**HLTH174 Techniques and Skills in Dual Team Sports**
Includes skill development and teaching strategies of a selected number of dual and team sports including tennis, badminton, track and field, soccer, basketball, touch/flag football, softball, and volleyball.

**HLTH178 Techniques and Skills in jogging and conditioning**
Designed to expose students to proper jogging, running and power walking techniques. Emphasis on proper equipment,

conditioning techniques and safety concerns. Course will accommodate all fitness levels.

**HLTH179 Handball Racquet Ball**
Covers basic skills and techniques of handball and racquetball; strategy, rules, and rules interpretation; singles and double play.

**HLTH204 Prevention First Aid EMS**
Includes emphasis on accident prevention and proper injury management in the general and sport environment. Students will receive Red Cross Certification in CPR and First Aid upon completion of course requirements.

**HLTH214 Survey of Public Health**
Presents a comprehensive overview of the public health field, including the history and philosophy of public health. The primary intent is to provide information, insight and perspective on a wide range of public health concerns impacting urban and rural populations, as well as children, adults, and the senior citizen.

**HLTH314 Public Health Planning**
Designed to develop basic knowledge and technical skills required to identify and assess the magnitude of health problems and issues involved in developing, implementing, operating, managing, and evaluating programs for all ages of citizens from the young to the elderly.

**HLTH324 Organizations/Administration of School & Community Health Programs**
Designed for the student whose health career emphasis is focused on employment opportunities as a public health administrator or one who organizes health systems.

**HLTH390 Health Education Practicum**
Affords students the opportunity to participate and assist in a variety of public health settings, including programs aimed at all ages including senior populations. Prereq.: Health Education majors

**HLTH391 Intro to Adaptive Physical Education**
Is an overview of preventive and adaptive physical education as it relates to the broader program. Students will be expected to have some knowledge of physiology, anatomy, and kinesiology.

**HLTH404 Mental Health**
Provides thorough analysis of the definitions, scope, and extent of mental health. It also covers changing concepts in philosophy, treatment care services, training and therapy. Special attention is given to the urban environment and problems of all ages including the older citizen.

**HLTH405 Health and Safety in Community Populations**
Examines policies, practices, and procedures involved in the organization, administration, and supervision of comprehensive health and safety education programs in the community. Special emphasis will be given to understanding communicable diseases with respect to signs/symptoms, incidence, epidemiology, control and prevention. All ages from childhood through senior populations will be explored.

**HLTH406 Consumer Health**
Provides a comprehensive analysis of products and services needing consumer evaluation. The course examines those health products and services which can be fraudulent to the consumer, including all ages from youth through senior citizens.

**HLTH417 Health Education Internship**
Provides the opportunity for observation and work in a variety of health and recreational settings under professional supervision. Students are required to prepare periodic reports, a final work product, and attend biweekly seminars. Prereq.: Senior Health Education majors.

**HLTH424 Sex Education**
Designed to provide further insight into the physical, psychosocial, and religious factors associated with contemporary attitudes, perceptions, beliefs, myths, and human behavior relative to heterosexual relationships. Special emphases will focus on personal responsibilities, causation and prevention of pregnancy, and the social epidemiology of venereal diseases. Prereq.: Health Education majors

**HLTH426 Drug Use and Abuse**
Provides an interdisciplinary analysis of contemporary drug issues and problems. The course will examine physiological, psychological, social, philosophical, historical, legal, and health aspects of drug use and abuse. Special attention will be focused on planning and organizing current curricula materials for the teaching of drug education in the schools. Prereq.: Health Education majors

**HLTH465 Measurements and Evaluation**
Examines measurement techniques and statistical analysis in the fields of health, physical education and leisure studies. Special attention is given to test construction and the importance of statistical analysis in determining human services. Prereq.: Junior health education major. Prereq.: Health Education majors

**HLTH493 Seminar: Health Issues**

Provides students with a forum to openly discuss community health issues and problems in an academic setting. Topics will be aimed at all population ages from youngsters to senior adults. Current topics will be selected, prepared, and presented by the students with instructor approval. Prereq.: Health Education majors

**HLTH494 Senior Project** Equips the student in basic research techniques. Each student will successfully complete a comprehensive research project utilizing recognized research methodology. Students will present and defend projects with peers and the instructor Prereq.: Health Education majors

## Registered Nurse (RN) to Bachelor of Science in Nursing (BSN) Online Program

**Bachelor of Science Degree in Nursing (BSN)**

The RN to BSN program prepares graduates with specific knowledge, skills, and behaviors that demonstrate the professionalism of a baccalaureate nurse. The program fosters characteristics of leadership, evidence-based practice, and clinical competency to guide decision-making and the delivery of safe, culturally relevant nursing care across health care settings and the health continuum. The program is accredited for 8 years from 2015 through 2023 by the Accreditation Commission for Education in Nursing (ACEN) - https://www.acenursing.org/.

Designed for Registered Nurses, the Bachelor of Science in Nursing completion program provides the opportunity for students to complete the baccalaureate degree online in less than 16 months of full-time study. Prospective students apply to the nursing program through NursingCAS - https://nursingcas.org/. Courses are offered in six-week sessions with rolling enrollment. Students may take the junior 300 level nursing courses (NURS 300 – NURS 359) while satisfying general education requirements. Registered Nurse students must complete all general education and junior 300 level courses before advancing to the three 400-level nursing courses (NURS 467, NURS 470, NURS 497).

Total credit hours of college-level courses required for graduation: *120*

Students are eligible for admission, progression and graduation in the nursing program upon meeting the following criteria:

- Maintain an active unencumbered Registered Nurse license.
- Maintain a Cumulative Grade Point Average (CGPA) of 2.7 or greater on a 4.0 scale.
- Provide two satisfactory recommendations or references.
- Earn of a grade of "C" or better in all courses on the Program of Study.
- Complete up to 67 semester credit hours of prelicensure nursing courses and science courses.
- Complete verification requirements through CastleBranch - https://mycb.castlebranch.com/.
- Complete appropriate Interdisciplinary General Education (IGED) requirements (see the IGED Table of Substitutions).
- Complete the final 30 credits in residence at the University.

**IGED Requirements (37 credits)**

**Program Core Requirements:**

Program Core Requirements:

| | | |
|---|---|---|
| NURS 300 | RN to BSN Transition | 3 |
| NURS 307 | Ethical Issues and Health Satisfies IGED 140 | 3 |
| NURS 309 | Health Assessment: History and Physical | 4 |
| NURS 348 | Pathophysiology | 3 |
| NURS 354 | Gerontological Nursing | 3 |
| NURS 356 | Legal Issues and Health Policy | 3 |
| NURS 359 | Nursing Issues, Trends, and Concepts | 4 |
| NURS 351 | Nursing Research - Satisfies Writing Intensive Course | 3 |
| NURS 467 | Nursing Systems Leadership | 5 |
| NURS 470 | Community Health Nursing and Population Health | 5 |
| NURS 497 | Nursing Capstone Satisfies IGED 391-392 | 4 |

## COURSE DESCRIPTIONS:

### NURSING (NURS)

**NURS 300 RN to BSN Transition (3) Online**

This course introduces the student to the program's conceptual framework. The course will introduce the student to nursing theories and an understanding of the knowledge, skills, values, meanings, and experience (KSVME) in areas of nursing practice and health care, critical thinking and clinical reasoning, and evidence-based practice. **This course is designed to support the student's transition from an Associate Degree or Diploma in nursing preparation to a Baccalaureate in nursing perspective in healthcare delivery**. The course also focuses on developing information management skills to assist students in understanding and applying informatics tools currently used in healthcare settings. Tools such as electronic health records (EHR) and telehealth are a part of

evidence-based practice. Students will examine issues related to the protection of privacy, confidentiality, and security of health information in a variety of health care settings. including social network environments. Strategies that facilitate professional growth and acculturation, life-long learning and professional practice and values **are also emphasized**. are the primary focus. Prerequisite: Junior Standing and RN Licensure or Permission from the Nursing Program Director.

**NURS 307 Ethical Issues and Health | IGED 140 Foundation Ethics Substitute (3) Online**
This multidisciplinary course is designed to introduce registered nurse students health science/health care to the ethical issues commonly encountered in health care and in health care delivery systems. Important ethical issues in health care and health care delivery will be reviewed and analyzed. Students are introduced to basic concepts of moral judgment, ethical theories and principles, and critical thinking processes that are necessary for critical analysis of ethical issues with an emphasis on ethical decision making in professional nursing practice. A team approach to C**ase analysis and problem resolution** is one of several **are** strategies used to promote critical thinking and application of decision-making models. Students may take either NURS 307 or IGED 140. Prerequisite: NURS 300 RN to BSN Transition.

**NURS 309 Health Assessment: History and Physical (4) Online**
This course is designed to develop and refine health assessment skills through the use of appropriate knowledge, skills, and values. It includes identification of common health deviations, at-risk behaviors and variations for culturally diverse individuals. Modification of examination and the interview techniques and expected findings across the life cycle will be discussed. A variety of classroom activities will be utilized to enhance critical thinking and clinical judgment in health assessment (interview, health history taking, physical examination, use of age-related data instruments and technology). The virtual laboratory is designed to refine and expand health assessment knowledge and skills in the performance of comprehensive health of individuals and families across the life span. Prerequisite: NURS 300 RN to BSN Transition.

**NURS 348 Pathophysiology (3) Online**
This course provides the learner with an opportunity to analyze responses of the human body to altered states of health, environmental stressors, and the aging process. Genetic and cultural influences of disease are addressed. Pathophysiologic processes of selected diseases, reflective of the most common health disparities in the metropolitan area, are examined. Emphasis is given to interrelationships among the pathological, physiological, psychological and pharmacological factors. Selected modes of diagnosis and treatment modalities are also examined. Prerequisite: NURS 300 RN to BSN Transition.

**NURS 351 Nursing Research – Writing Intensive Course in the Major (3) Online**
This course enhances the knowledge and understanding of the scientific research process and its relationship to evidence-based practice and quality patient care. Emphasis is placed on applying research methodologies in the critique of published research studties and developing a limited research proposal on a topic of interest.. building competence in critical evaluation of published research and organizing a limited literature review in an area of interest. Prerequisite: NURS 300 RN to BSN Transition.

**NURS 354 Gerontological Nursing (3) Online**
This course focuses on current health care issues affecting older adults. It is designed to examine essential foundations for practice of Gerontological nursing care and to build on the knowledge, skills, meanings, and values associated with practice with an elderly population. The course emphasizes applying the nursing process to older adults experiencing wellness and self-care alterations. Selective pharmacological, legal and ethical concerns are discussed. Prerequisite: NURS 300 RN to BSN Transition.

**NURS 356 Legal Issues and Health Policy (3) Online**
This course is designed to expand the learner's knowledge of the legal and policy systems and their influence on the health care delivery system and nursing practice. Legal issues related to nurse practice acts and nurse regulatory bodies, and the changing role and responsibilities of the nurse, are examined. Issues of funding methods, resource allocation, access to care, and disparities impacting the health care system are addressed from a policy perspective. Students will evaluate the effects of specified practice and health care laws and policies germane to practice, consumer health, the profession of nursing and identify factors they may influence in a proactive response to achieve quality patient outcomes. Prerequisite: NURS 300 RN to BSN Transition.

**NURS 359 Nursing Issues, Trends, and Concepts (4) Online**
This course facilitates the learner's development and refinement of critical thinking and decision-making skills through application of knowledge and understanding to a health care/clinical issue. Analysis and integration of all prior coursework is applied to the development of care delivery models to address a healthcare issue for individuals, families, and groups who fall within a health disparity group. The components of this course include systematic inquiry,

evidence-based practice, professional identity, initiative, and self- direction. The practicum component of this course allows the learner to demonstrate the application of critical thinking skills, systematic inquiry and integrated competencies pertaining to a specified area of health/health promotion identified in the theory component and reflective of a health/health care disparities. Prerequisite: NURS 300 RN to BSN Transition.

**NURS 467 Nursing Systems Leadership (5) Online**
This course is designed to expand the student's knowledge of organizational and leadership theories and strategies. It will provide students with an introduction to leadership theories and the principles of management and theories of leadership as well as to provide an understanding of the role and function of nurse managers. Students will apply leadership and understanding of the role and function of nurse managers. Students will apply leadership and management knowledge, skills, and values to develop and/or enhance leadership behaviors in health care organizations or clinical areas. The student will collaborate with a preceptor and faculty member to develop, implement, and evaluate a project that addresses an identified leadership or management issue/problem in the organization or clinical area. Recognition (of self and others) and Application of effective leadership and management behaviors will be highlighted. Prerequisite: NURS 359 Nursing Issues, Trends, and Concepts.

**NURS 470 Community Health Nursing and Population Health (5 credits)**
This course is structured to provide the theoretical base for the practice of community/public health nursing and application of community mental health, home health, hospice, and global health concepts. Analysis of communities in terms of health resiliencies and vulnerabilities are explored using principles from epidemiology, levels of prevention, and nursing research. The practicum component of the course provides the student the opportunity to apply knowledge and competence in caring for individuals and families in a variety of community and home health settings. Principles from levels of prevention, epidemiology and research are applied and experiences are provided that assist the development of decision-making processes while providing services to special populations. Practice experiences through virtual modalities are provided to develop core public health competencies. Prerequisite: NURS 359 Nursing Issues, Trends, and Concepts.

**NURS 497 Nursing Capstone IGED 391-392 Frontier Exploration & Inquiry I-II Substitute (4) Online**
This course provides the student with the experience of collaborating with a nurse expert in a leadership role in a health care area of interest. The student will integrate and apply concepts, theories and principles from prior learning in a healthcare setting that matches his/her long-term interest and professional goals. Students may select a mentor/coach from a variety of areas including management and leadership, practice, education, research, health care policy and/or ethics, safety and quality improvement, informatics and tele-health, and forensics. Focus is on cultivating environmental sensitivity and developing a professional identity and competencies through systematic inquiry, synthesis of prior knowledge, experiential learning, and peer relationships. The student assumes responsibility for her/his learning by writing and achieving specific and achievable learning goals. Prerequisite: NURS 359 Nursing Issues, Trends, and Concepts.

## Nutrition and Dietetics (BS)**

**Didactic Program in Dietetics (DPD)**
The B.S. degree in Nutrition and Dietetics requires a minimum of 125 credit hours, of which 31 credit hours are General Education, 58 credits are Core Courses and, 36 credits are Support Courses. Students desiring to enter the program should have a strong background in the physical and biological sciences as the scientific disciplines are emphasized. The mission of the DPD is to provide program graduates with the skills and knowledge to be confident and competent in their dietetic internship and serve as professionals capable of providing excellent entry-level dietetic services in community, food service, management, and clinical settings. The Dietetics concentration constitutes UDC's Didactic Program in Dietetics (DPD), which fulfills the academic requirements for a student to become a Registered Dietitian (RD). The DPD at the University of the District of Columbia is accredited for a period of seven (7) years from 2015 through 2022 by the Accreditation Council for Education in Nutrition and Dietetics (ACEND):
https://www.eatrightpro.org/acend

****Note:**
This program is **not accepting students** at this time.

**Three steps to becoming a Registered Dietitian:**

**First**: Successfully complete the Didactic Program in Dietetics (DPD) at UDC. Once students complete the DPD, they will receive a Verification Statement signed by the Program Director.

**Second:** Apply for, become accepted into, and successfully complete an approved dietetic internship (supervised practice experience). Alternatively, the graduates may complete ACEND approved program with a supervised practice component.
The Verification Statement issued at completion of the DPD is required for application to the Dietetic Internship. Upon completion of the Dietetic Internship or other ACEND accredited program that provides supervised practice experience, the student will receive another Verification Statement signed by the Program Director. This will allow the student to sit for the National Registration Examination for Dietitian.

**Third:** Pass the National Registration Examination for Dietitians.

**IGED Requirements (37 credits)**

**Program Core Requirements:**

**Dietetics Option**

| | | |
|---|---|---|
| NUDT 103 | Introduction to Food Science Lab | 1 |
| NUDT 104 | Introduction to Nutrition Lab | 1 |
| NUDT 105 | Introduction to Food Science Lecture | 3 |
| NUDT 106 | Introduction to Nutrition Lecture | 3 |
| NUDT 442 | Food Chemistry Lab | 1 |
| NUDT 444 | Food Chemistry Lecture | 3 |
| NUDT 313 | Nutrition in the Life Cycle | 3 |
| NUDT 314 | Community Nutrition Practicum | 1 |
| NUDT 316 | Community Nutrition Lecture | 3 |
| NUDT 317 | Advanced Nutrition | 3 |
| NUDT 320 | Nutrition Education Lecture | 3 |
| NUDT 321 | Nutrition Education Practicum | 1 |
| NUDT 322 | Nutrition Assessment Lecture (intensive writing course) | 3 |
| NUDT 323 | Nutrition Assessment Practicum | 1 |
| NUDT 344 | Nutritional Biochemistry Lecture | 3 |
| NUDT 374 | Geriatric Nutrition Lecture | 3 |
| NUDT 375 | Geriatric Nutrition Lab | 1 |
| NUDT 421 | Therapeutic Nutrition I Lecture | 3 |
| NUDT 422 | Therapeutic Nutrition II Lecture | 3 |
| NUDT 423 | Therapeutic Nutrition I Lab | 1 |
| NUDT 423 | Therapeutic Nutrition II Lab | 1 |
| NUDT 426 | Food Systems Management I Lecture | 3 |
| NUDT 427 | Food Systems Management II Lecture | 3 |
| NUDT 428 | Food Systems Management I Practicum | 1 |
| NUDT 429 | Food Systems Management II Practicum | 1 |
| NUDT 490 | Senior Seminar and Research | 3 |

**Program Support Core Requirements:**

| | | |
|---|---|---|
| CHEM 111 | General Chemistry Lec ture I | 3 |
| CHEM 113 | General Chemistry Laboratory I | 1 |
| CHEM 112 | General Chemistry Lecture II | 3 |
| CHEM 114 | General Chemistry Laboratory II | 1 |
| CHEM 231 | Organic Chemistry Lecture I | 3 |
| CHEM 233 | Organic Chemistry Laboratory I | 1 |
| CHEM 232 | Organic Chemistry Lecture II | 3 |
| CHEM 234 | Organic Chemistry Laboratory II | 2 |
| BIOL 111 | Anatomy & Physiology I Lecture | 3 |
| BIOL 113 | Anatomy & Physiology I Lab | 1 |
| BIOL 112 | Anatomy & Physiology II Lecture | 3 |
| BIOL 114 | Anatomy & Physiology II Lab | 1 |
| BIOL 240 | General Microbiology Lecture | 3 |
| BIOL 241 | General Microbiology Lab | 1 |

## Master of Science in Nutrition and Dietetics (MSND)**

**With emphasis on: Public Policy, Communication and Clinical Research**

The mission of the Master of Nutrition and Dietetics program is to produce graduates that are skilled practitioners with the compassion and knowledge to care for a diverse population who require nutritional health knowledge. While there are many institutions within the United States that provide nutrition and dietetics education, no institution is as uniquely positioned as UDC to enable professionals to gain practical knowledge, conduct applied research to address increasing demands on urban land for food production, and improve urban sustainability. This Masters in Nutrition and Dietetics **does not provide a pathway to become a Registered Dietitian**. Students interested in becoming a Registered Dietitian should consider the undergraduate DPD program. This Masters in Nutrition and Dietetics provides advanced knowledge in Nutritional health systems and is intended for individuals interested in careers as community educators; researchers; and managers of health service delivery organizations and systems, managed-care programs, and other population-based organizations.

The anticipated time required for a student to complete the Masters of Science in Nutrition and Dietetics is 2 years. (four semesters full time study for 36 credit hours).

****Note:**

This program is **not accepting students** at this time.
Students who must take the English Writing Proficiency course will graduate with 39 credit hours. Students who do not have a background in nutrition will be required to take pre-requisite courses; these are: General Chemistry I with lab, Organic Chemistry I with lab, General Microbiology with lab, and Anatomy and Physiology I with lab.

These courses must be taken prior to admission to the Masters in Nutrition and Dietetics Program. Advanced Nutrition must be taken prior to Food Chemistry lecture and lab. All courses must be taken in sequential order to give the student best chance for success in the Masters of Nutrition and Dietetics program.
General Admission requirements to UDC can be accessed at www.udc.edu. Any student, local, national or international, interested in the Graduate Program is eligible to apply and will have to submit the following:

- Application Form
- Application Fee
- Three Letters of Recommendation
- GRE Score –The GRE score should be above 4.0.

If the GRE score is not above 4 the students are mandated to successfully complete the English Proficiency Writing course (ENGL-515) offered by the Department of English

- Satisfactorily completed a baccalaureate degree in nutrition related field or from an accredited university
- Undergraduate minimum cumulative GPA of ≥ 3.0 or greater.
- An official copy of the transcript of the applicant's academic undergraduate record. If the student attended more than one college/university attach copies of transcripts from ALL colleges or universities attended
- An essay as to how the student will contribute to improving the health status of the minority population by getting involved with the legislative process
- International students should provide evaluation by World Education Services.

NOTE: The last day for submitting the applications for fall is April 15th for the fall admission. Applications after this date may be considered, however, those received by April 15th will take priority. The Graduate Program will not admit students that are unprepared for the graduate program. Students completing the accredited DPD Program will be eligible to apply for the Graduate Program. Students holding degrees in majors other than nutrition are expected to complete the DPD knowledge requirements prior to applying to the Graduate Program.

All applications to the Graduate Program will undergo a two-phase review process.

Phase 1: Evaluation by the Graduate Selection Committee
Phase 2: Personal Interview.

**Program Requirements**

| | | |
|---|---|---|
| ENSC 507 | Urban Food Hub & Sustainability | 3 |
| NUDT 500 | Cancer Prevention | 2 |
| NUDT 501 | Nutritional Epidemiology | 2 |
| NUDT 521 | Nutritional Biochemistry | 3 |
| NUDT 525 | Integrating Nutrition Assessment | 3 |
| NUDT 540 | Nutrition in Disease Prevention and Treatment | 3 |
| NUDT 640 | Management , Policy and Community Health | 3 |
| NUDT 650 | Nutritional Research Methods | 3 |
| NUDT 651 | Nutrition Thesis | 1 |
| NUDT 690 | Nutri-Genomics Lec or Elective | 3 |
| NUDT 691 | Nutri-Genomics Lab or Elective | 1 |
| CNSL 534 | Group Design and Intervention | 3 |
| WTRM 506 | Quantitative or Qualitative Research Methods | 3 |
| WTRM 502 | Public Communication for STEM Professionals | 3 |

**Program Total: 36 + 3 (if ENGL 515 is required)**

## COURSE DESCRIPTIONS: NUTRITION AND DIETETICS (NUDT)

**NUDT103 Introduction to Food Science Lab (1)**
Students will develop laboratory skills to examine the characteristics of raw food materials and to explore the development, preparation, and preservation of food. This lab course runs for three hours. Co-requisite NUDT105

**NUDT104 Introduction to Nutrition Lab (1)**
Students will collect personal dietary data using various techniques and analyze the nutrient composition and compare findings with the Dietary Recommended Intakes appropriate for age and gender. Water samples from students' homes will be tested for lead and other substances utilizing the UDC Environmental Quality Testing Lab. Students will analyze organic and inorganic nutrients from a 24-hour menu using homogenates that simulate digestion using blender. Students will develop skills to collect anthropometric measurements on themselves and their classmates and evaluate the results. Students will submit written lab reports based on scientific laboratory format. Co-requisite: NUDT 106

**NUDT105 Introduction to Food Science Lecture (3)**
Students will explore food science and food technology through examination of the early history of food and the development of the food industry to the present. Students will discuss current and future opportunities in the food industry with a focus on emerging careers for food scientists and food engineers in a society that focuses on sustainability of resources. Students will develop an understanding of the general characteristics of raw food materials, harvesting, and processing of foods. They will learn about methods of food

preparation that preserve the color, flavors, and nutrient content of foods. Co-requisite: NUDT103

**NUDT106 Introduction to Nutrition Lecture (3)**
This course prepares students of all disciplines to improve the nutritional health for themselves, their families, and their communities. It meets the university-wide life science requirement. Factors that affect the food choices of individuals across cultural groups will be emphasized. Basic information on the classification, chemistry, functions, and metabolism, and deficiency symptoms and dietary sources of essential nutrients will be discussed. Students will discuss basic issues of energy balance and utilize diet-planning guides, including MyPlate. Each student will research a nutrition topic from evidence-based sources and will present their findings to the class. Students will volunteer at a nutrition-related site in the District of Columbia area. Co-requisite: NUDT104.

**NUDT313 Nutrition in the Life Cycle (3)**
Field visits to selected federal government and community agencies in the District of Columbia and guest speakers from organizations such as La Leche League highlight this course. How nutrient requirements are altered by physical development throughout life, from preconception, prenatal development, lactation, and adolescence to aging is covered. Students will translate this information into practical pointers in providing quality nutrition care for individuals and groups at various stages of development. Students will research and present reports on important community-based programs that span the life cycle. Oral presentations and peer assessment are emphasized. This course is targeted not only for nutrition and dietetics majors, but also for those in related fields of study, including nursing, education, public health, social work, counseling, and psychology. It is anticipated that beginning Spring 2013, part of this course will be taught online. Prerequisite: NUDT106.

**NUDT314 Community Nutrition Practicum (1)**
Selected organizations located in and around the District of Columbia, including public and charter schools, Head Start, WIC, and D.C. Public Housing, will provide students with real-life challenges to address. Students will apply strategies to meet nutrition needs outside of acute-care settings, with emphasis on nutrition education and food assistance programs. Students will gain an understanding of the complexities of the external environment on health outcomes. Students will be required to travel to local community nutrition sites during the semester. Prerequisite: NUDT106 and permission of instructor/chairperson; co-requisite: NUDT316.

**NUDT316 Community Nutrition Lecture (3)**
An introduction to programs, policies, and institutions that influence nutrition services at the local, state, and national levels. This course supports the development of skills needed to practice nutrition in community settings with special attention to populations at high nutritional risk. Nutrition assessment, program planning and evaluation, and cultural competency are emphasized. Advocacy is an underlying theme for discussions and for individual and group projects. Certificates in (1) Protecting Human Research Participants and (2) Responsible Conduct of Research are expected to be earned by end of course. Prerequisite: NUDT106 and permission of instructor/chairperson; Co-requisite: NUDT314 (Lab).

**NUDT317 Advanced Nutrition: Exercise/Sports (3)**
This course emphasizes the significance of fundamental concepts of energy metabolism and applied nutrition with an emphasis on nutrient utilization and requirements for varying levels of physical activity and human performance throughout the life cycle. This includes the energy systems, specialized cells, enzymes and hormones involved in metabolic processes during rested and exercised states and utilization of macronutrients during exercise at varying intensities. In addition, micronutrients and the impact of hydration and electrolyte status on performance will be examined. Controversies pertaining to the use of dietary supplements, ergogenic aids, achieving desired body weight, and nutritional concerns of special populations will be further explored and evaluated through a practical assessment and evidence-based literature.
Prerequisites: BIOL-111/112 and 112/114, CHEM 111/112 and 113/114, NUDT 313 or NUDT 314 or NUDT 320; Co-requisite: CHEM 231/233 (if not completed prior to enrollment in NUDT 317)

**NUDT318 Child Health and Nutrition (3)** this is not a course requirement for the DPD program; this course is for majors in Human Development.
Evaluates ways of achieving excellent nutritional status in children. Discusses nutrient needs for optimal growth and health during early years of life and application of nutrition knowledge to the daily challenges of feeding children and forming lasting dietary patterns that will serve them well throughout their lives.

**NUDT320 Nutrition Education Lecture (3)**
This course includes a survey of the philosophy, principles and methods of nutrition education. Discussions include reliable sources of nutrition information, tools and skills used in managing nutrition programs, and various aspects of nutrition surveillance, nutrition care and promotion. Cultural competency and effective communication are stressed. Guest speakers from agencies within USDA and other federal and District of Columbia departments will join

the class throughout the semester. This course is targeted not only for nutrition and dietetics majors, but also for those in related fields of study, including nursing, education, public health, social work, counseling, and psychology. Prerequisite: NUDT106; co-requisite: NUDT316.

**NUDT321 Nutrition Education Practicum (1)**
Students will develop appropriate tools for nutrition education, including writing lesson plans and nutrition education evaluation tools. Developing curriculum, learning objectives, and goals for nutrition programs are also reviewed. Counseling skills also developed through in-class and field experiences scheduled in sites across the District of Columbia, including public and charter schools, faith-based organizations, and senior-citizen wellness sites. Participation in a mock Toastmasters International session will provide students with the opportunity to develop their communication and public speaking skills beyond the classroom. Nutrition Education generally precedes Geriatric Nutrition. Prerequisite: NUDT106; co-requisite: NUDT320.

**NUDT322 Nutrition Assessment Lecture (3)**
This course emphasizes strategies to assess the need for adaptive feeding techniques, including alternative feeding modalities and drug and nutrient interactions. Students will design and implement intervention in urban and diverse population groups. Using role play and patient simulations, students will interpret and apply medical and nutrition terminology, examine interactions between drugs and nutrients, and apply Nutrition Care Process and nutrition intervention. Using profiles of residents of the District of Columbia, students will develop skills in evaluating, documenting, and simulating patient records, implementing culturally competent Medical Nutrition Therapy (MNT), applying evolving methods of nutritional assessment and support, and interpreting laboratory parameters. Prerequisite: NUDT 317; co-requisite: NUDT323.

**NUDT323 Nutrition Assessment Practicum (1)**
This course features opportunities for students to interact with clients and patients in underserved clinical settings located in medically underserved areas of the District of Columbia. Students will perform nutritional screenings and assessments, analyze and present nutritional data, assess nutritional status, and document patient's/client's medical record. This course enables students to acquire skills in assessing, planning, calculating and implementing Total Parenteral Nutrition (TPN) and Enteral Feeding. Students will present dietary habits of diverse population groups while exhibiting cultural competence. Students will present scientific literature on choices of alternative nutrition therapies. Pre-req: NUDT317; Co-requisite: NUDT322.

**NUDT- 344: Nutritional Biochemistry (3).**
Co-requisites NUDT-345, Pre-requisite; CHEM 232/234. The course is designed to facilitate the understanding of biochemical principles and concepts to human nutrition. The course content will include structure, metabolism and functions of biological nutrients-Water, Proteins , Carbohydrates, Lipids and Minerals. Topics like bioenergetics; intermediary metabolism, regulation of metabolic control and enzymes, vitamins and co-factors, will be included. Biochemistry of cellular signaling including membrane structure and function, hormones, and signal transduction, nucleic acids, gene expression and regulation will be covered. Emphasis is placed on metabolic pathways, the interrelationships of major nutrients and the relation of metabolic processes to the overall nutritional health of an individual.

**NUDT374 Geriatric Nutrition Lecture (2)**
This course is an overview of the physiological, psychological, and socioeconomic aspects of aging and their impact on nutritional health. This course includes in-depth discussions of nutritional assessment, nutrition programs, and chronic medical disorders associated with the older adult. Students will be required to present specific topics to their peers in an interactive manner throughout the semester. Geriatric Nutrition generally precedes Therapeutic Nutrition I and II and serves as an introduction to the diseases and conditions that are covered in more depth and over additional life cycles in subsequent courses. Prerequisite: NUDT106 and permission of instructor/chairperson; co-requisite NUDT375.

**NUDT375 Geriatric Nutrition Practicum (1)**
Under the supervision of registered dietitians, student will work with older adults in various agencies across the District of Columbia. Students will develop or adapt lesson plans and provide nutrition education and nutrition screening to this population. Students may conduct food demonstrations, when applicable. A panel of senior citizens, in the format of "speed-dating," is the highlight of this course. Prerequisite: NUDT106 and permission of instructor/chairperson; co-requisite: NUDT374.

**NUDT421 Therapeutic Nutrition I Lecture (3)**
Discusses medical terminology, the nutritional care process, the biochemical functions of vitamins, nutrition intervention and care of the patient, Medical Record Documentation, diet modifications, and interactions between drugs and nutrients. Emphasizes nutritional care in diseases of the gastrointestinal, liver, and biliary system, allergies, neoplastic diseases and methods of nutritional support. 2 hrs., Prereq.: NUDT317, CHEM135. Coreq.:NUDT422,423.

**NUDT422 Therapeutic Nutrition II Lecture (3)**
This course features opportunities for students to interact with clients and patients in underserved clinical settings located in medically underserved areas of the District of Columbia. Students will examine the physiology, pathology, risk factors and medical nutrition therapy for management of the following conditions: Cancer, Gastrointestinal Diseases, Diseases of the Nervous System, Eating Disorders, Alzheimer's, Parkinson's, and Food Allergies. NUDT422 can be taken before or after NUDT421. Prerequisites: NUDT317, NUDTC-322 and permission of instructor/chairperson; co-requisite: NUDT423

**NUDT423 Therapeutic Nutrition I Laboratory (1)**
Performs nutritional assessment on a homogeneous population, analyzes the data, and presents the results. Plans, modifies, prepares meals, and develops instructional materials for patients with gastrointestinal, liver, biliary neoplastic diseases, and allergies. Analyze the menus for nutritional adequacy. Lab. 3 hrs., Prereq.:NUDT317, CHEM135. Co-req.: NUDT421.

**NUDT424 Therapeutic Nutrition II Lab (1)**
This course offers opportunities to explore and conduct research on environmental pollutants in the air, food and water in communities located in the District of Columbia. Students will work with patients living with allergies, cancer, gastrointestinal and neurological disorders to plan supporting strategies and Medical Nutrition Therapy. Students will participate in panel discussions applying evidence-based research and Medical Nutrition Therapy on all diseases covered in the lecture course. Patient simulations will also be incorporated. Prerequisites NUDT317, NUDT322; co-requisite: NUDT422.

**NUDT426 Food Systems Management I Lecture (3)**
The course emphasizes planning various types of hospital menu as the focal point of food service and offers skills to analyze and interpret nutrient composition of menus. Students will identify different types of food service operations, including food production, food delivery systems, quantity food production, procedures and principles of food procurement, markets, buyers, methods of purchasing, food receiving and storage, specifications, inventory records, recipe development and standardization, production control, production scheduling and demonstration of basic food preparation and presentation skills. Prerequisite: NUDT106; co-requisite: NUDT428.

**NUDT427 Food Systems Management II Lecture (3)**
Student will integrate the process and tools used in effective management, theories of management, and administrative leadership. Topics covered in this course include Total Quality Management, mechanics of cost control, planning of physical facility in relation to its needs and equipment, quality assurance in food production, and use of technology in food service institutions. NUDT427 can be taken before or after NUDT428. Prerequisite: NUDT106; co-requisite: NUDT429

**NUDT428 Food Systems Mngmt I Practicum (1)**
Students will visits various local food service facilities to observe food service operations including menus, production records, procurement, ordering and receiving foods, food specifications, food inventory and food production and tray line management. Students will submit visitation records and provide a summary of analysis and critiques of the facilities visited. This course provides the opportunity for students to complete a portfolio to simulate interviewing prospective candidates for a dietary department. This course also provides students with opportunities to network with representatives of Consumer Regulatory Affairs and to observe commercial food service operations. NUDT428 can be taken before or after NUDT427. Prerequisite: NUDT106; co-requisite: NUDT426.

**NUDT429 Food Systems Mngmt II Practicum (1)**
This is a hands-on lab course where students visit food service facilities located in the District of Columbia. Students will develop management tools, monitor quality assurances, and design floor plans for a simulated operational food service facility. Students will prepare documents for applying for state licensure for operating a food service facility. Prerequisite: NUDT106; co-requisite: NUDT427

**NUDT442 Food Chemistry Lab (1)**
Three hours of laboratory per week where students analyze the changes that occur during processing and utilization of foods using state-of-the art chemical, physical and instrumental methods. Prerequisite: CHEM-461 (Biochemistry); co-requisite: NUDT444.

**NUDT444 Food Chemistry Lecture (3)**
This course emphasizes the basic composition, structure and properties of food and the chemistry of changes that occur to foods during processing and utilization. Prerequisite: CHEM-461 (Biochemistry); co-requisite: NUDT442.

**NUDT490 Senior Seminar and Research (3)**
This capstone course involves critical review of literature on recent research in nutrition, dietetics, and food science and acquiring competency in writing proposals, conducting research, and presenting the research findings. Arrangements can be made to work under a preceptor outside of the university in collaboration with a UDC

faculty advisor. Suggested sites of research include, but are not limited to, USDA Agricultural Research Center (ARC), UDC Agricultural Experiment Station, the UDC Environmental Quality Testing Lab, and other agencies and organizations located in the Greater Washington Metropolitan Area identified by the student and faculty research advisor. Submission of a written undergraduate thesis is required. All students enrolled in this course must earn certification in Responsible Conduct of Research before they can begin their research. Prerequisite: Senior standing in the Bachelor of Nutrition and Food Science Degree Program and permission of Department Chairperson and faculty research advisor.

**NUDT500 Cancer Prevention (2)**
Features presentations primarily by the faculty and postdoctoral fellows, and class discussions of any materials provided to the students in advance. Students may be required to read up to 2 papers per week, and to participate in all class discussions.

**NUDT501 Nutritional Epidemiology (2)**
This course introduces principles of epidemiology and methods used in the investigation of health-related events. The course will examine and emphasize detection of trends in disease and nutrition, including the distribution of diseases or other health-related states and events in human populations. Discussion on factors, especially in urban populations, that influence this distribution, (e.g.,
age, sex, occupation, ethnicity, and economic status) and the application of this study to control health problems will be emphasized. Topics covered include: basic epidemiology, statistical methods, and analytical issues related to diet and disease

**NUDT520 Nutritional Biochemistry (3)**
The course provides an in depth view of human biochemistry with focus in energy metabolism and its regulation, plus nutrient synthesis and degradation at the cellular level. Major nutrient classes will be reviewed at the cellular level as well as biochemical pathways for their digestion, absorption, metabolism and degradation will be analyzed. There will be a focus in normal physiological processes but we will also discuss some major pathological states. Prerequisites: NUDT 422, NUDT 424.

**NUDT525 Integrating Nutrition Assessment and Research Methods (3)**
Nutrition assessment is the interpretation of information using anthropometric, biochemical, clinical and dietary methods, study of data collection techniques, nutrient analysis and dietary modifications, the new nutrition care process and methods of nutritional support; current reimbursement issues, policies and regulations, and the appropriate use of these tools in determining the nutrition status of a population and/or individual client. The assessment also addresses the process of conducting a food & nutrition environment and occupational assessment that impacts the nutritional status. Laboratory experiences are provided to allow students practice time for learning and applying assessment techniques.

**NUDT530 Pharmacology for Nutrition Professionals, Medical Nutrition Therapy IV (3)**
This course provides an integrated approach to the biochemical functions and nutritional metabolism and drug-nutrient interactions of fat-soluble and water-soluble vitamins. The course emphasizes the comprehensive study of terms used by health care practitioners to describe laboratory, radiology, pathology procedures and pharmacological products for body systems. Other topics covered are pharmomacokinetics, pharmacodynamics, bioavailability and biotransformation of drugs, drug-nutrient interactions of antibiotics, antiviral drugs, IV and TPN fluids, anesthetics, anti-histamine, autonomic, cardiovascular, central nervous system, gastrointestinal, hormones and synthetic substitutes, heavy metal antagonists, non-prescription drugs, herbal supplements and chemotherapeutic agents. Prerequisite: NUDT520.

**NUDT 540 Nutrition in Disease Prevention and Treatment (3)**
The dietary guidelines tell healthy Americans what to eat in order to maintain overall health and wellness, but individuals with health conditions have different nutritional needs and require special diets. This course examines the physiologic, biochemical and psychosocial basis of various disease states and the application of medical nutrition therapy in clinical treatment.

**NUDT640 Management, Policy and Community Health (3)**
This course examines political, social and philosophical aspects of legislating public policy and health policy in particular. Emphasizes how issue, power, policy, lobbyist and the legislative process work in conjunction with one another and how coalitions are formed to promote legislative impacting constituents. The course will identify and discuss current legislative topics and current health-related policies under consideration in the U.S. Congress. The course clarifies the importance of advocacy, public interest and public policy and emphasizes nutrition policies and programs.

**NUDT650 Nutrition Research Methods, Research (3)**
This course is designed to examination of quantitative and qualitative techniques appropriate for research in the field of nutrition and dietetics. The course will use a combination

of didactic, interactive and applied techniques to strengthen the skills relevant for qualitative and quantitative research. Preparation of the proposal and completing the master's thesis or project are stressed. The students are strongly advised to take Applied Statistical Methods course in addition to this introductory course in research methods.

**NUTD651 Nutrition Thesis (1)**
Scholarly essay based on research, written under the guidance of the student's adviser. Credit is given upon meeting thesis requirements for the master's degree. Prerequisite: Consent of instructor.

**NUDT690 Nutri-Genomics Lecture (3)**
Introduces the principals of genetics at the molecular, cellular, organismal, and population level. Emphasis will be on nucleic acid structure, gene expression, the process of DNA replication, gene transcription, RNA translation, how mutations occur and recombinant DNA methodology.

**NUDT691 Nutri-Genomics Laboratory (1)**
Emphasizes electrophoretic separation of nucleic acids and proteins. Introduces purification and enzymatic digestion of nucleic acids, principles of agarose and polyacrylamides gel electrophoresis; sequencing and fingerprinting, RFLP's, PCR and other applications in biotechnology.

**NUDT694 Contemporary Issues in Nutrition**
The course will critically examine the theories, models, and concepts from social & behavioral sciences to increase the understanding of individual and environmental factors affecting food and nutrition issues locally, regionally, and globally. Students conduct literature reviews and examine sustainable nutrition practices and global food issues such as starvation and malnutrition and present the results.

## Land-Grant Programs

The Land-Grant Programs of CAUSES offers research-based community education and professional certification programs that are delivered through five centers. Each of the CAUSES centers houses a number of programs and services that are designed to engage the communities and regions where we are located and to enrich the lives of District of Columbia residents. What follows is an overview of land-grant programs offered as well as detailed descriptions of each center's programs and services.

For more information about programs and services offered within CAUSES' Division of Land-Grant Programs, please email CAUSES@udc.edu. For additional information on Land Grant programs, please visit: https://www.udc.edu/causes/landgrant-research/.

## Center for Urban Agriculture and Gardening Education:

https://www.udc.edu/causes/land-grant/center-for-urban-agriculture-gardening-education/
The Center for Urban Agriculture and Gardening Education (CUAGE) seeks to expand academic and public knowledge of sustainable farming techniques that improve food and water security. The center also seeks to improve the health and wellness of people in the local community and around the world through research and education on urban and peri-urban agroecology and gardening techniques.

- **DC Master Gardener Program**
- **Sustainable Urban Agriculture Certificate**
- **Ethnic and Specialty Crop Program**

**DC Master Gardener Program** seeks to enhance the ecological health and aesthetics of the urban environment by training District of Columbia residents to become Master Gardeners. Expert horticulturists and plant scientists teach the eight-week educational program, which includes a 50-hour service learning requirement working under a professional gardener. The program also has beautification projects in all eight Wards of DC including schools, places of worship, nursing homes and parks. The Master Gardeners give back 9,000 hours back to the city annually. In return, participants dedicate volunteer time to teach horticultural information, speak at public events, and participate in community gardening programs. Upon completion of the program, graduates earn a Master Gardener Certificate. The program provides interested individuals with extensive training in topics such as plant pathology, entomology, urban soils, and plant propagation.

**Sustainable Urban Agriculture Certificate** is a certification course that totals 15 contact hours with expert instructors. This course focuses on sustainable agriculture practices in an urban environment and implementing those practices for personal or business opportunities. The content of this course is appropriate for novice and experienced growers interested in pursuing some kind of agricultural business.

**Ethnic and Specialty Crop Program** uses sustainable growing methods to produce a range of fresh herbs and vegetables that are rare in area supermarkets. Many of them are known as "ethnic crops" that do not originate on the American continent, but can be grown locally.

## Center for Sustainable Development & Resilience

https://www.udc.edu/causes/land-grant/center-for-sustainable-development/

Three broad themes guide the community education programs within the Center of Sustainable Development & Resilience (CSDR), including urban forestry, green economy, and green infrastructure. Our commitment is to build healthy, livable, equitable communities in the District of Columbia and beyond, whether the goal is to start a community cooperative, improve energy efficiency in your home or workplace, or grow your own vegetables. Please visit the website above for more information on the following:

- UDC Farmers Market
- Urban Gardening & Forestry Outreach
- Waste Management Assessment
- DC Master Naturalist Program
- Data Collection Clinics
- Compost Trainings
- Green Infrastructure Program

## Center for Nutrition, Diet and Health

**https://www.udc.edu/causes/land-grant/the-center-for-nutrition-diet-and-health/**

The Center for Nutrition, Diet, and Health (CNDH) recognizes the critical need to combat systemic urban nutrition and health issues and engage citizens in collaborative efforts to improve community health. The center is dedicated to educating residents on the benefits of a healthy lifestyle and ways to prevent obesity, heart disease, and other health threats. CNDH offers the following programs and services aimed at improving District residents' quality of life.

- Kids Cooking Classes
- District of Columbia Water Blind Taste Testing Research Project
- Food Demonstrations
- and Cooking Classes
- Nutrition, Diet and
- Health Seminars
- Expanded Food and Nutrition Education Program Food Safety Education (EFNEP)
- Nutrition on Demand
- Supplemental Nutrition Assistance Program-Education (SNAP-Ed)
- Team Nutrition Project

Visit the website above for more information

## Center for 4-H and Youth Development

**https://www.udc.edu/causes/land-grant/center-for-4-h-and-youth-development/**

CAUSES is committed to building strong, vibrant communities of active and engaged citizens. The Center for 4-H and Youth Development develops innovative programs that emphasize experiential learning opportunities for young people and their families. Through "hands-on" interactive programming, participants develop life skills, leadership abilities, and an ethic of civic stewardship. The center offers the following programming to support and engage District youth.

- 4-H Clubs
- 4-H Summer Camp
- 4-H Living Interactive Family Education (LIFE)
- 4-H STEM
- 4-H International Network
- Environ Mentors
- LifeSmarts Consumer Education for Teenagers
- Operation Military Kids
- Volunteer Leaders Training
- UDC Soccer Program

For more information on any of these programs, please visit the **website** above.

## Institute of Gerontology

**https://www.udc.edu/causes/land-grant/the-center-for-nutrition-diet-and-health/institute-of-gerontology/**

The Institute of Gerontology was established with two goals in mind: to introduce interdisciplinary courses in gerontology into the University curriculum and to create a community resource for improving the lives of the urban elderly. In keeping with the goals of the University, special efforts by the Institute are directed toward identifying the problems of African-American and other minority aged and training professionals to work with them. The academic program of the Institute is directed towards providing the expertise essential for employment opportunities for university trained workers in services for the aged. The Institute oversees the following programs. For more information on any of these programs, please visit the **website** above.

**Senior Tuition Program**

The policy regarding tuition and fees for senior citizens has been in effect since 1978 without change. It states that "persons 65 years of age or older, upon their application, shall be admitted to classes in the University under these provisions provided that the individuals are residents of the District of Columbia meet all established prerequisites for

the course (s) to be taken; admission in a class or section will not deny space in the course or section to a regularly matriculating student of the University". The policy also states that "tuition and fees normally required of students admitted to the University will be waived except in cases where the applicant matriculated in a degree program. Such matriculating student shall pay one-half the amount set for students within their category unless otherwise deferred, or waived by specific Board of Trustee authority".

**Senior Companion and Respite Aide Program of Washington, DC**

The Senior Companion Program is funded by the Corporation for National and Community Services and the DC Office on Aging. This program has recruited and trained thousands of senior volunteers 55 years and older living in the District of Columbia to serve other District citizens in their place of residence or at group facilities such as: senior housing buildings, senior centers, and hospitals. The respite service provided by the program has served to ease the load of family caregivers by providing short-term relief to them.

**BODYWISE Program**

The BODYWISE Program is funded by the DC Office of Aging and Community Living. It is a program specifically designed and operated to promote health, wellness and fitness for persons 60 years of age or older in the District of Columbia. Some of the benefits which may be achieved include: an increase in participant's cardiovascular efficiency, muscular strength, flexibility, and overall life satisfaction. The BODYWISE Program consists of water, (swimming is not required) stretch, walk, and chair exercise classes. Each of these activities includes a health education component covering topics such as: the use of over-the counter drugs and prescription medication, blood pressure screening and the benefits of exercise for certain physical problems. Participants in the BODYWISE Program must meet eligibility:

- Be a resident of the District of Columbia
- Be 60 years of age or older
- Complete an Application form
- Obtain a Medical Release form executed and signed by his/her physician
- Medical Release form must be done annually

## Water Resources Research Institute

**https://www.udc.edu/causes/land-grant/wrri/**

The mission of Water Resources Research Institute (WRRI) is to provide the District of Columbia with interdisciplinary research support to identify DC water resources problems and contribute to their solution. In addition to coordinating and facilitating water resources-related research projects through seed grants provided to faculty members from the consortium of universities in the District, the Institute provides training and disseminates research findings that address water issues in the DC area and beyond. The Institute supports collaborative research that engages not only faculty members and students, but also a broad array of stakeholders to address regional water issues in a holistic way. Areas of focus include drinking water source protection, storm water management and planning, water safety, and watershed stewardship. WRRI offers the following programs and services.

- National Capital Region Section – American Water Resources Association Annual Water Symposium
- Environmental Quality Testing Laboratory Services: Soil and Water Quality Testing

**National Capital Region American Water Resources Association Annual Water Symposium** is held in early April each year at the University of the District of Columbia. This one-day symposium brings together experts from governmental agencies, academia, the private sector, and non-profits to discuss challenges and opportunities for sustainable management of water resources and infrastructure in the region, as well as nationally and internationally. For additional information on these programs, please visit the **WRRI website.**

**Environmental Quality Testing Laboratory Services** is provided through UDC's Environmental Quality Testing Laboratory (EQTL). EQTL Provides soil and water quality testing services and training for all its stakeholders including student, research faculty, DC residents, public and private institutions. For additional information on these programs, please visit the https://www.udc.edu/eqtl/

# College of Arts and Sciences (CAS)

https://www.udc.edu/cas/

The College of Arts and Sciences, the largest of the University of the District of Columbia's Flagship academic units, supports the institution's tri-fold mission via its academic offerings, co-curricular activity, research and grantsmanship, and community outreach. The College offers baccalaureate and graduate degree programs across the traditional arts and sciences disciplines as well as in Education and the behavioral sciences. Additionally, the College contributes significantly to courses offered under the University's General Education umbrella and, thus, supports the liberal education experience of every undergraduate UDC student.

CAS endeavors to be an inclusive space built on the principles of diversity, multiculturalism, and equity. Its programs are responsive to and reflective of the constituencies of the District of Columbia. The College strives to be a place of understanding and continuous dialogue regarding the concepts of inclusivity, affinity, and intersectionality.

CAS programs interweave responsibility for intentional learning that is both broad and specific and tied to job readiness, career advancement, and enduring social satisfaction. Moreover, CAS programs embody the University's land-grant mission concerns of community safety and resilience, educational relevance and equity, and political activism, representation, and equality. The College's undergraduate programs support student acquisition of the broad foundation of social science skills required to address persisting, evolving, and new societal issues and opportunities. CAS faculty and staff help students develop their academic skills and advance critical abilities that support independence in learning and work. CAS undergraduate programs are seamlessly aligned with pathways to jobs and next levels of education.

CAS graduate programs serve a two-fold mission: 1) they allow students enhanced and concentrated study in fields of interest; and 2) they offer requisite professional training for advanced scholarship, job entry, and professional mobility. The College strives to maintain the strengths of current offerings and operations but further the benefits of those programs by marrying them to new programs that have forward reaching relevance for CAS students and communities. Existing CAS graduate programs provide three significant supports: preparation for careers that exist now and serve families and communities; research that furthers the scholarship of teaching and learning; and research that challenges existing policies and practices across fields as diverse as healthcare, finance, public safety, and construction.

| Division of Arts and Humanities | |
|---|---|
| Art | BA |
| Music | BM |
| English | BA |
| Digital Media | BA |

| Division of Social and Behavioral Sciences | |
|---|---|
| Administration of Justice | BS |
| Human Development | BA |
| Political Science | BA |
| Psychology | BS |
| Homeland Security | MS |

| Division of Education, Health, and Social Work | |
|---|---|
| Early Childhood Education | BA |
| Elementary Education | BA |
| Special Education | BS |
| Social Work | BSW |
| Teaching | MAT |
| Early Childhood Education | MA |
| Rehabilitation Counseling | MA |
| Speech-Language Pathology | MS |
| Counseling (School/Mental Health) | MS |

| Division of Sciences and Mathematics | |
|---|---|
| Biology | BS |
| Chemistry | BS |
| Mathematics | BS |
| Biology | MS |

## Division of Arts and Humanities

The Division of Arts and Humanities supports students' professional preparation in the visual and performing arts, liberal arts, and communications. The Division promotes the mission of the College of Arts and Sciences and the University of the District of Columbia by providing students career-focused academic experiences in writing, literature, and cultural and media studies.

**Degrees:**
Bachelor of Art (BA)
Bachelor of Music (BM)
English (BA)
Digital Media (BA)

**GPA Statement**
Students must earn a minimum of "C" in major courses for these courses to be accepted towards completion of the degree.

## Art Program

The Art Program provides students with marketable artistic skills, increases awareness of the role of art and design in contemporary culture and throughout history, builds conceptual thinking and aesthetic awareness, inspires collaboration among student artists and designers, and serves as an artistic resource for the community.

**The Art Program offers a BA in Art with several degree options:**

- Bachelor of Arts (BA) in Art with a Concentration in Studio Art
- Bachelor of Arts (BA) in Art with a Concentration in Photography
- Bachelor of Arts (BA) in Art with a Concentration in Graphic Design

### Bachelor of Art with Concentration in Studio Art

prepares students for work as exhibiting studio artists, and for positions in art museums and galleries, including alternative spaces and art-related government agencies.

### Bachelor of Art with a Concentration in Photography

The BA Art degree with a Concentration in Photography prepares students for work as exhibiting fine art photographers commercial photographers, photojournalists, teaching and photography instructors, and as artists working with agencies that utilize and promote photography.

### Bachelor of Art with a Concentration in Graphic Design

This degree prepares students for work as professional print and web designers. The curriculum helps students to develop the knowledge, skills, and portfolio for professional design positions in commercial institutions, design studios, and government agencies.

**Program Admission Statement**
To be admitted to the Art Program at UDC, students must apply to the University and enroll under the degree program. At the completion of the first 60 credit hours (sophomore standing), students must apply to continue in the Art Program for the Junior and Senior years of study. At that time, students will provide a written request to the Art Program coordinator and complete the required Art Program Junior-level application, which includes a portfolio.

**Graduation Credit Hours**
The Bachelor of Arts in Art (with a Studio Art, Photography, or Graphic Design concentration) requires 120 credit hours.

**Student Organizations**
Art Student Union & UDC
Photo Club

Required IGED Courses for **all** Art Program BA degrees regardless of concentration: **Refer to IGED Table and Substitutions (37 Credits).**

**Required Courses for B.A. Art**
**Studio Art Concentration (83 credits total)**

**Required studio courses in the major (63 credits):**
ARTD – 105 Foundations of Design
ARTS – 101 Introduction to Drawing
GRCT – 109 Digital Applications
ARTS – 115 Visual Thinking
ARTS – 102 Figure Drawing
ARTS – 145 Basic Photography
ARTS – 231 Introduction to Painting
ARTS – 261 Introduction to Ceramics
ARTD – 124 Computer Art
ARTS – 241 Introduction to Printmaking
ARTS – 251 Introduction to Sculpture
ARTD – 201 Computer Illustration
ARTS – 331 Advanced Painting
ARTS – 380 Illustration Techniques
ARTS – 217 Color Theory & Practice
ARTS – 305 Advanced Figure Drawing
ARTS – 341 Advanced Printmaking
ARTS – 480 Interdisciplinary Art I
ARTS – 460 Video for the Arts
ARTS – 481 Interdisciplinary Art II
ARTS – 490 Senior Portfolio

**Required art history courses (6 credits):**
ARTS – 281 World Art History: Ancient to Renaissance
ARTS – 282 World Art History: Renaissance to Contemporary

In addition to the above requirements, students pursing the Studio Art Concentration must also complete 6 credits in Studio Art electives, 6 credits in an Art History electives, and 2 open elective credits.

## B.A. Art: Photography Concentration (83 credits total)

**Required studio courses in the major (63 credits):**
ARTD – 105 Foundations of Design
ARTS – 101 Introduction to Drawing
GRCT – 109 Digital Applications
ARTD – 115 Visual Thinking
ARTS – 145 Basic Photography
ARTD – 124 Computer Art
ARTS – 231 Introduction to Painting
ARTS – 206 Intermediate Photography I: Portrait Photography
ARTS –209 Intermediate Photography II: Fine Art Photography
ARTS – 260 Digital Photography
ARTS – 240 Photojournalism
ARTS – 354 Photographic Lighting
DIGM – 300 300-level Digital Media course
ARTS – 217 Color Theory & Practice
ARTS – 364 Advanced Photographic Lighting
ARTS – 473 Advanced Photography I
ARTS – 480 Interdisciplinary Art I
ARTS – 460 Video for the Arts
ARTS – 474 Advanced Photography II
ARTS – 481 Interdisciplinary Art II
ARTS – 477 Senior Portfolio

**Required art history courses (9 credits):**
ARTS – 280 History of Photography
ARTS – 281 World Art History: Ancient to Renaissance
ARTS – 282 World Art History: Renaissance to Contemporary

In addition to the above listed requirements, students pursing the B.A. Art – Photography Concentration must also complete 6 credits in Studio Art electives, 3 credits in an Art History electives, and 2 open elective credits.

## B.A. Art: Graphic design concentration (83 credits total)

**Required studio courses in the major (69 credits):**
ARTD – 105 Foundations of Design
ARTS – 101 Introduction to Drawing
GRCT – 109 Digital Applications
ARTD – 124 Computer Art
ARTS – 145 Basic Photography
ARTS – 115 Visual Thinking
GRCT - 107/108 Desktop Publishing (3 cr. Total)
ARTD – 113 Graphic Design I
ARTD – 201 Computer Illustration
ARTD – 126 Typography
GRCT - 113/114 Digital Imaging (3 cr. Total)
ARTD – 213 Publication Design
ARTD – 207 Web Design I
ARTS – 102 Figure Drawing
ARTS – 231 Introduction to Painting
ARTS – 303 Animation I
ARTD – 212 Graphic Design II
ARTD – 310 Applied Typography
ARTS – 409 Animation II
ARTS – 380 Illustration Techniques
ARTD – 470 Advanced Web Design
ARTD – 494 Graphic Design Practicum
ARTS – 490 Senior Portfolio

**Required art history courses in the major (9 credits):**
ARTD – 208 History of Graphic Design
ARTS – 281 World Art History: Ancient to Renaissance
ARTS – 282 World Art History: Renaissance to Contemporary

In addition to the above listed requirements, students pursing the B.A. Art – Graphic Design Concentration must also complete 3 credits in an Art History electives, and 2 open elective credits.

## COURSE DESCRIPTIONS: ART PROGRAM and GRAPHIC DESIGN (ARTS) (ARTD)

**ARTS 101 Introduction to Drawing (3)**
Analyzes and explores basic drawing techniques. Traditional media is used to create still life, landscape, and perspective drawings. Emphasis is on representational visual interpretation of forms in the environment through the use of contour line and various shading techniques. Studio course.

**ARTS 102 Figure Drawing (3)**
Explores drawing through the study of the human figure using a variety of media. Covers portraiture, gestural studies, and working from plaster casts and from the live model. Prerequisite: ARTS 101 or permission of instructor. Studio course.

**ARTS 115 Visual Thinking (3)**
Introduces the concept of visual thinking and the development of *visual literacy* as it applies to communication design and the fine arts. This is an idea-oriented course designed to help students solve visual and artistic problems through invention and interpretation. Emphasis is placed on imagination and experimentation with concepts and ideas, as well as exploring approaches to art and design. Value is placed both on individual problem solving as well as working in groups to produce creative work. Lecture course with studio projects required.

**ARTS 145 Basic Photography (3)**
Introduces the use of black and white photography as both a graphics and fine arts medium. Explores the use of the adjustable camera, the development of the negative, and the production of the photographic print. Students study aspects of composition, lighting, camera settings, and dark room processing. A 35mm camera is required for the course. Studio course.

**ARTS 184 Fundamentals of Art Appreciation (3)**
Presents basic tools for understanding and discussing visual expression from a variety of perspectives. Explores art and design theory, history, and media with reference to social context*Writing Intensive lecture course which includes assigned readings and requires field trips.

**ARTS 206 Intermediate Photography (3)**
Focuses on developing skills and artistic vision through creative photographic assignments. Students develop film and print photographs in a darkroom setting, and participate in critiques. This course develops knowledge of the aesthetics of fine art photography while exploring techniques of camera operation, photographic chemistry, and film quality. Prerequisite: ARTS145 or permission of the instructor.

**ARTS 208 Film Photography and Wet Processing (3)**
Explores traditional and experimental darkroom developing techniques. Students explore the possibilities of darkroom wet processing and its effects using filters and various photographic papers. Prerequisite: ARTS 145 or permission of instructor. Studio course.

**ARTS 231 Introduction to Painting (3)**
Introduces techniques and theory of working in oil, watercolor, gouache, and acrylic paints. Students explore a variety of techniques in creative painting. Covers representational painting, abstract approaches, and color theory. Prerequisite: ARTD105, ARTS 101 or permission of instructor. Studio course.

**ARTS 240 Photojournalism (3)**
Students will use the camera to create socially current images, as well as visual narratives documenting a variety of events and situations. Also, students will learn the essentials of how picture editing can support or help craft the story. Prerequisite: ARTS145 or permission of instructor. Studio course.

**ARTS 241 Introduction to Printmaking (3)**
Explores the fundamentals of fine art printmaking through a variety of techniques and media, with emphasis on relief and intaglio processes such as woodcut, linoleum cut, dry point, and calligraphy. Prerequisite: ARTD105, ARTS101, or permission of instructor. Studio course.

**ARTS 245 Visual Communication Photography (3)**
Introduces photographic processes used in advertising, illustration, editorial and fashion photography. Emphasizes studio concepts in photography as a visual communication tool. Students learn the elements of small, medium, and large format camera work. Prerequisite: ARTS145 or permission of instructor. Studio course.

**ARTS 247 Digital Photography (3)**
Introduces the basic principles and concepts of digital photography, including composite imaging and digital darkroom techniques. Students learn to use the manual settings of a digital camera to create a variety of photographic effects such as black and white and color images using the digital camera. are introduced. Prerequisite: ARTS145 or permission of instructor. Studio course.

**ARTS 251 Introduction to Sculpture (3)**
Explores basic sculpture materials and methods. Students create original sculptural artworks. Examines additive and subtractive methods of sculpture as students learn the physical and aesthetic qualities of working three dimensionally. Focuses on representational and abstract forms. Includes studio intensive work, readings, and field trips. Involves use of mechanical equipment and power tools in the studio workspace. Prerequisite: ARTD105, or permission of instructor. Studio course.

**ARTS 261 Introduction to Ceramics (3)**
Introduces students to the practice of ceramics techniques. Students learn about the physical structure and aesthetic properties of ceramic art using three-dimensional building approaches. Focus is on both functional and decorative forms. Prerequisite: ARTD105 or permission of instructor. Studio course.

**ARTS 280 (3)**
History of Surveys the development of photography from the inception of daguerreotypes through the development of digital image-making. Examines the impact of photography on culture by learning of the medium's influence on society and the arts. Course involves a substantial amount of independent reading and study.. Lecture course, field trips required.

**ARTS 281 World Art History: Ancient to Renaissance (3)**
Chronological survey of art and visual expression across cultures. Emphasizes processes and purposes of creating and the role of the creator in an historical and cultural

context from prehistory to c. 1400. Lecture course requiring field trips.

**ARTS 282 World Art History II: Renaissance to Contemporary (3)**
Continues the chronological survey of art and visual expression across cultures. Emphasizes processes and purposes of creating and the role of the creator in an historical and cultural context from c. 1400 to the present. Lecture course requiring field trips

**ARTS 285 African-American Art History (3)**
Provides an historical survey of African-American art and its global influence. Emphasizes social and historical context of art created by and for the African-American community. Lecture course requiring field trips.

**ARTS 288 Multicultural Traditions in American Art(3)**
Examines the contributions of American artists from various cultural, ethnic, and social minority traditions that are often neglected in traditional art history courses. Prerequisite: none. Lecture course, field trips required.

**ARTS 294 Directed Studies (3)**
Provides a structure for independent studio work at the sophomore level under the close supervision and direction of an art faculty member. Also provides independent studio time equal to the amount of time required for all three-credit studio courses. Requires weekly conferences with instructor. Prerequisite: ARTD105, ARTS101 and permission of Department Chair. Studio course.

**ARTS 294 Intermediate Photography: Portrait Photography (3)**
Introduces o the fundamentals of creating portraits using the camera. Students learn the qualities of effective portrait compositions while working in a studio environment. Additional topics explored include lighting, posing, expression, make-up, wardrobe, and cropping images. Prerequisite: ARTS145 or permission of the instructor. Studio course.

**ARTS 296 Intermediate Digital Photography (3)**
Students utilize digital camera technology to produce a portfolio of works around a theme. Advanced digital darkroom techniques are explored. Explores black and white and color image creation as the student develops a unified body of work. Prerequisite: ARTS247 or permission of the instructor. Studio course.

**ARTS 303 Animation I and Multimedia (3)**
Introduces students to basic fundamentals of creating animation. Explores how to convert scripts to visuals, how to create storyboards, invent characters, and design backgrounds. Includes basic concepts such as designing key frames, developing character movement, and managing visual rhythm in animated film. Prerequisite: ARTS101, GRCT109, or permission of instructor. Digital studio course.

**ARTS 305 Advanced Figure Drawing (3)**
Focuses on intensive study of the human figure, with particular emphasis upon muscular, skeletal, and surface anatomy. Students draw directly from draped and undraped figures, the skeletons, and plaster casts to create drawings as finished statements using the figure as the primary subject. Explores expressive drawing techniques using mixed media. Prerequisite: ARTS 102. Studio course.

**ARTS 331 Advanced Painting (3)**
Continues exploration of techniques presented in Introduction to Painting with focus on study of a specific medium, including watercolor, oil, gouache, acrylic, or mixed media techniques. Prerequisite: ARTS 231 or permission of instructor. Studio course.

**ARTS334 Portrait Painting (3)**
Focuses on developing the skills of portrait painting through the study of the human form, facial expression, and variations in human physical appearance. Uses various painting media. Prerequisite: ARTS102, ARTS231, or permission of instructor. Studio course.

**ARTS 341 Advanced Printmaking (3)**
Continues exploration of printmaking techniques with focus on study of a specific medium such as relief printing, collagraphy, or monoprinting. Students will develop a cohesive portfolio of works exploring a common theme and technique. Explores contemporary and experimental printmaking techniques, including mixed media and use of new technologies. Prerequisite: ARTS 241 or permission of instructor. Studio course

**ARTS 350 Advertising and Publication Photography (3)**
Involves an advanced study of the techniques and business practices for advertising and commercial photography. Topics include location lighting, location portraits, product and food photography, marketing, salesmanship, and working with commercial clients. Prerequisite: ARTS294 or permission of instructor. Studio course.

**ARTS 354 Photographic Lighting (3)**
Explores the use of contemporary photographic lighting theory sing studio and natural lighting to achieve a variety of effects while generating successful photographic images. . Prerequisite: ARTS145 or permission of instructor. Studio course.

**ARTS 387 Contemporary World Art (3)**
Examines visual expressions of the world, including painting, sculpture, architecture, and other forms created from the 20th Century to contemporary times presented in cultural and historical contexts. Prerequisite: none. Lecture course which involves field trips.

**ARTS 394 Directed Studies (3)**
Provides an opportunity for independent studio work at the junior level under the close supervision and direction of an art faculty member. Independent studio time is equal to the amount required of all three-credit studio courses. Requires weekly conferences with instructor. Prerequisite: 200-level series of classes and permission of the Department Chair. Studio course.

**ARTS 394 Illustration Techniques (3)**
Explores visual style, narrative, and communication in traditional and experimental media and techniques used for illustration. Students will develop compositional strategies for a variety of black-and-white and color illustrations, integrating text and image. . Students work on concept development, gathering visual reference, and the use of craft in making intellectually and aesthetically pleasing images. Prerequisite: ARTS101, ARTS102, or permission of the instructor. Studio course.

**ARTS 409 Animation II (3)**
Examines advanced animation techniques Develops varieties in character design, body language, . visual timing, scene editing, and project workflow. Students collaborate on animation in a group workshop setting. Prerequisite: ARTS102, ARTS303, or permission of instructor. Digital studio course.

**ARTS 411 Package and 3D Graphic Design (3)**
Explores advanced three-dimensional concepts as applied to package design, exhibit design, and other 3-D commercial formats. Covers traditional and computer-aided design techniques, and reviews graphic design software, utilizing concepts of color, type, presentation methods, and spatial design. Prerequisite: ARTD310 or permission of instructor. Digital studio course.

**ARTS 435 Mural Painting (3)**
Covers the process of mural painting on interior and exterior surfaces and its use as a mode of personal expression and as a communication tool for the community. Students work both individually and in supervised groups to create finished mural artwork. Prerequisite: Introduction to Painting or permission of instructor. Studio course involves field trips and off-campus art making.

**ARTS 474 Advanced Photography (3)**
This course is meant for students who have completed the majority of their photographic coursework and are ready to build a final portfolio of photographic work. Students will explore a subject, equipment and materials, and professional presentation of their choice to produce a unified portfolio of their own images with which to represent their work as a professional photographer. Prerequisite: ARTS206, ARTS294; or permission of instructor. Studio course.

**ARTS 472 Senior Portfolio (3)**
A senior capstone course for art, graphic design, and photography students. The creative output of each student is edited and revised for consideration in a final working portfolio. Students revise their résumés and develop a complete physical and digital portfolio of works to show to prospective clients and art buyers. Prerequisite: Senior standing. Studio course with writing involved.

**ARTS 477 Independent Study in Art (3)**
Provides independent study under the direction and supervision of art faculty. Offers the advanced student an in-depth study of the area of specialization. Prerequisite: Completion of all 300-level studio courses in area of specialization and permission of Department Chair. Studio course.

**ARTS 478 Photography Portfolio Seminar (3)**
Senior capstone course for photography students, who will revise their résumés and organize a complete portfolio of photographic works to show to prospective clients and art buyers. Focuses on preparing students for the photography market through portfolio preparation and presentation. Covers career guidelines, job pricing, and marketing tips Requires portfolio review and a résumé Prerequisite: Completion of all 300-level photography courses. Studio course.

**ARTS 480 Interdisciplinary Art I (3)**
Explores the boundaries between art and community, including (but not limited to) art and anthropology, art and politics, art and sociology, and art and narrative. Students will learn about the integration of form and content while creating artwork using two-dimensional, three-dimensional, digital and time-based techniques. . Prerequisite: completion of all 300-level studio and art history courses. Lecture course which requires field trips and studio projects .

**ARTS 481 Interdisciplinary Art II (3)**
Exposes students to collaborative art processes, the exploration of cultural identity through art, and the making of art within contemporary social contexts. Focuses on gathering visual data, refining art content, and honing craftsmanship. Using various art media, students will

perform media experiments and develop artwork in a studio setting as they integrate the procedures, materials and discourses of differing art disciplines. Prerequisite: completion of all 300-level studio and art history courses. Lecture course which requires field trips and studio projects.

**ARTS 490 Radical Image (3)**
Exposes students to a history of the radical image through filmmaking, video arts, photography and digital art. Lectures explore theories relating to surrealism, hyperrealism, magical realism, and gender, identity, and race deconstruction. Lecture course, field trips required.

## GRAPHIC DESIGN (ARTD)

**ARTD 105 Foundations of Design (3)**
Introduces students to the elements of visual art and design including the principles of aesthetics as they explore various solutions to design problems. Examines the design principles of line, shape, value, and texture, along with an introduction to color theory. Focuses on developing design skills as a means to communicate thoughts, ideas, and messages. Studio course.

**ARTD 113 Graphic Design I (3**)
Examines composition, communication through word and image, typographic layout, and use of color in design. Explores how page layout and spatial organization form the foundation for solving graphic design challenges. Students apply basic design concepts to a variety of graphic formats to produce works of graphic design such as posters, business communications, and other related graphics, for presentation via print and digital media Studio course. Prerequisite: ARTD105; GRCT109 or permission of instructor. Digital studio course.

**ARTD 124 Computer Art (3)**
Introduces the concept of creating and producing art using the computer as a creative tool. Explores digital design in a studio atmosphere where students learn digital image development and manipulation while exploring conceptual ideas and compositional strategies. Focuses on raster-based image programs such as Photoshop, and the creation of art by utilizing image-building software programs. Prerequisite: ARTD105, GRCT109. Digital studio course.

**ARTD 126 Typography (3)**
Surveys the type used as a graphic design element. Explores typographic design through the creation of letterforms, the use of traditional and contemporary fonts, and the creation of effective page layouts using type. Combines technical aspects and rules of traditional typesetting with the aesthetics of creative typography. Prerequisite: ARTD 105, GRCT 109 or permission of instructor. Digital studio course.

**ARTD 201 Computer Illustration (3)**
Focuses on developing vector-based drawing skills as students continue to develop conceptual solutions for effective illustration. Students learn the fundamentals of digital image building techniques that are applied in visual communications as well as how to use digital toolboxes to produce illustrations and logo design. Prerequisite: ARTD 105, GRCT 109. Digital studio course.

**ARTD 207 Web Design (3)**
Students develop an understanding of web structures as they apply graphic design concepts to web page and site design, with the goal of creating a comprehensive, integrated web site. Explores the use of type design, page flow, image placement, and hyperlinks. Course utilizes web authoring software. Prerequisite: ARTD112, GRCT109, or permission of instructor. Digital studio course.

**ARTD 208 History of Graphic Design (3)**
Surveys the development of the graphic arts (design, typography, illustration, photography, film, industrial design, architecture, and electronic media) in world culture through history. Explores visual communication from the earliest days of civilization through the rise of industrialism and into the current era. Course includes extensive independent reading and study Lecture course which require, field trips.

**ARTD 212 Graphic Design II (3)**
Applies advanced design concepts to various communication formats. Students apply concepts to web, publication, and promotion graphics through assignments which address the development of visual identity systems packaging design, and advanced communication design problems. Prerequisite: ARTD112 or permission of the instructor. Digital studio course.

**ARTD 213 Publication Design (3)**
Explores copy fitting, text and image flow, and visual design identity. Covers concepts in publication design for circulated printed media including the core concepts of page layout for brochures, newsletters, magazines, annual reports, and other printed materials. Prerequisite: ARTD112 or ARTD126 or permission of instructor. Digital studio course.

**ARTD 275Portfolio and Marketing Workshop (3)**
Focuses on preparing students for the job market through portfolio preparation and presentation. Covers career guidelines, job pricing, and marketing tips. Students prepare portfolios by revising and reworking design projects, or creating new assignments. Requires portfolio review and

résumé. Prerequisite: Sophomore standing. Studio course with writing involved.

**ARTD 411 Package and 3D Graphic Design (3)**
Explores advanced three-dimensional concepts as applied to package design, exhibit design, and other 3-D commercial formats. Covers traditional and computer-aided design techniques, and reviews graphic design software, utilizing concepts of color, type, presentation methods, and spatial design. Prerequisite: ARTD212 or permission of instructor. Digital studio course.

**ARTD 494 Graphic Design Practicum (3)**
Prepares students for the professional graphic design field by providing assignments for a local client. Students will explore collaboration with an art director and other designers while completing group projects. In a design studio environment, students will respond to client concerns, deadlines, and project revisions. Also, they. may explore intern/apprenticeship experiences with local design studios for the semester to gain first-hand experience in the graphic design field. Prerequisite: ARTD212 or permission of instructor. Studio course.

## English (BA)

The Bachelor of Arts in English broadens and deepens students' understanding of language and literature and develops skills in analysis, research, and writing. To meet these objectives, the program offers a variety of courses in language and in literature (arranged by area, period, genre, movement, or special topic). Career opportunities for English majors are many and varied. The English major prepares students for teaching (at the secondary level) and is an appropriate baccalaureate preparation for careers in law, medicine, business, and government.

Prospective majors are expected to earn grades of "B" or higher in composition and literature courses and should declare a major in English before taking ENGL 213. The Program encourages English majors to maintain a GPA of at least 3.0; the required minimum GPA is 2.5. A grade of "B" or higher is required in ENGL 213, and the course may be repeated once. A minimum grade of "C" is required in other English courses. A course may be retaken only once. On the recommendation of an English advisor, a student may be required to take additional courses. IGED 210 is a pre-requisite for all English courses. ENGL 213 is a pre-requisite for all literature-based English courses.

**Student Organization**
Sigma Tau Delta International English Honor Society-Alpha Epsilon Rho Chapter
Literature Club

**Graduation Credit Hours**
The bachelor's degree in English requires a minimum of 120 credit hours, including specific courses identified in the program of study and the applicable General Education requirements.

**Residency Requirements**
The Program requires that all majors complete at least 21 of the required 42 credit hours in residence at the University. ENGL 213 must be completed on campus, and no transfer credits will be accepted for this course.

**GPA Statement**
Students must earn a grade of B or higher in ENGL-213, Introduction to Critical Writing, to become an English major and then maintain a GPA of 2.5 and a minimum grade of "C" in all required English Major courses.

**IGED Requirements (37 credits) (See IGED Table of Substitutions)**

**Required English Core Courses (30 credits)**
ENGL 213 Introduction to Critical Writing (3)
ENGL 314 The Structure of English (3)
or
ENGL 316 Advanced Grammar (3)
ENGL 330 Major British Authors (3)
ENGL 317 Writing for the Web (3)
or
ENGL 472 Technical Writing (3)
ENGL 351 Major American Authors (3)
ENGL 354 African-American Literature (3)
ENGL 439 Shakespeare (3)
ENGL 467 Principles of Literary Criticism I (3)
or
ENGL 468 Principles of Literary Criticism II (3)
ENGL 480 English Thesis (Capstone) (3)
ENGL 485 Internship for English Majors (3)

**Required English Electives (12)**
At least 3 at the 300 level or higher
Writing Intensive Course (ENGL 213) (3)

**Required General Electives (38 Credits)**
**Total Credit Hours: 120**

## COURSE DESCRIPTIONS: ENGLISH (ENGL)

**ENGL213 Introduction to Critical Writing (3)**
Enables the student to write about literature through the study of four genres. Introduces critical terms, approaches, and methods. Prereq.: IGED 210.
**ENG 215 Creative Writing (3)**

Introduces creative writing, including the short story, poetry, drama, and novel. Prereq.: ENGL 112.

**ENGL216 Words in Context (3)**
Develops, through reading and writing, awareness of how differences in language use, form, and setting affect meaning; Assesses how context determines meaning of a passage. Prereq.: ENGL210.

**ENGL219 Advanced Writing (3)**
Focuses on advanced structural, rhetorical, and stylistic techniques in writing. Also emphasizes reading of selected texts. Prereq: ENGL210.

**ENGL290 Topics in Literature (3)**
Offers in-depth, seminar-style exploration of literary topics that vary to accommodate faculty and student interest in language and literature. Prereq.: ENGL112.

**ENGL314 Structure of English (3)**
Analyzes the phonological, morphological, syntactic, and semantic structures of English using modern linguistic techniques. Emphasizes linguistic approaches to the study of grammar. Prereq: ENGL 212.

**ENGL315 History of the English Language (3)**
Analyzes the history and structure of Old, Middle, and Modern English, including dialects of Modern English. Emphasizes historical and cultural factors influencing linguistic development. Prereq.: ENGL 212.

**ENGL316-Advanced Grammar (3)**
Presents the history of grammatical study and surveys modern grammar and current usage. Covers descriptive English grammar. Prereq: ENGL 212.

**ENGL330 Major British Authors (3)**
Examines British literary works and movements from Beowulf through the contemporary period. Courses may be designed by theme or era and concentrate on the historical development of forms and modes through the analysis of major British authors.

**ENGL351 Major American Authors (3)**
Examines American literary works and movements from pre-contact Native texts and early seventeenth-century Colonial writing through the contemporary period. Courses may be designed by theme or era and concentrate on the historical development of forms and modes through the analysis of major American authors.

**ENGL354 African-American Literature**
Surveys African-American literature to the eighteenth century.

**ENGL356 African Literature (3)**
Surveys the national literatures (in English and in English translation) of Africa. Examines prose models from classical Egypt to the post-independence period writers.

**ENGL358 Caribbean Literature (3)**
Studies major works of poetry, fiction, and drama from the English, French, and Spanish Caribbean, by Cesaire, Guillen, Walcott, Brathwaite, Naipaul, Lamming, Carpentier, Roumain, and others. Focuses on the theme of Caribbean identity.

**ENGL359 Special Topics in Caribbean Literature (3)**
Focuses on some facet of Caribbean literature for a semester; for example, the Caribbean novel, the works of a single author, or a major intellectual movement.

**ENGL437 Victorian Writers (3)**
Studies poetry and non-fictional prose from 1832 to the twentieth century. Emphasizes major Victorian poets and essayists.

**ENGL438 English Novel (3)**
Studies the development of the novel from its beginning to the twentieth century. Emphasizes representative novels from Defoe to the present.

**ENGL439 Shakespeare (3)**
Studies selected plays (histories, comedies, and tragedies) and sonnets. Introduces conventions of the Elizabethan theater, relevant social history, and Shakespeare scholarship.

**ENGL 454 American Novel (3)**
Surveys the American novel. Focuses on major novelists from Brown to Faulkner.

**ENGL455 African-American Fiction (3)**
Emphasizes critical analysis of major novels and selected short stories. Focuses on African-American writers since 1940.

**ENGL456 African-American Poetry (3)** Studies poetry by African-American writers. Examines early poetry in America; also emphasizes major

**ENGL467 Principles of Literary Criticism I (3)**
Analyzes literary and critical theory from the ancient to the eighteenth century.

**ENGL468 Principles of Literary Criticism II(3)**
Studies modern theories of literary criticism. Focuses on various approaches to evaluating and critical analyzing literature by applying theory to selected literary texts.

**ENGL470 Topics in Literature (3)**
Offers in-depth seminar-style exploration of topics, which vary to accommodate faculty and student interest in language and literature. Prereq.: ENGL213.

**ENGL 480 English Thesis (Capstone) (3)**
Students produce a substantive, original project by synthesizing skills, knowledge, and research- and critical methodologies developed within the English major. These projects should be tailored to students' individual interests and career aspirations and will be completed in various modes of writing and digital presentation.

**ENGL495 Independent Study (3)**
Provides for in-depth study or project with the guidance of an instructor. Approval of the Department chair is required. Prereq.: Junior standing and 2.8 cumulative GPA.

## Digital Media (BA)

The Digital Media program provides an evolving, state-of-the-art education in New Media, professional communication, and digital production and creates academic research and practical productions to engage in community outreach.

The program combines practical hands-on training and rigorous classroom scholarship, and project-based learning across multiple synchronized courses in the curriculum.

Community and public service is emphasized in all courses through relevant curricula and readings, real-world projects, individual engagement, external internships, and tracking into employment and beyond.

**Student Organizations**
Journalism Club
CineMedia Club
Student Documentarians

**Graduation Credit Hours**
This bachelor's degree program requires 121 credit hours, including specific courses identified in the program of study and the applicable General Education requirements. Each student will complete the core requirements and two concentrations. This allows flexibility the industry calls for and easier integration of transfer students. All students will be provisionally accepted into the Digital Media BA program. After completing 12-15 credit hours in the programs, students apply to **two concentrations**.

**GPA statement**
Digital Media students must achieve a minimum grade of "C" in all required courses in the program.

**Residency Statement**
Of the 121 credits needed for graduation, the following courses must be taken in residence at the University:

- DIGM 300 Portfolio Project
- DIGM 390 Internship
- DIGM 400 Convergent Media Seminar

In addition, the University confers the bachelor's degree upon students who complete the last 30 semester credit hours of study in residence at UDC. Students must complete all General Education requirements, as well as degree requirements, and attain a minimum cumulative grade point average of 2.00.

**Undergraduate Internships**
All students must complete a one-semester internship with a public or commercial media institution or an acceptable equivalent. To enroll in an internship course, a GPA of 3.0 or better is required and completion of a majority of major courses.

**IGED Requirements (37 credits) (See IGED Table and Substitutions)**

| **Required Core Courses Digital Media (33 Credits)** | |
|---|---|
| DIGM 100 | Communication Tools(3) |
| DIGM 101 | Media History and Literacy (3) |
| DIGM 105 | Digital Photography (3) |
| DIGM 110 | Foundations of Journalism (3) |
| DIGM 111 | Fundamentals of Video (3) |
| DIGM 200 | Media Ethics (3) |
| DIGM 210 | Strategic Communication (3) |
| DIGM 250 | Scriptwriting (3)* |
| DIGM 300 | Portfolio Project (3) |
| DIGM 390 | Internship (3) |
| DIGM 400 | Convergent Media Seminar (3) |
| *IGED writing-intensive course | |

| **Multimedia Journalism Concentration Requirements (18 Credits)** | |
|---|---|
| DIGM 201 | Copy Editing (3) |
| DIGM 212 | Reporting (3) |
| DIGM 202 | Digital Editing (3) |
| DIGM 230 | Magazine Writing (3) |
| DIGM 310 | Web Journalism (3) |
| DIGM 362 | Publication Lab (3) |

| **Broadcast Journalism Concentration Requirements (18 Credits)** | |
|---|---|
| DIGM 212 | Reporting (3) |
| DIGM 202 | Digital Editing (3) |
| DIGM 261 | Broadcast Journalism (3) |
| DIGM 303 | Field Reporting (3) |
| DIGM 310 | Web Journalism (3) |
| DIGM 361 | TV Show Lab (3) |

| Digital Video Production Concentration Requirements (18 Credits) | |
|---|---|
| DIGM 202 | Digital Editing (3) |
| DIGM 260 | Studio Production I (3) |
| DIGM 280 | Field Production I (3) |
| DIGM 360 | Studio Production II (3) |
| DIGM 380 | Field Production II (3) |
| DIGM 361 | TV Show Lab (3) |

| Documentary and Film Concentration Requirements (18 Credits) | |
|---|---|
| DIGM 112 | History of Cinema (3) |
| DIGM 202 | Digital Editing (3) |
| DIGM 280 | Field Production I (3) |
| DIGM 350 | Cinema and Film Techniques (3) |
| DIGM 380 | Field Production II (3) |
| DIGM 388 | Advanced Script Writing (3) |

**General Electives (15 credits)**
**Total: 121 credits**
**37 (IGED) + 33 (core) + 36 (two concentrations) + 15 (electives)**

## COURSE DESCRIPTIONS: DIGITAL MEDIA (DIGM)

**DIGM100 Communication Tools (3)**
This course focuses on public speaking including on-camera interviewing, panel debates, presentation software, and story structure. Coreq.: IGED 110 & IGED 130

**DIGM101 Media Literacy and History (3)**
Explores current elements of media literacy and surveys the history of media from literacy through print, broadcast and the Internet. Prereq.: IGED 111 & DIGM 100

**DIGM105 Digital Photography (3**)
This course focuses on theories of composition and staging, and digital image retouching and manipulation using industry-standard software packages. Pre-req.: none.

**DIGM110 Fundamentals of Journalism (3)**
This course provides an introduction to journalism with a focus on reporting, research, writing and current practices in convergent journalism. Prereq.: DIGM 100 & IGED 111

**DIGM111 Fundamentals of Video (3)**
Students engage in a video and podcasting "Bootcamp" with hands-on training in creation of professional short-form web videos using a variety of technology. Pre-req – DIGM 100 & DIGM 105

**DIGM112 History of Cinema (3)**
This course explores the history of American and World Cinema with a focus on the films that changed the methods of production and distribution of movies. Pre-req.: none.

**DIGM200 Media Ethics (3)**
Explores the application of ethical principles within the fields of media, journalism and communication. Prereq.: IGED 140 & DIGM 101

**DIGM 201 Copy Editing (3)**
Intermediate course that highlights the esthetics, best-practices and hands-on technical skills involved in the production of professional digital video and audio editing using industry-standard software packages. Pre-req.: DIGM 105, & DIGM 111

**DIGM202 Digital Editing (3)**
Intermediate course in the esthetics and practical applications of digital video and audio editing with Premiere Pro and Adobe Audition or other applicable software. Prereq: DIGM 111

**DIGM210 Strategic Communication (3)**
Applies knowledge of media writing and production to integrated marketing campaigns, advertising and P.R. Prereq.: DIGM 101 & DIGM 200

**DIGM212 Reporting (3)**
Newsgathering - research, fact checking, editing and photography - through beat reporting. Prereq.: DIGM 110 & IGED 111

**DIGM230 Magazine Writing (3)**
This intermediate course explores feature length, non-fiction writing for online and print publications. Prereq.: DIGM 110 & IGED 111

**DIGM250 Scriptwriting (3)**
This course addresses the application of skills in research and writing in digital media to multiple formats. Writing-Intensive course for IGED program. Pre-req.: DIGM 101 & IGED 210

**DIGM260 Studio Production (3)**
Intermediate course in production skills in live studio production environment with a focus on time management and teamwork. Prereq.: DIGM 111 & ARTS 274

**DIGM261 Broadcast Journalism (3)**
This course is an introduction to broadcast journalism with an emphasis on local TV news. Focus on DSLR camera use and reporting, shooting, writing, and editing video news stories. Pre-req.: DIGM 212 & DIGM 202

**DIGM 270 Directed Study in Digital Media (3)**
This intermediate course provides opportunities for structured interactions between faculty and students for course-based student production(s). Pre-req.: Student must have >9 credit hours in program and > 30 credit hours total.

**DIGM280 Field Production (3)**
Intermediate course in production skills for on-location environment with a focus on single-camera DSLR production and audio. Prereq.: DIGM 111 & DIGM 105

**DIGM300 Portfolio Project (3)**
This course focuses on creating and editing student media work for inclusion in ePortfolios and demo reels using industry-standard software packages. Pre-req.: DIGM 111 & DIGM 250

**DIGM303 Field Reporting (3)**
This intermediate broadcast journalism class focuses on storytelling outside of the classroom and "in the field" with an emphasis on newsgathering and reporting on location. Pre-req.: DIGM 212 & DIGM 261

**DIGM310 Web Journalism (3)**
Introduction to creating content and using the tools required to report, write and shoot for online media. Prereq.: DIGM 212 & DIGM 202

**DIGM350 Cinema and Film Techniques (3)**
This advanced course explores connections between traditional film esthetics, evolving digital production techniques and hardware and business models of digital distribution and marketing. Pre-req.: DIGM 111, DIGM 202 & DIGM 250

**DIGM360 Studio Production II (3)**
Advanced practicum focused on behind-the-camera production of student-created newscasts, panel discussions and live TV production. Prereq.: DIGM 260

**DIGM361 TV Show Lab (3)**
A senior capstone course with a focus on creating a newscast -producing, staffing and hosting a newsmagazine show for broadcast on UDC's higher education access cable channel 98 and online distribution. DIGM 212, DIGM 202, DIGM 260 (production concentration) & DIGM 261

**DIGM362 Publication Lab (3)**
Senior capstone course focusing on creating an online news publication, The Free Voice. Pre-req. DIGM 202, DIGM 202 & DIGM 212

**DIGM 370 Special Topics in Digital Media (3)**
Advanced course focusing on cutting-edge topics in digital media guided by program faculty, working professionals and industry-leaders. Pre-req.: Students must have >12 credit hours in program and > 45 credit hours total

**DIGM380 Field Production II (3)**
Advanced practicum focused on production and editing of student documentaries, work with advocacy groups and local businesses. Prereq.: DIGM 280

**DIGM388 Advanced Scriptwriting (3)**
Advanced writing to specific formats and narratives for media productions. Prereq.: DIGM 250 & IGED 210

**DIGM390 Internship (3)**
Supervised students work at professional media organizations applying existing skills (approx. 150 contact hours across 16 wks) with on-site visits.

**DIGM400 Convergent Media Seminar (3)**
Advanced course for review and reflection on skills, knowledge and attitudes of a professional media creator and communicator. Pre-req.: DIGM 111, DIGM 250

**DIGM 470 Independent Study in Digital Media (3)**
Advanced course that provides structured interactions between faculty and students for continuing coursework. Pre-req .: Students must have >15 credit hours in program and > 60 credit hours total.

## Music Program (BM) in Music Performance or Music Education

The Music Program provides specialized professional training to prepare students as performers, teachers and as creative individuals in the field of music. The program offers a diverse curriculum, general courses for cultural enrichment, and a variety of performing opportunities in an environment that allows for personal growth. The Bachelor of Music degree is offered in two options:

1) The Bachelor of Music – Music Performance degree offers five areas of concentration:
    - Gospel Music
    - Jazz Studies
    - Keyboard
    - Instrumental
    - Voice

All concentrations within this four-year degree program prepare students for performing careers and for graduate study in performance, pedagogy and related areas.

2) The Bachelor of Music – Music Education degree (pre-certification) offers four areas of concentration:
   - Instrumental
   - Keyboard/instrumental
   - Keyboard/vocal
   - Vocal music education

The program prepares students for teaching careers and is designed for students intending to complete additional requirements for K-12 teacher certification or in anticipation of enrollment in the Master of Arts in Teaching program (MAT).

**Admission Statement**
To be admitted to any of the degree programs, students must apply to the Music Program, audition in their performance area(s), and pass the Music program's placement examinations.

**Student Organizations**
Music Student Senate, UDC Chorale (Organization), UDC Voices (Organization), and MENC Student Chapter (Music Educators National Conference)

**Graduation Credit Hours**
This Bachelor's degree program requires the fulfillment of 125 credit hours, including specific courses identified in the program of study and the applicable General Education requirements. Only College-level courses numbered 100 and above are counted in the GPA and total credits earned. In other words, developmental courses, those numbering below 100 (ex. 015 or 004), are not counted in the GPA* or in the total credits earned. Exclusion of these courses happens upon application for graduation. All excluded courses are identified on the transcripts with an "E".

*Exception: All MUSC courses numbered below 100 (ex. 010 or 020) are counted in the GPA and in the total credit hours earned for non-music majors. Only MUSC ensemble courses numbered below 100 (ex. 025 or 086) are counted in the GPA and in the total credit hours earned for music majors.

**GPA statement**
A grade point average of 2.0 is required for all music courses and 3.0 for all applied major courses.

**Comments for Majors in Bachelor of Music – Music Performance**
A recital in the junior and senior year is required. The student must complete the appropriate 400-level applied major course each fall and spring until the senior recital is performed and accepted.

**Required Courses**
Required IGED Courses (37 Credits)

**Music Performance: Gospel Music Concentration**
**Required Courses (88)**
For Model Plan of Study: Gospel Music Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 103 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 181 | Gospel Music Improvisation I | 1 |
| MUSC 181 | Gospel Music Improvisation I | 1 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 281 | Gospel Music Improvisation II | 1 |
| MUSC 281 | Gospel Music Improvisation II | 1 |
| MUSC 290 | Keyboard Harmony I | 1 |
| MUSC 291 | Keyboard Harmony II | 1 |
| MUSC 372 | Choral Conducting | 3 |
| MUSC 381 | Gospel Music Improvisation III | 1 |
| MUSC 381 | Gospel Music Improvisation III | 1 |
| MUSC 382 | Gospel Arranging I | 2 |
| MUSC 383 | Gospel Arranging II | 2 |
| MUSC 384 | History and Aesthetics of Gospel Music I | 2 |
| MUSC 385 | History and Aesthetics of Gospel Music II | 2 |
| MUSC 386 | Principles of Gospel Music Pedagogy | 2 |
| MUSC 410 | BM Seminar | 2 |
| MUSC 481 | Gospel Music Improvisation IV | 1 |
| MUSC 481 | Gospel Music Improvisation I | 1 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 6 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

**Applied Major (16)**
*Select on the the following sequences:*
Applied Major Keyboard
MUSC 115, 115, 215, 215, 315, 315, 415, 415
Applied Major Voice
MUSC 125, 125, 225, 225, 325, 325, 425, 425
Applied Major Instrument
MUSC 135, 135, 235, 235, 335, 335, 435, 435

**Applied Minor (4)**
*If Applied Major Voice or Applied Major Instrument is selected:*
Applied Minor Keyboard: MUSC 116, 116, 216, 216

*If Applied Major Keyboard is selected, select one of the following three sequences:*
Applied Minor Keyboard: MUSC 116, 116, 216, 216
Applied Minor Voice: MUSC 126, 126, 226, 226
Applied Minor Instrument: MUSC 136, 136, 236, 236

**Music Performance: Jazz Studies Concentration Required Courses (88)**
For Model Plan of Study: Jazz Studies Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 103 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 107 | Jazz History | 3 |
| MUSC 130 | Jazz Improvisation I | 1 |
| MUSC 130 | Jazz Improvisation I | 1 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 230 | Jazz Improvisation II | 1 |
| MUSC 230 | Jazz Improvisation II | 1 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 271 | Computer Applications to Music II | 3 |
| MUSC 330 | Jazz Improvisation III | 1 |
| MUSC 330 | Jazz Improvisation III | 1 |
| MUSC 331 | Jazz Arranging I | 2 |
| MUSC 332 | Jazz Arranging II | 2 |
| MUSC 374 | Instrumental Conducting | 3 |
| MUSC 410 | BM Seminar | 2 |
| MUSC 430 | Jazz Improvisation IV | 1 |
| MUSC 430 | Jazz Improvisation IV | 1 |
| MUSC 431 | Jazz Composition and Advanced Arranging | 2 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 6 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

**Applied Major (16)**
*Select on the the following sequences:*
Applied Major Keyboard
MUSC 115, 115, 215, 215, 315, 315, 415, 415
Applied Major Voice
MUSC 125, 125, 225, 225, 325, 325, 425, 425
Applied Major Instrument
MUSC 135, 135, 235, 235, 335, 335, 435, 435

**Applied Minor (4)**
*If Applied Major Voice or Applied Major Instrument is selected:*
Applied Minor Keyboard: MUSC 116, 116, 216, 216

*If Applied Major Keyboard is selected, select one of the following three sequences:*
Applied Minor Keyboard: MUSC 116, 116, 216, 216
Applied Minor Voice: MUSC 126, 126, 226, 226
Applied Minor Instrument: MUSC 136, 136, 236, 236

**Music Performance: Keyboard Concentration Required Courses (88)**
For Model Plan of Study: Keyboard Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 102 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 115 | Applied Major Keyboard | 2 |
| MUSC 115 | Applied Major Keyboard | 2 |
| MUSC 119 | Piano Sight-Reading | 1 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 215 | Applied Major Keyboard | 2 |
| MUSC 215 | Applied Major Keyboard | 2 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 290 | Keyboard Harmony I | 1 |
| MUSC 291 | Keyboard Harmony II | 1 |
| MUSC 300 | History of Western Music I | 3 |
| MUSC 301 | History of Western Music II | 3 |
| MUSC 315 | Applied Major Keyboard | 2 |
| MUSC 315 | Applied Major Keyboard | 2 |
| MUSC 318 | Ensemble Accompanying | 2 |
| MUSC 372 | Choral Conducting or | 3 |
| MUSC 374 | Instrumental Conducting | |
| MUSC 391 | Form and Analysis II | 2 |
| MUSC 392 | Orchestration I or | 2 |
| MUSC 307 | Vocal Arranging | |
| MUSC 397 | Counterpoint II | 2 |
| MUSC 410 | BM Seminar | 2 |
| MUSC 415 | Applied Major Keyboard | 2 |
| MUSC 415 | Applied Major Keyboard | 2 |
| MUSC 418 | Piano Literature | 2 |
| MUSC 419 | Piano Pedagogy | 2 |

| | | |
|---|---|---|
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 5 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

**Applied Minor (4)**

*Select one of the following three sequences:*

Applied Minor Keyboard: MUSC 116, 116, 216, 216
Applied Minor Voice: MUSC 126, 126, 226, 226
Applied Minor Instrument: MUSC 136, 136, 236, 236

**Music Performance: Instrumental Concentration Required Courses (88)**

For Model Plan of Study: Instrumental Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC | Chamber Ensemble Courses | 2 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 102 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 135 | Applied Major Instrument | 2 |
| MUSC 135 | Applied Major Instrument | 2 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 235 | Applied Major Instrument | 2 |
| MUSC 235 | Applied Major Instrument | 2 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 300 | History of Western Music I | 3 |
| MUSC 301 | History of Western Music II | 3 |
| MUSC 335 | Applied Major Instrument | 2 |
| MUSC 335 | Applied Major Instrument | 2 |
| MUSC 391 | Form and Analysis II | 2 |
| MUSC 392 | Orchestration I | 2 |
| MUSC 374 | Instrumental Conducting | 3 |
| MUSC 397 | Counterpoint II | 2 |
| MUSC 406 | Symphonic Literature | 2 |
| MUSC 410 | BM Seminar | 2 |
| MUSC 435 | Applied Major Instrument | 2 |
| MUSC 435 | Applied Major Instrument | 2 |
| MUSC 438 | Applied Literature | 2 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 8 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

**Music Performance: Voice Concentration Required Courses (82)**

For Model Plan of Study: Voice Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 102 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 125 | Applied Major Voice | 2 |
| MUSC 125 | Applied Major Voice | 2 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 225 | Applied Major Voice | 2 |
| MUSC 225 | Applied Major Voice | 2 |
| MUSC 260 | German Vocal Literature | 2 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 300 | History of Western Music I | 3 |
| MUSC 301 | History of Western Music II | 3 |
| MUSC 325 | Applied Major Voice | 2 |
| MUSC 325 | Applied Major Voice | 2 |
| MUSC 360 | French Vocal Literature | 2 |
| MUSC 361 | Opera Workshop | 1 |
| MUSC 361 | Opera Workshop | 1 |
| MUSC 372 | Choral Conducting | 3 |
| MUSC 391 | Form and Analysis II | 2 |
| MUSC 392 | Orchestration I | 2 |
| MUSC 307 | Vocal Arranging | |
| MUSC 410 | BM Seminar | 2 |
| MUSC 425 | Applied Major Voice | 2 |
| MUSC 425 | Applied Major Voice | 2 |
| MUSC 460 | Vocal Pedagogy I | 1 |
| MUSC 461 | Vocal Pedagogy II | 1 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 2 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

Required Ancillary Courses (6)

| | | |
|---|---|---|
| ITAL 114 | Italian Diction for Voice Major | 2 |
| FREN 114 | French Diction for Voice Major | 2 |
| GRMN 114 | German Diction for Voice Major | 2 |

**Music Education: Instrumental Concentration**
**Required Courses: (88)**
For Model Plan of Study: Instrumental Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 102 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 135 | Applied Major Instrument | 2 |
| MUSC 135 | Applied Major Instrument | 2 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 235 | Applied Major Instrument | 2 |
| MUSC 235 | Applied Major Instrument | 2 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 240 | String Methods | 2 |
| MUSC 275 | Dominant Trends in Music Education | 2 |
| MUSC 300 | History of Western Music I | 3 |
| MUSC 301 | History of Western Music II | 3 |
| MUSC 335 | Applied Major Instrument | 2 |
| MUSC 335 | Applied Major Instrument | 2 |
| MUSC 338 | Woodwind Methods | 2 |
| MUSC 348 | Brass Methods | 2 |
| MUSC 368 | Percussion-Guitar Methods | 2 |
| MUSC 374 | Instrumental Conducting | 3 |
| MUSC 391 | Form and Analysis II | 2 |
| MUSC 392 | Orchestration I | 2 |
| MUSC 410 | BM Seminar | 2 |
| MUSC 435 | Applied Major Instrument | 2 |
| MUSC 435 | Applied Major Instrument | 2 |
| MUSC 438 | Applied Literature | 2 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 4 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

**Music Education: Keyboard/Instrumental Concentration**
**Required Courses (88)**
For Model Plan of Study: Keyboard/Instr Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 102 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 115 | Applied Major Keyboard | 2 |
| MUSC 115 | Applied Major Keyboard | 2 |
| MUSC 136 | Applied Minor Instrument | 1 |
| MUSC 136 | Applied Minor Instrument | 1 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 215 | Applied Major Keyboard | 2 |
| MUSC 215 | Applied Major Keyboard | 2 |
| MUSC 236 | Applied Minor Instrument | 1 |
| MUSC 236 | Applied Minor Instrument | 1 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 240 | String Methods | 2 |
| MUSC 275 | Dominant Trends in Music Education | 2 |
| MUSC 300 | History of Western Music I | 3 |
| MUSC 301 | History of Western Music II | 3 |
| MUSC 315 | Applied Major Keyboard | 2 |
| MUSC 315 | Applied Major Keyboard | 2 |
| MUSC 338 | Woodwind Methods | 2 |
| MUSC 348 | Brass Methods | 2 |
| MUSC 368 | Percussion-Guitar Methods | 2 |
| MUSC 374 | Instrumental Conducting | 3 |
| MUSC 391 | Form and Analysis II | 2 |
| MUSC 392 | Orchestration I | 2 |
| MUSC 410 | BM Seminar | 2 |
| MUSC 415 | Applied Major Keyboard | 2 |
| MUSC 415 | Applied Major Keyboard | 2 |
| MUSC 417 | Piano Literature and Pedagogy Lan | 2 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 4 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

**Music Education: Keyboard/Vocal Concentration**
**Required Courses (82)**
For Model Plan of Study: Keyboard/Vocal Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 102 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 115 | Applied Major Keyboard | 2 |
| MUSC 115 | Applied Major Keyboard | 2 |

| | | |
|---|---|---|
| MUSC 126 | Applied Minor Voice | 1 |
| MUSC 126 | Applied Minor Voice | 1 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 215 | Applied Major Keyboard | 2 |
| MUSC 215 | Applied Major Keyboard | 2 |
| MUSC 226 | Applied Minor Voice | 1 |
| MUSC 226 | Applied Minor Voice | 1 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 275 | Dominant Trends in Music Education | 2 |
| MUSC 300 | History of Western Music I | 3 |
| MUSC 301 | History of Western Music II | 3 |
| MUSC 315 | Applied Major Keyboard | 2 |
| MUSC 315 | Applied Major Keyboard | 2 |
| MUSC 370 | Foundations of Tch Band/Orch Instruments | 3 |
| MUSC 372 | Choral Conducting | 3 |
| MUSC 391 | Form and Analysis II | 2 |
| MUSC 392 | Orchestration I or | 2 |
| MUSC 307 | Vocal Arranging | |
| MUSC 410 | BM Seminar | 2 |
| MUSC 415 | Applied Major Keyboard | 2 |
| MUSC 415 | Applied Major Keyboard | 2 |
| MUSC 417 | Piano Literature and Pedagogy Lan | 2 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 3 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

Required Ancillary Courses (6)

| | | |
|---|---|---|
| ITAL 114 | Italian Diction for Voice Major | 2 |
| FREN 114 | French Diction for Voice Major | 2 |
| GRMN 114 | German Diction for Voice Major | 2 |

**Music Education: Vocal Concentration**

For Model Plan of Study: Vocal Concentration

| | | |
|---|---|---|
| MUSC | Performing Ensemble Courses* | 8 |
| MUSC 100 | Materials of Music I | 3 |
| MUSC 101 | Materials of Music II | 3 |
| MUSC 102 | Ear Training and Sight Singing I | 2 |
| MUSC 102 | Ear Training and Sight Singing II | 2 |
| MUSC 106 | History of African-American Music | 3 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 116 | Applied Minor Keyboard | 1 |
| MUSC 125 | Applied Major Voice | 2 |
| MUSC 125 | Applied Major Voice | 2 |
| MUSC 200 | Materials of Music III | 3 |
| MUSC 201 | Materials of Music IV | 3 |
| MUSC 202 | Ear Training and Sight Singing III | 2 |
| MUSC 203 | Ear Training and Sight Singing IV | 2 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 216 | Applied Minor Keyboard | 1 |
| MUSC 225 | Applied Major Voice | 2 |
| MUSC 225 | Applied Major Voice | 2 |
| MUSC 270 | Computer Applications to Music I | 3 |
| MUSC 275 | Dominant Trends in Music Education | 2 |
| MUSC 300 | History of Western Music I | 3 |
| MUSC 301 | History of Western Music II | 3 |
| MUSC 325 | Applied Major Voice | 2 |
| MUSC 325 | Applied Major Voice | 2 |
| MUSC 370 | Foundations of Tch Band/Orch Instruments | 3 |
| MUSC 372 | Choral Conducting | 3 |
| MUSC 391 | Form and Analysis II | 2 |
| MUSC 392 | Orchestration I or | 2 |
| MUSC 307 | Vocal Arranging | |
| MUSC 410 | BM Seminar | 2 |
| MUSC 425 | Applied Major Voice | 2 |
| MUSC 425 | Applied Major Voice | 2 |
| MUSC 428 | Vocal Literature | 2 |
| MUSC 285 | Business of Music (Writing Intensive Course in the Major) | 3 |
| | Electives | 3 |

*Specific Performing Ensemble Courses are required in certain programs and approved by department.

Required Ancillary Courses (6)

| | | |
|---|---|---|
| ITAL 114 | Italian Diction for Voice Major | 2 |
| FREN 114 | French Diction for Voice Major | 2 |
| GRMN 114 | German Diction for Voice Major | 2 |

## COURSE DESCRIPTIONS: MUSIC (MUSC)

**MUSC003 Introduction to Jazz Improvisation (1)**
Focuses on the fundamentals of jazz improvisation, nomenclature, chord construction, scale construction, analytical listening, and the application to performance. Provides fundamental exercises in improvisation. Prepares students for acceptance into Jazz Improvisation I. Course may be repeated. Prereq.: Audition.

**MUSC005 Fundamentals of Music Theory (2)**
Provides background information and skills necessary for the advanced study of music. Satisfies requirement for music majors who do not pass the placement examination in music theory to gain admittance to MUSC100, MUSC102. Also open to non-majors.

**MUSC010 Keyboard Group Instruction (1)**
Provides group instruction for non-majors or students needing to be prepared for acceptance into 100-level applied keyboard classes.

**MUSC020 Voice Group Instruction (1)**
Provides group instruction for non-majors or students needing preparation for acceptance into 100-level applied vocal classes. Students are encouraged to enroll concurrently in either MUSC005 or MUSC010.

**MUSC025 UDC Chorale(1)**
Develops musicianship and vocal skills through the study and performance of choral literature of various styles and periods. Satisfies elective course for general student body and a required course for voice majors. Prereq.: Audition.

**MUSC026 The Voices (1)**
Develops musicianship and vocal skills through the study and performance of gospel music literature. Prereq.: Audition.

**MUSC027 Chamber Singers (1)**
Provides an opportunity for students to prepare and perform chamber works for various combinations of voices and periods of music. Allows public performances. Prereq.: Audition.

**MUSC028 Vocal Workshop (2)**
Prepares students to study and perform various vocal ensemble media, including oratorio, opera, musicals, and other genres. Prereq.: Audition.

**MUSC033 Small Jazz Ensemble (1)**
Studies and performs music in the jazz idiom through small jazz ensembles. Provides instruction to qualified students with demonstrated performance capabilities. Prereq.: Audition.

**MUSC035 Woodwind Ensemble (1)**
Prepares students to study and perform representative literature of various periods and styles for woodwind instruments. Allows public performances. Prereq.: Audition.

**MUSC045 Brass and Percussion Ensemble (1)**
Prepares students to study and perform representative literature for brass and percussion instruments. Allows students to perform for the public. Prereq.: Audition.

**MUSC055 Symphonic Ensemble for Strings (1)**
Provides rehearsal and performance literature, including original works from the Baroque through the Contemporary period. Allows for public performances for the University-wide and community service organizations. Prereq.: Audition.

**MUSC070 Instrumental Group Instruction (1)**
Provides group instruction for non-majors or students needing preparation for acceptance into 100-level applied instrumental classes. Students may select instruction on a single woodwind, brass, string, or percussion instrument.

**MUSC085 UDC Pep Band (1)**
Emphasizes selected literature appropriate for a variety of activities, including sports events and other University functions. Is open to all university students. Prereq.: Audition.

**MUSC086 Jazz Lab Band (1)**
Prepares students to study and perform music in the jazz idiom through a Big Band ensemble. Provides instruction to qualified students with demonstrated performance capabilities. Prereq.: Audition.

**MUSC087 Chamber Ensemble (1)**
Provides experience in chamber ensemble performance and reacquaints the student with a knowledge of literature for the respective genre. Allows public performances. Prereq.: Audition.

**MUSC088 UDC Marching Band (1)**
Develops performance skills through the study of a variety of music styles and periods. Requires mandatory performance for appropriate University functions. Prereq.: Audition. (Open to all University students.)

**MUSC089 UDC Concert Band (1)**
Focuses on developing performance skills through the study of a variety of music styles and periods. Requires mandatory performance for appropriate university functions. Prereq.: Audition. Open to all university students.

**MUSC100 Materials of Music I (3)**
Prepares students to study harmony and melody in the diatonic style, focusing on concepts of intervals, scales, melodic form, four-part harmony, and contrapuntal writing. Emphasizes analysis, keyboard application, written examples, and exercises. Prereq.: MUSC005 or placement exam in music theory. Co-req.: MUSC102.

**MUSC101 Materials of Music II (3)**
Continues concepts addressed in Music I. Prereq.: MUSC100. Co-req.: MUSC- 103.

**MUSC 102 Ear Training and Sight Singing I (2)**
Applies concepts studied in Materials of Music I to the keyboard and to the skills of ear training and sight singing.

Teaches melodic and simple harmonic diction. Prereq.: MUSC005 or placement exam in music theory. Co-req.: MUSC100.

**MUSC103 Ear Training and Sight Singing II (2)**
Continues Ear Training and Sight Singing I. Prereq.: MUSC102. Co-req.: MUSC101.

**MUSC105 Music Appreciation (3)**
Designed to increase appreciation and understanding of music in the Western classical tradition. Requires attendance at concerts outside of UDC..

**MUSC106 History of African American Music (3)**
This course explores the major categories of African American music and proceeds to establish theories of origin and paths of development. It examines the musical practices and the life styles of people who produced this music. Every effort is made to examine distinguishing characteristics of each genre of composed music and of its importance in contemporary American society.

**MUSC107 Jazz History (3)**
Surveys the musical and historical development of jazz, from the early roots to the present day styles.

**MUSC115 Applied Major Keyboard (2)**
Two-semester course designed for piano majors only, course provides individually arranged lessons featuring the prescribed literature from various periods of music. Examines issues of technique and performance. . Requires recital performance. Allows substitution of a master class for the first semester freshman.. Prereq.: Audition.

**MUSC116 Applied Minor Keyboard (1)**
Two-semester course offers individually arranged and/or group lessons featuring, prescribed literature from all periods. Addresses techniques and performance issues. Encourages recital performance.. Prereq.: Audition.

**MUSC119 Piano-Sight Reading (1)**
Offers step-by-step approach to sight-reading techniques for the piano major. Prereq.: Piano majors or permission of instructor.

**MUSC125 Applied Major Voice (2)**
Designed exclusively for voice majors, course provides individually arranged lessons featuring prescribed literature from various periods of music. Addresses issues of technique and performance. Requires recital performance. Allows substitution of a master for the first-semester freshman. Requires two semesters. Prereq.: Audition.

**MUSC126 Applied Minor Voice (1)**
Two-semester course provides individually arranged lessons, featuring prescribed literature from fall periods. Addresses techniques and performance Issues. Encourages recital performance. Prereq.: Audition.

**MUSC130 Jazz Improvisation I (1)**
Two-semester course provides training in the applying improvisational techniques encompassing all standard forms and styles in the jazz idiom. Allows a student in a small group to apply the techniques and approaches discussed in class. Prereq.: Audition.

**MUSC135 Applied Major Instrument (2)**
Two-semester course designed for instrumental majors only. Provides individually arranged woodwind, brass, string, or percussion lessons featuring prescribed literature of various periods of music. Addresses issue of technique and performance in the course Requires recital performance. Allows substitution of a master class for the first semester freshman. Prereq.: Audition.

**MUSC136 Applied Minor Instrument (1)**
Two-semester course provides individually arranged woodwind, brass, string, or percussion lessons featuring prescribed literature from various periods of music. Addresses issues of technique and performance. Encourages recital performance. Prereq.: Audition.

**MUSC181 Gospel Music Improvisation I (1)**
Two-semester course examines improvisation techniques basic to the study of performance in Black American gospel music. Emphasizes replication of standard improvisatory patterns. Prereq.: Audition.

**MUSC200 Materials of Music III (3)**
Explores harmony and melody in the chromatic style, including modulation as a formal procedure. Introduces harmonic practices and analytical systems of the 20th Century. Prereq.: MUSC- 101. Co-req.: MUSC- 202.

**MUSC201 Materials of Music IV (3)**
Continues Materials of Music III. Prereq.: MUSC200. Co-req.: MUSC203.

**MUSC202 Ear Training and Sight Singing III (2)**
Applies materials studied concurrently in Materials of Music III to the keyboard and to the skills of ear-training and sight-singing. Emphasizes melodic and harmonic dictation. Prereq.: MUSC103. Co-req.: MUSC- 200.

**MUSC203 Ear Training and Sight Singing IV (2)**
Continues Ear Training and Sight Singing III. Prereq.: MUSC202. Co-req.: MUSC201.

**MUSC210 Directed Studies (VC)**
Offers opportunities for supervised independent study. Prereq.: Permission of Program/Area faculty.

**MUSC215 Applied Major Keyboard (2)**
Two-semester course which continues Applied Major Keyboard. Requires recital performances. Prereq.: Two semesters of MUSC115.

**MUSC216 Applied Minor Keyboard (1)**
Two-semester course which continues Applied Minor Keyboard. Prereq.: Two semesters of MUSC116.

**MUSC225 Applied Major Voice (2)**
Two-semester course which continues Applied Major Voice. Requires recital performance. Prereq.: Two semesters of MUSC125.

**MUSC226 Applied Minor Voice (1)**
Continues Applied Minor Voice. Requires two semesters. Prereq.: Two semesters of MUSC126**.**

**MUSC230 Jazz Improvisation II (1)**
Continues Jazz Improvisation I. Requires two semesters. Prereq.: MUSC130.

**MUSC235 Applied Major Instrument (2)**
Two-semester course which continues Applied Major Instrument. Requires recital performance.. Prereq.: Two semesters of MUSC135.

**MUSC236 Applied Minor Instrument (1)**
Two-semester course which continues Applied Minor Instrument. Requires recital performance.. Prereq.: Two semesters of MUSC135.

**MUSC240 String Methods (2)**
Introduces and analyzes common string method publications and identification of instructional objectives based on the approaches. Includes practical application of string methodological techniques in the playing of string instruments.

**MUSC260 German Vocal Literature (2)**
Surveys vocal literature of primarily eighteenth and nineteenth century Germany. Studies various techniques of interpretation and presentation as a basis for artistic performance and comprehensive teaching. Prereq.: GRMN- 114.

**MUSC270 Computer Applications to Music I (3)**
Acquaints students with basic materials and techniques of a computer-assisted workstation and applications for music composition, performance, recording, and music publishing. Prereq.: Sophomore standing in music.

**MUSC271 Computer Applications to Music II (3)**
Continues Computer Applications to Music I with an emphasis on individually assigned projects. Prereq.: MUSC-270.

**MUSC275 Dominant Trends in Music Education (2)**
Surveys philosophies, materials, methods, and approaches of Suzuki, Orff, Kodaly, Caribou-Cone, Montessori, Dalcroze, and others. Introduces basic approaches to electronic music on the computer. Studies and discusses the implementation in methodology to public school music. Prereq.: Sophomore standing in music.

**MUSC281 Gospel Music Improvisation II (1)**
Continues Gospel Improvisation I. Prereq.: Two semesters of MUSC181.

**MUSC285 Business of Music (3)**
Acquaints the student with every aspect of the music business and provides a background study into the related areas of the music industry and the institutions through which it operates. including the new digital space. The course includes a mock contract negotiation where students are assigned roles and negotiate a major label recording contract and publishing agreement. The course touches on a variety of topics, including: careers in the music business, digital distribution, publishing, operation of a record label, marketing and promotions, negotiation of a record or publishing deal, and various avenues for record distribution.

**MUSC290 Keyboard Harmony I (1)**
Teaches practical skills at the keyboard in melodic harmonization, transposition, chord movement and voicing, figured bass realization, accompanying skills to instrumental and vocal ensembles, and creative improvisation. Prereq.: Two semesters of MUSC215 or MUSC216.

**MUSC291 Keyboard Harmony II (1)**
Continues Keyboard Harmony I. Explores history, literature, performance practices, and compositional styles of music from antiquity to 1750. Discusses the relationship between music and parallel movements in various areas. Involves recorded listening and score analyses. Prereq.: MUSC290.

**MUSC301 History of Western Music II (3)**
Studies history, literature, performance practices, and compositional styles of music from 1750 to present. Discusses the relationship between music and parallel

movements in various areas. Involves listening to recorded music and score analysis. Prereq.: MUSC300.

**MUSC307 Vocal Arranging (2)**
Examines techniques of scoring for vocal ensembles of specific ages, abilities, and sizes. Develops arrangements, from simple unaccompanied unison songs to more complex accompanied writing, with emphasis on stylistic and constructional features unique to particular kinds of music. Prereq.: MUSC201, MUSC203.

**MUSC315 Applied Major Keyboard (2)**
Two-semester course which continues Applied Major Keyboard. Prereq.: Two semesters of MUSC215.

**MUSC318 Ensemble Accompanying (2)**
Explores fundamental techniques of accompanying solo voice or instruments and training accompanying and chamber music performance skills. Provides instruction for students who will be coached in various historical styles and periods. Requires one student recital or master class performance. Prereq.: MUSC115 or permission of instructor.

**MUSC325 Applied Major Voice (2)**
Two-semester course that continues Applied Major Voice. Recital performance required each semester. Jury required each semester. Prereq.: Two semesters of MUSC225.

**MUSC330Jazz Improvisation III (1)**
Continues Jazz Improvisation II. Prereq.: Two semesters of MUSC230.

**MUSC331 Jazz Arranging I (2)**
Examines arranging for ensembles of varying sizes and instrumentation. Analyzes representative works and acquaintance with Fundamentals of Orchestration. Prereq.: Junior standing in music-jazz studies or permission of instructor.

**MUSC332 Jazz Arranging II (2)**
Continues Jazz Arranging I. Prereq.: MUSC331.

**MUSC335 Applied Major Instrument (2)**
Two-semester course that continues Applied Major Instrument. Recital performance required. Prereq.: Two semesters of MUSC235.

**MUSC338** Woodwind Methods to teach and play woodwind instruments. Prereq.: Junior standing in music.

**MUSC348 Brass Methods (2)**
Introduces methods and materials used to teach and play of brass instruments. Prereq.: Junior standing in music.

**MUSC360 French Vocal Literature (2)**
Surveys French vocal literature of the nineteenth and twentieth century's. Discusses techniques of interpretation and presentation for performance and studio teaching purposes. Prereq: FREN 114.

**MUSC361 Opera Workshop (1)**
Introduces and exposes the vocal performance major to the art of singing and acting via study and practical experience. I Includes body movement instruction for the stage, study in interpretation and characterization, and a study of selected operas. Prereq.: MUSC225.

**MUSC368 Percussion-Guitar Methods (2)**
Introduces methods and materials used in the teaching and playing of percussion instruments and the guitar. Prereq.: Junior standing in music.

**MUSC370 Foundations of Teaching Band & Orchestral Instruments (3)**
Designed for Music Education, Vocal and Keyboard-Vocal Option majors only, surveys methods and materials on band and orchestral instruments in the field of school music and how these are applied in performance. Prereq.: Junior standing in music.

**MUSC372 Choral Conducting (3)**
Introduces choral conducting techniques, basic concepts of choral tone, diction in choral singing, rehearsal techniques, basic elements of musical style and interpretation, and representative choral literature. Prereq.: Junior standing in music.

**MUSC374 Instrumental Conducting (3)**
Concentrates on applied baton technique. Discusses representative literature, which includes school music materials. Concentrates on interpretation of style. Prereq.: Junior standing in music.

**MUSC381 Gospel Music Improvisation III (1)**
Continues Gospel Music Improvisation II. Prereq.: Two semesters of MUSC281.

**MUSC382 Gospel Music Songwriting and Arranging I (2)**
Examines techniques of scoring, voicing, and designing appropriate arrangement and instrumental accompaniments for gospel music. Prereq.: MUSC201, MUSC203.

**MUSC383 Gospel Music Songwriting and Arranging II (2)**
Continues Gospel Music Songwriting and Arranging I. Prereq.: MUSC382.

**MUSC384 History and Aesthetics of Gospel Music I (2)**
Examines the socio-cultural and historical setting of gospel music in the context of the Black American experience in Western culture. Covers the major stylistic periods and major composers of gospel music from 1920-1970. Discusses challenges involved in developing value criteria relevant to the gospel idiom. Prereq.: Junior standing in music.

**MUSC385 History and Aesthetics of Gospel Music II (2)**
Continues History and Aesthetics of Gospel Music I from 1970 to the present. Prereq.: MUSC- 384.

**MUSC386 Principles of Gospel Music Pedagogy (2)**
Explores the methodology for teaching gospel music performance. Prereq.: Junior standing in music.

**MUSC390 Form and Analysis I (2)**
Examines form as an evolutionary process from early church monody, secular polyphony, up through the Baroque period in music history, with analysis of appropriate literature from these early periods. Prereq.: MUSC- 201, MUSC- 203.

**MUSC391 Form and Analysis II (2)**
Analyzes the various forms in music, including the classical, romantic, and modern periods. Surveys the contemporary analytical technique of form.. Prereq.: MUSC390 or MUSC201, MUSC203.

**MUSC392 Orchestration I (2)**
Provides a practical application of orchestration principles to elementary and secondary school teaching. Discusses techniques in scoring and arranging for small ensembles, as well as score reading and transcribing. Prereq.: MUSC201, MUSC203.

**MUSC393 Orchestration II (2)**
Continues Orchestration I with a primary focus on the orchestration of large scale compositions. Prereq.: MUSC392.

**MUSC 394 Music Composition I (2)**
Explores creative writing of small forms in various idioms, approached through analysis and stylistic emulation of contemporary scores, selected listening and critical appraisal of original creative work. Serves an advanced seminar for several students or on an individual basis. Prereq.: MUSC201, MUSC 203.

**MUSC395 Music Composition II (2)**
Continues Music Composition I. Prereq.: MUSC394.

**MUSC396 Counterpoint I (2)**
Examines the compositional style and technique of vocal polyphony in the 16th century, approached through species counterpoint, analysis, selective listening, and creative writing or performing. Prereq.: Junior standing in music.

**MUSC397 Counterpoint II (2)**
Investigates the compositional style and technique of 18th Century instrumental forms which found culmination in the works of J. S. Bach; emphasizes the metamorphosis of such forms through the romantic period into 20th Century neo-classical style. Prereq.: Junior standing in music.

**MUSC398 Electronic Music Laboratory (2)**
Acquaints the student with materials, equipment, and techniques of the computer-assisted electronic music studio as applied to all facets of music composition/ arranging. Prereq.: MUSC271.

**MUSC406 Symphonic Literature (2)**
Examines the chronological development of symphonic literature and the orchestra from the 18th Century to the present. Covers representative composers through the analysis of scores and recorded performances. Prereq.: MUSC- 301.

**MUSC410 Directed Studies (VC)**
Provides an upper level course (under this designation) not included in the present Departmental offerings, as well as supervised independent study. Prereq.: Permission of Department Chair.

**MUSC415 Applied Major Keyboard (2)**
Two-semester course that continues Applied Major Keyboard. Requires two semesters. Prereq.: Two semesters of MUSC315.

**MUSC417 Piano Literature and Pedagogy Laboratory (2)**
Surveys piano literature from the pre-Baroque to the twentieth-century periods and provides supervised student teaching in the piano laboratory. Focuses on analysis, research, listening, performance, and emphasis on piano pedagogical principles for various ages. Prereq.: Piano majors with senior standing in Music Education.

**MUSC418 Piano Literature (2)**
Surveys piano literature from the Baroque to the contemporary periods. Concentrates on analysis, re-search, listening, performance, and student teaching demonstration with special emphasis on pedagogical techniques. Prereq.: Senior standing; piano performance majors only.

**MUSC419 Piano Pedagogy (2)**

Explores the concepts and practical applications of piano performance and pedagogy. Prepares the piano major for professional teaching in the private piano studio with emphasis on beginning and intermediate instruction. Provides supervised student teaching in the piano laboratory. Prereq.: MUSC418.

**MUSC425 Applied Major Voice (2)**
Two-semester course that continues Applied Major Voice. Recital performance required. Prereq.: Two semesters of MUSC325.

**MUSC428 Vocal Literature (2)**
Designed for voice majors only. Surveys vocal literature from early treatises to contemporary songs. Discusses techniques of interpretation and presentation for performance and teaching purposes. Prereq.: Senior standing.

**MUSC430 Jazz Improvisation IV (1)**
Continues Jazz Improvisation III. Prereq.: Two semesters of MUSC330.

**MUSC431 Jazz Compositional Techniques and Advanced Arranging (2)**
Continues Jazz Arranging II. Prereq.: MUSC332.

**MUSC- 435 Applied Major Instrument (2)**
Requires recital performance for two semesters. Continues Applied Major Instrument. Prereq.: Two semesters of MUSC335.

**MUSC438 Applied Literature (2)**
Explores instrumental literature from the twentieth century periods. Concentrates on analysis, research, listening, and performance. Prereq.: Senior standing; instrumental music majors only.

**MUSC450 String Pedagogy I (2)**
Designed for the string major. Examines theory and development of string pedagogy as traced through available sources. Emphasizes methods of research. Requires a paper on a topic approved by the instructor. Prereq.: Two semesters of MUSC235.

**MUSC451 String Pedagogy II (2)**
Continues String Pedagogy I. Applies research to applied teaching with particular emphasis on the physiological aspects of string instrument performance. Requires teaching simulations and demonstrations. Prereq.: MUSC450.

**MUSC460 Vocal Pedagogy I (1)**
Acquaints students with the fundamentals of voice production and provides opportunities for research into, and comparative analysis of, the various schools and methods of teaching singing from the establishment of the Italian Scholar Cantorum to date. Prereq.: MUSC325.

**MUSC461 Vocal Pedagogy II (1)**
Continues Vocal Pedagogy I. Prereq.: MUSC460.

**MUSC462 History of Opera (2)**
Explores in-depth the background of opera beginnings, its development, national styles, various elements, types of opera, literary sources and influences, use of ballet, and production components. Prereq.: MUSC301.

**MUSC463 Oratorio Literature (2)**
Explores literature for solo voice and small ensembles in the standard oratorios, cantatas, masses, and other works. Exposes operatic works no longer being staged but now being performed primarily in concert versions Prereq.: MUSC301.

**MUSC464 English and American Vocal Literature (2)**
Surveys classical vocal literature of England and America from the pre-Elizabethan period to the present. Prereq.: Voice majors only.

**MUSC466 Italian Vocal Literature (2)**
Explores Italian vocal literature for the solo voice and small ensembles from the Renaissance to the present. Prereq.: MUSC225.

**MUSC481 Gospel Music Improvisation IV (1)**
Continues Gospel Music Improvisation III. Prereq.: Two semesters of MUSC- 381.

**MUSC490 Music Composition III (2)**
Continues Music Composition II. Prereq.: MUSC390.

**MUSC491 Music Composition IV (2)**
Continues Music Composition III. Prereq.: MUSC490.

**MUSC492 Music Theory History (2)**
Provides an overview how tonal or harmonic concepts developed in Western classical music through the study of selected treatises and music scores that represent specific historical developments in music theory/history. Prereq.: Senior standing; music theory majors only.

**MUSC493 20th Century Music Literature (2)**
Examines 20th century compositional practice through score reading, listening and analysis; surveys important composers, their compositional styles, socio-political influences on their work, and their individual impact on the

musical scene, from 1900 to present. Prereq.: Senior standing; music theory majors only.

## Division of Sciences and Mathematics

**Bachelor Degrees:**
Bachelor of Science in Biology (BS)
Bachelor of Science in Chemistry (ACS certified BS)
Bachelor of Science in Mathematics (BS)

**Graduate Degree**
Master of Science in Biology (MS)

**Honor Societies and Student Organizations**

- Beta Kappa Chi Scientific Honor Society
- National Institute of Science
- University of the District of Columbia Biology and Chemistry Club
- University of the District of Columbia Math Club

**Accreditation and Associations**
The Chemistry Program at the University is approved by the American Chemical Society (ACS):
https://www.acs.org/content/acs/en.html

**GPA Statement**
Students must earn a minimum of "C" in major courses for these courses to be accepted towards completion of the degree. Also, students must maintain a 2.5 grade point average to continue in the major.

**Graduation Credit Hours**
This bachelor's degree programs require the fulfillment of a minimum of 120 credit hours, including specific courses identified in the program of study and the applicable General Education requirements.

**Advancement to Candidacy**
Students must submit a request to advance to candidacy upon successfully completing a minimum of 12 semester hours. Readiness for candidacy will be determined by the cumulative grade point average, an acceptable score on a comprehensive examination, and successful completion of all core requirements.

## Biology (BS)

**Graduation Credit Hours:**
The BS program in Biology requires completing a minimum of 120 credit hours of college-level courses in order to graduate.

**IGED Requirements (37 credits)**

**Program Core Requirements (114 Credits)**

BIOL 101 Biological Sciences I Lecture (3)
BIOL 103 Biological Sciences Laboratory (1)
BIOL 102 Biological Sciences 2 Lecture (3)
BIOL 104 Biological Sciences Laboratory (1)
BIOL 225 Invertebrate Zoology Lecture (3)
BIOL 224 Invertebrate Zoology Laboratory (1)
BIOL 235 Botany Lecture (3)
BIOL 234 Botany Laboratory (1)
BIOL 241 General Microbiology Lecture (3)
BIOL 240 General Microbiology Laboratory (1)
BIOL 361 General Genetics Lecture (3)
BIOL 360 General Genetics Laboratory (1)
BIOL 493 Senior Seminar (2)
BIOL Elective 300-level or above (4)
BIOL Elective 300-level or above (4)
BIOL Elective 300-level or above (4)
BIOL Elective 300-level or above (4)
CHEM 111 General Chemistry 1 Lecture (3)
CHEM 113 General Chemistry 1 Laboratory (1)
CHEM 112 General Chemistry 2 Lecture (3)
CHEM 114 General Chemistry 2 Laboratory (1)
CHEM 231 Organic Chemistry 1 Lecture (3)
CHEM 233 Experimental Organic Chemistry (2)
CHEM 232 Organic Chemistry 2 Lecture (3)
CHEM 234 Experimental Organic Chemistry (2)
MATH 113 Pre-calculus with Trigonometry 1 (3)
MATH 114 Pre-calculus with Trigonometry 2 (3)
MATH 215 Calculus for Business, Social, and Life Sciences (4)
PHYS 101 Introduction to College Physics 1 Lecture (3)
PHYS 103 Introduction to College Physics 1 Lab (1)
PHYS 102 Introduction to College Physics 2 (3)
PHYS 104 Introduction to College Physics 2 Lab (1)
PHIL 105 Introduction to Logic (3)

General Electives (6) credits **Total: 120**

## COURSE DESCRIPTIONS: BIOLOGY (BS) (BIOL)

**BIOL101 Biological Science I (3)**
Introduces the concepts of modern biological principles, with emphasis on the physical and chemical basis of life processes. Lec. 3 hrs., Co-req.: BIOL 103.

**BIOL102 Biological Science II (3)**
Presents the structural and functional features of animal and plant systems, including interactions existing between major groups of organisms. Lec. 3 hrs., Pre-req.: BIOL 101, BIOL 103. Co-req.: BIOL104.

**BIOL103 Biological Science I Laboratory (1)**
Focuses on the experimental principles of the physical and chemical processes of life. Lab 3 hrs., Co-req.: BIOL 101.

**BIOL104 Biological Science II Laboratory (1)**
Examines unifying relationships between living organisms through dissection of a representative vertebrate. Emphasis is also placed on energy, respiration, structure, and function of organs, organ systems, and the total organism. Lab 3 hrs., Pre-req.: BIOL 101, BIOL 103. Co-req.: BIOL1 102.

**BIOL111 Fundamentals of Human Anatomy and Physiology I (3)**
Focuses on the human body as it relates to function, organization, and interrelationship of body structures as these form an integrated functional organism. Lec. 3 hrs., Co-req.: BIOL 113.

**BIOL112 Fundamentals of Human Anatomy and Physiology II (3)**
Details a continuation of Fundamentals of Human Anatomy and Physiology I. Emphasizes body systems and how these contribute to homeostasis. Lec. 3 hrs., Pre-req.: BIOL 111, BIOL 113. Co-req.: BIOL 114.

**BIOL113 Fundamentals of Human Anatomy and Physiology I Laboratory (1)**
Examines the cellular, tissue, and organ levels of the organization of the human body and how these units coordinate activities and function in the living organism. Lab 3 hrs., Co-req.: BIOL 111.

**BIOL114 Fundamentals of Human Anatomy and Physiology II Laboratory (1)**
Focuses on detailed examination of the structure and function of the body systems with emphasis on balanced coordination of the living organism. Lab 3 hrs., Pre-req.: BIOL 111, BIOL 113. Co-req.: BIOL 112.

**BIOL122 Essentials of Human Biology (3)**
Introduces basic concepts and principles of body structure and function. Special emphases are given to transport mechanisms and the dynamics of steady state equilibrium. Lec. 3 hrs., Pre-req.: Permission of Department chair. Co-req.: BIOL 123.

**BIOL123 Essentials of Human Biology Laboratory (1)**
Focuses on the basic organizational and principal functions of the human body in a hierarchal manner. Emphasis is also placed on the microscopic and macroscopic components of the human body. Lab 3 hrs., Co-req.: BIOL 122.

**BIOL195 Independent Study/Biology (1-4)**
Provides an opportunity for students to arrange with an instructor in the Department to work on a topic selected prior to registration. Prepares reports on laboratory, library, and/or field research topics approved by the instructor on subjects not regularly covered in the Department. Lec. and/or Lab 6 hrs. Pre-req.: Permission of Department chair.

**BIOL215 Histological Techniques (3)**
Exposes students to the procedures used to prepare various animal tissues for histochemical studies. The lecture presentations correlate the structural and functional features of animal cells and tissues. Lec. 3 hrs., Pre-req.: BIOL 102, BIOL 104 and BIOL 112,BIOL 114. Co-req.: BIOL 216.

**BIOL216 Histological Techniques Laboratory (1)**
Prepares and stains tissue samples for microscopic examination. Applies histochemical stains to label- specific chemical components of cells and tissues. Lab 3 hrs., Pre-req.: BIOL 102, BIOL 104 and BIOL 112, BIOL 114. Co-req.: BIOL 215.

**BIOL224 Invertebrate Zoology Laboratory (1)**
Examines prepared slides and specimens of invertebrates and classifies them based on the taxonomical nomenclature. Lab 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 225.

**BIOL225 Invertebrate Zoology (3)**
Studies selected invertebrates with special attention to those of the local area. Emphasis is placed on the morphology and physiology of organisms. Lec. 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 224.

**BIOL226 Zoology (3)**
Examines the fundamental characteristics of animals including structure, function, and ecology; includes current understandings of taxonomy and animal evolution. Pre-reqs: BIOL 102, BIOL 104.

**BIOL227 Field Zoology (2)**
Examines the relationships of animals to their environment with emphasis on organisms indigenous to the local area; will include visits to local parks and nature areas Pre-reqs: BIOL 102, BIOL 104.

**BIOL234 Botany Laboratory (1)**
Details laboratory exercises that address plant anatomy and functions. Lec. 3 hrs., Pre-req: BIOL 102, BIOL 104. Co-req.: BIOL 235.

**BIOL235 Botany (3)**
Introduces the fundamental concepts of the scientific investigation of life, ranging from the cell as a living unit to the more complex plant life. Lec. 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 234.

**BIOL236 Systematic Botany (4)**

Explores the phylogenetic systematics of vascular plants of both extinct and extant taxa. Compares traditional and modern means of classification based on morphological and molecular characters. Pre-req BIOL 234, BIOL 235.

**BIOL240 General Microbiology I Laboratory (1)**
Focuses on exercises involved with isolation and identification of bacteria, yeast, and molds. Lab 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 241.

**BIOL241 General Microbiology I (3)**
Examines the basic principles concerning microbial life and its relationship to human welfare. Lec. 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 240.

**BIOL245 Clinical Microbiology (3)**
Emphasizes the structure, function, and pathogenic nature of various microorganisms as these relate to infection, body resistance, and diagnostic testing. Lec. 3 hrs., Pre-req.: BIOL 102, BIOL 104 or permission of instructor. Co-req.: BIOL 246.

**BIOL246 Clinical Microbiology Laboratory (1)**
Focuses on exercises that involve the use of micro-biological techniques in culturing select groups of microorganisms. Pre-req: BIOL 102, BIOL 104. Co-req.: BIOL 245.

**BIOL295 Independent Study Biology (1-4)**
Provides an opportunity for students to arrange with an instructor in the Department to work on a topic selected prior to registration. Students prepare reports on laboratory, library, and/ or field research topics approved by the instructor on subjects not regularly covered in the Department. Lec. and/or Lab 6 hrs., Pre-req.: Permission of Department Chairperson.

**BIOL317 General Physiology Laboratory (1)**
Provides experiments on the functioning of animal cells, tissues, and organs. Lab 3 hrs., Pre-req.: BIOL 102, BIOL 104; CHEM 112, CHEM 114. Co-req.: BIOL 319.

**BIOL319 General Physiology (3)**
Details the principles of animal physiology presented with references to the functioning of cells, tissues, and organs. Emphasizes basic cell functions and biological control systems, such as membrane phenomena, energy and cellular metabolism, protein synthesis, muscle contraction, and other areas of functional biology. Lec. 3 hrs., Pre-req.: BIOL 101, BIOL 102; CHEM 112, CHEM 114. Co-req.: BIOL 317.

**BIOL325 Human Anatomy (3)**
Examines the structure and organization of organs and organ systems of the human body including the skeletal, muscular, circulatory, digestive, and nervous systems. Lec. 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 328.

**BIOL326 Mammalian Histology (3)**
Examines the basic concepts of the structure of tissues and organs of mammals at the light and ultrastructure levels. Pre-req: BIOL 102, BIOL 104. Co-req: BIOL 327.

**BIOL327 Mammalian Histology Lab (1)**
Identifies cells, tissues, and organs of mammals at the light microscopic and electron microscopic levels. Lab 3 hrs., Pre-req.: 1401 102, BIOL104. Co-req.: BIOL 326.

**BIOL328 Human Anatomy Laboratory (1)**
Emphasizes dissection of organisms for studying the various systems: skeletal, muscular, digestive, urinary, cardiovascular, and nervous. Lab 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 325.

**BIOL330 Cell Biology I Laboratory (1)**
Explores the principles and techniques of cell biological experimentation, involving chemical and molecular structure of cells and cellular respiration. Lab 3 hrs., Pre-req.: BIOL 240, BIOL 241; BIOL 360, BIOL 361; CHEM 112, CHEM 114. Co-req.: CHEM 331.

**BIOL331 Cell Biology I (3)**
Introduces the molecular basis of cell structure and functions with consideration of subcellular organelles, including the processes of cellular metabolism and oxidative regulation of control mechanisms in cell metabolism. Lec. 3 hrs., Pre-req.: BIOL 240, BIOL 241; BIOL 360, BIOL 361; CHEM 112, CHEM 114. Co-req.: BIOL 330.

**BIOL332 Cell Biology II (3)**
Focuses on the molecular aspects of mitosis and meiosis, including molecular models of intergenic and intragenic recombination, DNA repair, and mutation. Discusses cellular biology, such as inborn errors of metabolism, the role of vitamins, cell transformation, and related subjects. Promotes an understanding of the major lines of research in the area. Lec. 3 hrs., Pre-req.: BIOL 330, BIOL 331. Co-req.: BIOL 333.

**BIOL333 Cell Biology II Laboratory (1)**
Discusses techniques of recombinant DNA and principles of cell biological experimentation. Lab 3 hrs., Pre-req.: BIOL 330, BIOL 331. Co-req.: BIOL 332.

**BIOL335 Mycology (3)**
Focuses on characteristics, reproductive structures, and medically important fungi. Emphasizes nutritional

adaptations and fungal diseases of plants, animals, and humans. Lec. 3 hrs., Pre-req.: BIOL 240, BIOL 241; Co-req.: BIOL 336.

**BIOL336 Mycology Laboratory (1)**
Examines prepared slides and specimen of yeasts, molds, and fleshy fungi. Isolates and identifies mildews, rusts, smuts, yeasts, and mushrooms. Lab 3 hrs., Pre-req.: BIOL 240, BIOL 241; Co-req.: BIOL 335.

**BIOL337 Biostatistics (3)**
Introduces the principal statistical techniques used in the analysis of biological data. Lec. 3 hrs., Pre-req.: BIOL 224, BIOL 225 or BIOL 240, BIOL 241, or BIOL 234, BIOL 235. Co-req.: BIOL 338.

**BIOL338 Biostatistics Laboratory (1)**
Analyzes data from experiments in biology and ecology using computers. Pre-req.: BIOL 224, BIOL 225 or BIOL 240, BIOL 241 or BIOL 234, BIOL 235. Co-req: BIOL 337.

**BIOL344 Immunology Laboratory (1)**
Emphasizes the fundamentals of serologic procedures and the roles in a variety of infectious and non-infectious conditions. Examines a series of diagnostic tests to detect specific antibodies in sera and biological fluids. Lab 3 hrs., Pre-req.: BIOL 240, BIOL 241. Co-req.: BIOL 346.

**BIOL346 Immunology (3)**
Introduces the principles involved with the immune response in man and higher animals. Emphasizes antibody formation and antibody-antigen reactions. Lec. 3 hrs., Pre-req.: BIOL 240, BIOL 241. Co-req.: BIOL 344.

**BIOL360 General Genetics Laboratory (1)**
Identifies modes of inheritance utilizing alleles of various characteristics to show phenotypic expression. Lab 3 hrs., Pre-req.: BIOL 102, BIOL104. Co-req.: BIOL 361.

**BIOL361 General Genetics (3)**
Presents the mechanisms of inheritance and expression of hereditary traits of representative microorganisms, plants, and animals. Explores the structure and function of the gene at the molecular level. Lec. 3 hrs., Pre-req.: BIOL 102, BIOL 104. Co-req.: BIOL 360.

**BIOL362 Advanced Genetics (3)**
Examines the chemical basis of gene expression, the mechanism of nucleic acid replication, the genetic code, protein synthesis, and phenotype variation due to gene mutation. Lec. 3 hrs., Pre-req.: BIOL 360, BIOL 361; CHEM 112. Co-req.: BIOL 363.

**BIOL363 Advanced Genetics Laboratory (1)**
Examines phenotypic expression utilizing alterations to typical Mendelian ratios such as gene mutations, chromosomal aberrations, and novel phenotypes. Lab 3 hrs., Pre-req.: BIOL 360,
BIOL 361. CHEM 112. Co-req.: BIOL 362.

**BIOL364 Embryology Laboratory (1)**
Details the fetal development in selected organisms from gamete formation to organogenesis. Lab 3 hrs., Pre-req.: BIOL 224, BIOL 225 or BIOL 226, BIOL 228. Co-req.: BIOL 365.

**BIOL365 Embryology (3)**
Introduces selected vertebrates with emphasis on gametogenesis, morphogenesis, organogenesis, and developmental physiology. Lec. 3 hrs., Prereq.: BIOL 225, BIOL224 or BIOL 226, BIOL 228. Co-req.: BIOL 364.

**BIOL366 Evolution (4)**
Explores the history of evolution, evolutionary processes, adaptation and evolution of genes and genomes including microevolution, macroevolution and speciation. Pre-req BIOL 102, BIOL 104.

**BIOL395 Independent Study (4)**
Provides an opportunity for students to arrange with an instructor in the Department to work on a topic selected prior to registration. Prepares reports on laboratory, library and/or field research topics approved by the instructor on subjects not regularly covered in the Department. Lab 6 hrs., Pre-req: Permission of the Department Chairperson.

**BIOL401 Undergraduate Research I (4)**
Supervises the planning, conducting, and reporting of independent laboratory and/or library research as part of an honors program in the biology unit; analyzes reports on data obtained as a result of independent laboratory and/or library research; work designed to encourage students to pursue graduate studies. Lab 6 hrs., Prereq.: Permission of Department Chairperson.

**BIOL402 Undergraduate Research II (4)**
Continues Undergraduate Research I. Lab 6 hrs., Pre-req.: Permission of Department Chairperson.

**BIOL405 Electron Microscopy (3)**
Presents techniques of specimen preparation and use of the electron microscope in a study of the ultrastructure of animal and plant cells. Lec. 3 hrs., Prereq.: BIOL 326, BIOL 327 or Permission of Department Chair. Co-req.: BIOL 406.

**BIOL406 Electron Microscopy Laboratory (1)**
Prepares specimens for examination with the electron microscope. Lab 3 hrs., Pre-req.: BIOL 326, BIOL 327 or permission of Department Chairperson. Co-req.: BIOL 405.

**BIOL443 Principles of Virology Laboratory (1)**
Prepares bacteriological media, cultivation of bacteria, and growth of bacteriophages. Applies immunological techniques used in assaying viruses; and includes a special project involving limited research on a related topic. Lab. 3 hrs., Pre-req.: BIOL 240, BIOL 241. Co-req.: BIOL 445.

**BIOL444 Principles of Parasitology Laboratory (1)**
Examines the life cycle of parasites in the animal kingdom via preserved specimens, light microscopy, and live specimens. Emphasizes life cycles with vertebrate and invertebrate hosts. Lab 3 hrs., Pre-req.: BIOL 224, BIOL 225 or BIOL 226, BIOL 228. Co-req.: BIOL 446.

**BIOL445 Principles of Virology (3)**
Presents the chemical, physical, and biological properties of animals, plants, bacteria and viruses. Explores cultivation and purification of animal viruses and determination of viral titer. Lec. 3 hrs., Pre-req.: BIOL 240, BIOL 241. Co-req.: BIOL 443.

**BIOL446 Principles of Parasitology (3)**
Examines the parasite-host relationship. Also explores the variations of permanency of the association, degree of intimacy, and degree of pathogenicity. Lec. 3 hrs., Prereq.: BIOL 224, BIOL 225 or 226, 228. Co-req.:BIOL 444.

**BIOL490 Molecular Biology (3)**
Introduces the basic concepts of molecular biology with emphasis on nucleic acid structure, gene expression, and recombinant DNA methodology. Lec. 3 hrs., Prereq.: BIOL 240, BIOL 241; BIOL 361, BIOL 360. Co-req.: BIOL 491.

**BIOL491 Molecular Biology Laboratory (1)**
Emphasizes electrophoretic separation of nucleic acids and proteins. Introduces purification and enzymatic digestion of nucleic acids, principles of agarose and polacrylamides gel electrophoresis. Explores Southern, Northern, and Western blotting, DNA sequencing and finger-printing, RFLP's, PCR, and other applications in biotechnology. Lab 3 hrs., Pre-req.: BIOL 490. Coreq.: BIOL 490.

**BIOL493 Senior Seminar I (2)**
Prepares, presents, and discusses current scientific topics and original research papers. Includes a series of articles to be discussed and presented to students. Lec./demo. 2 hrs., Pre-req.: Senior standing in biology.

**BIOL494 Senior Seminar II (2)**
Continuing activities of Senior Seminar I. Lec./demo. 2 hrs., Pre-req: Senior standing in biology.

**BIOL495 Independent Study (1-4)**
Provides an opportunity for students to arrange with an instructor in the Department to work on a topic selected prior to registration. Prepares reports on laboratory, library, and/or field research topics approved by the instructor on subjects not regularly covered in the Department. Lab 6 hrs., Pre-req.: Permission of Department Chair.

## Biology (MS)

The Biology program offers a Master's Degree in Biology with concentrations in Cancer Biology, Prevention and Control, which is in partnership with the Lombardi Comprehensive Cancer Center at Georgetown University Medical Center.
The graduates of the Master's in Biology with a concentration in Cancer Biology, Prevention and Control will be individuals best suited for translating basic science knowledge into cancer prevention and control practices.

**Admission Statement**
Students must meet the following criteria:

1. Hold a Bachelor's Degree from an accredited institution in science, science-related discipline, or psychology;
2. Have a minimum grade point average of 3.00;
3. Submit three letters of recommendation from individuals having knowledge of the applicant's potential to complete the MS program.

Write an essay explaining why the applicant wants to pursue a MS degree in Biology.

**Graduation Credit Hours:**
A student must earn a minimum of 36 credits in the required courses as outlined in the following chart.

**GPA Statement:**
Students must earn a minimum of "B" in major courses for the courses to be accepted towards completion of the degree.

Graduate Academic Probation
Graduate Transfer Credit

**Required Courses and Program of Study**
The following program schedule illustrates the recommended full-time course of study for students in each concentration. Students without the necessary background

to begin at this level, part-time students, or students entering the program late will receive the necessary advising assistance to support timely graduation.

## Concentration Option: Cancer Biology, Prevention and Control

**First Year - Fall Semester**

| | | |
|---|---|---|
| BIOL 660 | Molecular Genetics (core) | 3 hrs |
| BIOL 531 | Cell and Molecular Biology Lab(cor | 3 hrs |
| BIOL 593 | Graduate Journal Club (core) | 1 hrs |
| BIOL 502 | Biostatistics *(core) | 3 hrs |
| BIOL 534 | Research & Applied Ethics (core) | 2 hrs |
| BIOL 566 | Cancer and Infectious Diseases | 3 hrs |
| BIOL 500 | Research Methods & Car. Dev | 1 hr |
| | | Total 16 |

**First Year - Spring Semester**

| | | |
|---|---|---|
| BIOL 535 | Principles & Practice of Behavioral Science in Cancer Control* | 2 hrs |
| BIOL 501 | Dietary Cancer Prevention | 2 hrs |
| BIOL 515 | Minority Populations and Health Dis | 2 hrs |
| BIOL 581 | Cancer Education, Outreach & Field Study | 4 hrs |
| BIOL 545 | Principles of Epidemiology | 3 hrs |
| | | Total 13 |

* Or Existing course at LCCC

**Second Year**

Research Project, 3 credits for each semester ( BIOL 601 Research I and BIOL 602 Research II), BIOL 594 Graduate Journal Club and Seminar
BIOL. 508 Tumor Biology * (core requirement)
**One electives is required**
BIOL 546 Applied Immunology
BIOL 590 Toxicity- 2 hrs

## Concentration Option: Infectious Diseases

**Course Offerings for the First Year**

**First Year - Fall Semester**

| | | |
|---|---|---|
| BIOL 610 | Infectious Diseases with Clinical Mi | 4 hrs |
| BIOL 502 | Biostatistics (core) | 3 hrs |
| BIOL 531 | Cell and Molecular Biology (core) | 3 hrs |
| BIOL 500 | Research Methods & Car. Dev | 1 hr |
| BIOL 534 | Research and Applied Ethics (core) | 2 hrs |
| BIOL 593 | 593 Graduate Journal Club (core) | 1 hr |
| | | Total 14 |

**First Year - Spring Semester**

| | | |
|---|---|---|
| BIOL 505 | Bioinformatics | 2 hrs |
| BIOL 612 | Ecology of Disease Transmission | 2 hrs |
| BIOL 543 | Global Health | 2 hrs |
| BIOL 507 | Biotechnology | 3 hrs |
| BIOL 545 | Principles of Epidemiology | 3 hrs |
| BIOL 546 | Applied Immunology | 3 hrs |
| | | Total 15 |

**Second Year** Research Project, 3 credits for each semester ( BIOL 601 Research l and BIOL 602 Research ll) , BIOL 594 Graduate Journal Club and Seminar

**One elective is required**
BIOL 660 Molecular Genetics (3 credit hours) (core)
BIOL 590 Toxicity- 2 hrs

**Concentration Option: General Studies in Biology**

**Course Offerings for the First Year**

| **First Year - Fall Semester** | | |
|---|---|---|
| BIOL 500 | Research Methods Career and Development (core) | 1 hr |
| BIOL 531 | Cell and Molecular Biology | 3 hrs |
| BIOL 593 | Graduate Journal Club (core) | 1 hrs |
| BIOL 502 | Biostatistics (502)* (core | 3 hrs |
| BIOL 534 | Research & Applied Ethics (core) | 2 hrs |
| BIOL 541 | Advanced Microbiology | 3 hrs |
| | | Total 13 |
| **First Year - Spring Semester** | | |
| BIOL 526 | Histology | 3 hrs |
| BIOL 505 | Bioinformatics | 2 hrs |
| BIOL 515 | Minority Populations and Health Disparities | 2 hrs |
| BIOL 519 | Advanced Physiology | 3 hrs |
| BIOL 612 | Ecology of Disease Transmission | 2 hrs |
| BIOL 543 | Global Health | 2 hrs |
| | | Total 14 |

**Second Year for Thesis MS Year** Research Project, 3 credits for each semester (BIOL 601 Research I and BIOL 602 Research II), BIOL 594 Graduate Journal Club and Seminar

**Second Year for Non-Thesis MS**

Laboratory Rotation Course (4 hrs)***** BIOL 603

Graduate Journal Club and Seminar BIOL 594

***For Non-Thesis MS students only**

**One elective is required for both Academic Choices.**
BIOL 590 Toxicity, 2hrs
BIOL 660 Molecular Genetics (3 credit hours) (core)
BIOL 519 Advanced Physiology

## GRADUATE COURSE DESCRIPTIONS: BIOLOGY (BIOL)

**BIOL508 Tumor Biology-Cellular and Molecular Aspects of the Transformed Cell (3)**
Designed to provide students with an integrative overview of mechanisms of growth control and malignant transformation by physical, chemical, and viral mechanisms. Introduces growth factors, oncogenes, and suppressor genes including the means of reverting or blocking malignant behavior with a particular emphasis on biochemical and molecular mechanisms.

**BIOL545 Cancer Epidemiology (3)**
Introduces epidemiological methods with a focus on methodological issues relevant to cancer research. Examples from "real" studies and issues will be used throughout the course. Weekly assignments require students to put into practice some of the material introduced in class. Two short papers will be assigned as part of the class that will require the students to read and evaluate published epidemiology studies.

**BIOL500 Research Methods and Career Dev. (1)**
Introduces methods in responsible conduct of research, procedures in searching scientific literature, preparing presentation and participating in scientific meeting. Also discusses sources, drafting, and submitting grants and fellowships along with career information.

**BIOL502 Biostatistics (3)**
Addresses statistical analysis needed in research. Covered topics include probability, distribution I and II, graphical approaches to data analysis, estimation and hypothesis testing, categorical data, linear and logistic regression and epidemiological statistics.

**BIO534 Research and Applied Ethics (2)**
Addresses responsible conduct in research and applied ethics detailing the proper ethical methods in conducting research (e.g., data sharing, ownership, publication issues, null results, credit, plagiarism) human subjects, conflict of interest, genetic counseling, and policy issues.

**BIOL535 Principles and Practices of Behavioral Science in Cancer (2)**
Explains general principles and practices involved in cancer control through behavior and behavior change at the individual and population levels. Also covers theory and applied aspects in this field.

**BIOL531 Cell and Molecular Biology Laboratory (3)**
Introduces basic tissue culture techniques, microscopy, cancer cell lines and molecular biological principles and procedures that will help clarify the subject and prepare students for the research assignment in the second year of the program.

**BIOL585 Cancer Ed., Outreach and Field Study (4)**
Designed to acquaint students with the techniques and methods required to carry out cancer prevention and control activities. Covers health education theories and models, a basic overview of cancer, behavior changes and its connection to cancer prevention and control, basic counseling skills and communication techniques, life-style modifications and cancer prevention and control, and organizing and implementation of cancer outreach projects

**BIOL601 Research I (3 – 6)**
Independent investigation of a special topic selected prior to registration. Students work directly with a faculty mentor on the advanced topic that is not covered in the Department curriculum. Permission of Department Chair.

**BIOL602 Research II (3 – 6)**
Continuation of independent investigation of a special topic. Graduate students work directly with a faculty mentor on the advanced topic that is not covered in the Department's curriculum. Permission of Department Chair.

**BIOL581 Molecular Epidemiology (1)**
Designed to familiarize the student with literature sources and specific laboratory tests used to determine risk factors involved in cancer and disease susceptibility. Discusses the criteria used assess molecular epidemiological studies. Incorporates a first year journal club where students will make presentations in the forum.

**BIOL535 Principles and Practices of Behavioral Science in Cancer (2)**
Explains general principles and practices involved in cancer control through behavior and behavior change at the individual and population levels. Also covers theory and applied aspects in this field.

**BIOL500 Dietary Cancer Prevention (2)**
Features presentations primarily by the faculty and postdoctoral fellows and class discussions of any materials provided to the students in advance. Students may be

required to read up to 2 papers per week, and to participate in all class discussions.

**BIOL531 Cell and Molecular Biology Laboratory (3)**
Introduces basic tissue culture techniques, microscopy, cancer cell lines and molecular biological principles and procedures that clarify the subject and prepare students for the research assignment in the second year of the program.

**BIOL585 Cancer Ed., Outreach and Field Study (4)**
Acquaints students with the techniques and methods required to carry out cancer prevention and control activities. Examines health education theories and models, a basic overview of cancer, behavior changes and its connection to cancer prevention and control, basic counseling skills and communication techniques, life-style modifications and cancer prevention and control. Provides opportunities to organize, present, and implement cancer outreach projects.

**BIOL690 Topics in Epidemiology (3)**
Focuses on the latest developments in the field of cancer risk assessment and explores how inter-individual variation contributes to cancer risk.

**BIOL660 Molecular Genetics (3)**
Introduces the fundamentals of the molecular genetics and molecular cytogenetics of cancer. Also covers diagnostic, clinical, and population-based aspects of this rapidly advancing field.

## Chemistry (BS)

The Bachelor of Science in Chemistry program provides students with a rigorous introduction to the basic fields of chemistry: analytical, inorganic, organic, physical chemistry, and biochemistry. In addition to lecture courses, the program provides 500 hours of laboratory classes plus a two-semester sequence of senior research courses.

**Chemistry (ACS Approved)**
The chemistry program has earned the distinguished American Chemical Society (ACS) Certification for the program's rigorous curriculum and the hands-on research experience provided to students.

**Graduation Credit Hours**
The BS program in Chemistry requires the fulfillment of a minimum of 121 credit hours, including specific courses identified in the program of study and the applicable IGED requirements. Students must also and attain a minimum cumulative grade point average of 2.00.

**GPA statement**
Students must earn a minimum grade of "C" in major courses for the courses to be accepted towards completion of the degree.

**Required Courses**

**IGED Requirements (40 credits) (See IGED Table)**

**Program Core Requirements for Chemistry with ACS Accreditation Option (72 Credits)**

CHEM 112 General Chemistry 2 Lecture (3)
CHEM 114 General Chemistry 2 Laboratory (1)
CHEM 231 Organic Chemistry 1 Lecture (3)
CHEM 233 Organic Chemistry I Laboratory (2)
CHEM 232 Organic Chemistry 2 Lecture (3)
CHEM 234 Organic Chemistry II Lab (2)
CHEM 225 Descriptive Inorganic Chemistry (2)
CHEM 351 Physical Chemistry Lecture (3)
CHEM 353 Physical Chemistry Laboratory (2)
CHEM 355 Physical Chemistry Calculations 1 (1)
CHEM 245 Quantitative Analysis Lecture (3)
CHEM 247 Quantitative Analysis Laboratory (2)
CHEM 352 Physical Chemistry 2 Lecture (3)
CHEM 354 Physical Chemistry 2 Laboratory (2)
CHEM 356 Physical Chemistry Calculations 2 (1)
CHEM 445 Instrumental Methods of Analysis (3)
CHEM 447 Instrumental Analysis Laboratory (2)
CHEM 461 Biochemistry 1 Lecture (3)
CHEM 463 Biochemistry 1 Lab (2)
CHEM 411 Senior Research 1 (2)
CHEM 425 Inorganic Chemistry (3)
CHEM 426 Inorganic Chemistry Laboratory (2)
CHEM 412 Senior Research 2 (2)
MATH 253 Calculus 3 Lecture (3)
MATH 255 Calculus 3 Laboratory (1)
BIOL 101 Biological Sciences 1 Lecture (3)
BIOL 103 Biological Sciences 1 Laboratory (1)
BIOL 102 Biological Sciences 2 Lecture (3)
BIOL 104 Biological Sciences 2 Laboratory (1)
PHYS 201 University Physics 1 Lecture (3)
PHYS 205 University Physics 1 Laboratory (1)
PHYS 202 University Physics 2 Lecture (3)
PHYS 206 University Physics 2 Laboratory (1)
Writing Intensive Course (*Satisfied by One General Chemistry Laboratory and one Organic Chemistry Laboratory course)*
**Electives (9 credits)***

**Program Core Requirements for Chemistry Option (63 Credits)**

CHEM 112 General Chemistry 2 Lecture (3)
CHEM 114 General Chemistry 2 Laboratory (1)
CHEM 231 Organic Chemistry 1 Lecture (3)
CHEM 233 Organic Chemistry I Laboratory (2)
CHEM 232 Organic Chemistry 2 Lecture (3)
CHEM 234 Organic Chemistry II Lab (2)

CHEM 225 Descriptive Inorganic Chemistry (2)
CHEM 351 Physical Chemistry Lecture (3)
CHEM 353 Physical Chemistry Laboratory (2)
CHEM 355 Physical Chemistry Calculations 1 (1)
CHEM 245 Quantitative Analysis Lecture (3)
CHEM 247 Quantitative Analysis Laboratory (2)
CHEM 352 Physical Chemistry 2 Lecture (3)
CHEM 354 Physical Chemistry 2 Laboratory (2)
CHEM 356 Physical Chemistry Calculations 2 (1)
CHEM 461 Biochemistry Lecture (3)
CHEM 463 Biochemistry Lab (2)
CHEM 445 Instrumental Methods of Analysis (3)
CHEM 447 Instrumental Analysis Laboratory (2)
MATH 253 Calculus 3 Lecture (3)
MATH 255 Calculus 3 Laboratory (1)
BIOL 101 Biological Sciences 1 Lecture (3)
BIOL 103 Biological Sciences 1 Laboratory (1)
BIOL 102 Biological Sciences 2 Lecture (3)
BIOL 104 Biological Sciences 2 Laboratory (1)
PHYS 201 University Physics 1 Lecture (3)
PHYS 205 University Physics 1 Laboratory (1)
PHYS 202 University Physics 2 Lecture (3)
PHYS 206 University Physics 2 Laboratory (1)
Writing Intensive Course (*Satisfied by One General Chemistry Laboratory and one Organic Chemistry Laboratory course)*

**Electives (18 credits)***

***18 hours of electives approved by the Program**

## COURSE DESCRIPTIONS: CHEMISTRY (CHEM)

**CHEM105 Fundamentals of Chemistry (3)**
Surveys the essential concepts of inorganic chemistry with emphasis on health-related applications. CHEM 105 is not acceptable for credit toward graduation for students majoring in chemistry. When taken as a prerequisite for 1507 111 (General Chemistry I Lecture), there is no co-requisite. When taken to satisfy the University-wide science requirement, concurrent enrollment in CHEM 106 (Fundamentals of Chemistry Laboratory) is required. Lec. 3 hrs., Pre-req.: High School Algebra (2 yrs.) or equivalent.

**CHEM106 Fundamentals of Chemistry Laboratory (1)**
Introduces basic laboratory techniques through a collection of experiments designed for students who have little or no laboratory experience. Requires concurrent enrollment in CHEM 105. Lab 3 hrs.

**CHEM109 Introductory Chemistry (3)**
Presents and explains properties of matter in terms of modern theories and concepts. CHEM109 is not acceptable for credit toward graduation for students majoring in chemistry. When taken as a prerequisite for CHEM111 (General Chemistry I Lecture), there is no co-requisite. When taken to satisfy the University-wide science requirements, concurrent enrollment in CHEM110 (Introductory Chemistry Laboratory) is required. Lec 3 hrs., Pre-req.: High school algebra (2 yrs.) or equivalent.

**CHEM110 Introductory Chemistry Laboratory (1)**
Introduces basic laboratory techniques through a selection of experiments for students who have little or no laboratory experience. It requires concurrent enrollment in CHEM109 (Introductory Chemistry Lec). Co-req.: CHEM109

**CHEM111 General Chemistry I (3)**
Examines atomic structure, stoichiometry, periodic table, chemical bonding, molecular structure, properties of gases, liquids and solids, acids and bases, and oxidation-reduction reactions. Lec 3 hrs., Pre-req.: High school chemistry or CHEM 105 or CHEM 109, two years of high school algebra. Co-req.: CHEM 113.

**CHEM112 General Chemistry II (3)**
Examines chemical thermodynamics, chemical kinetics, chemical equilibria, electrochemical reactions, nuclear chemistry, and coordination complexes. Lec 3 hrs., Pre-req.: CHEM 111; Co-req.: CHEM 114.

**CHEM113 General Chemistry I Laboratory (1)**
Concentrates on the principles of chemistry with emphasis on statistical treatment of experimental data. Requires concurrent enrollment in CHEM 111. Lab 3 hrs.

**CHEM114 General Chemistry II Laboratory (1)**
Emphasizes the experimental principles of solution chemistry. Requires concurrent enrollment in CHEM 112. Lab 3 hrs., Pre-req.: CHEM 113.

**CHEM135 Essentials of Organic and Biochemistry (3)**
Studies classes of organic compounds, their structure, nomenclature, and characteristic reactions including structure, function, and metabolism of proteins, carbohydrates, lipids, and nucleic acids. Requires concurrent enrollment in CHEM 136. Lec 3 hrs., Pre-req.: CHEM 105 or CHEM 111.

**CHEM136 Essentials of Organic and Biochemistry Laboratory (1)**
Illustrates the basic properties of organic and biological compounds and some of the reactions these compounds undergo, including functional group analysis through experimental exercises. Requires concurrent enrollment in CHEM 135. Lab 3 hrs.

**CHEM225 Descriptive Inorganic Chemistry (2)**
Discusses the descriptive chemistry of the elements and compounds emphasizing trends, similarities, and comparisons among the properties. Lec 2 hrs., Pre-req.: CHEM 112.

**CHEM231 Organic Chemistry I (3)**
Studies the structure, nomenclature, stereochemistry, reactions, and reaction mechanisms of hydrocarbons, alkyl halides, and alcohols. Lec 3 hrs., Pre-req.: CHEM 112. Co-req.: CHEM 233.

**CHEM232 Organic Chemistry II (3)**
Examines the preparation and reactions of alkyl halides, alcohols, phenols, ethers, aldehydes, ketones, amines, carboxylic acids and their derivatives, carbohydrates and other biologically important compounds. Lec 3 hrs., Pre-req.: CHEM 231. Co-req.: CHEM 234.

**CHEM233 Experimental Organic Chemistry I (2)**
Experiments in the techniques of separation, purification, and identification of pure substances; preparations and reactions of selected organic families. Introduces infrared spectroscopy. Lab 6 hrs., Pre-req.: CHEM 114. Co-req.: CHEM 231.

**CHEM234 Experimental Organic Chemistry II (2)**
Introduces nuclear magnetic resonance, ultraviolet and mass spectroscopy. Also covers preparations and reactions of oxygenated organic compounds, and introduces qualitative organic analysis. Lab 6 hrs., Pre-req.: CHEM 233. Co-req.: CHEM 232.

**CHEM245 Quantitative A0nalysis (3)**
Discusses the theories of volumetric and gravimetric analysis with particular emphasis on acid-base, precipitation, complex formation and oxidation-reduction reactions. Lec 3 hrs., Prereq: CHEM 112.

**CHEM247 Quantitative Analysis Laboratory (2)**
Features experiments illustrating volumetric, gravimetric, and potentiometric methods of analysis. Lab 6 hrs., Co-req.: CHEM 245

**CHEM351 Physical Chemistry I (3)**
Examines the physicochemical systems with application to the first, second, and third laws of thermodynamics, thermochemistry, homogeneous and heterogenous equilibria, electrochemistry, ionic equilibria, liquids, and surface chemistry. Lec 3 hrs., Pre-req.: CHEM 112, MATH 152, PHYS 201. Co-req.: CHEM 353.

**CHEM352 Physical Chemistry II (3)**
Discusses the kinetic theory of gases, kinetics and mechanism, molecular structure and symmetry, and quantum theory and spectroscopy. Also addresses statistical mechanics irreversible processes insolution, crystal structure, and solid state. Lec 3 hrs., Pre-req.: CHEM 351. Co-req.: CHEM 354.

**CHEM353 Physical Chemistry I Laboratory (2)**
Provides laboratory instruction in experimentation, treatment of experimental data and error analysis;, report writing, and theory and operation of instruments. Lab 4 hrs., Co-req.: CHEM 351.

**CHEM354 Physical Chemistry II Laboratory (2)**
Examines the techniques of physical measurements and error analysis. Explores thermodynamic measurements, chemical dynamics, spectroscopy, physical property measurements, and electrochemical and conductivity measurements. Lab 4 hrs., Pre-req.: CHEM 353. Co-req.: CHEM 352.

**CHEM355 Physical Chemistry Calculations I (1)**
Examines calculations based on the application of theories as studied in Physical Chemistry I Lec 1 hr., Co-req.: CHEM 351.

**CHEM356 Physical Chemistry Calculations II (1)**
Examines calculations based on the application of theories as studied in Physical Chemistry II. Lec 1 hr., Co-req: CHEM 352.

**CHEM411 Senior Research I (2)**
Provides directed research in chosen area of chemistry. Includes techniques in literature searching, utilization of basic and specialized instrumentation, and preparation of scientific reports. Primarily for chemistry majors; however, other qualified majors may be considered. Lab 6 hrs., Pre-req.: Permission of Department chair.

**CHEM412 Senior Research II (2)**
Continues research project begun in CHEM 411. Students analyze and interpret data and prepare a final written report. Requires a seminar presentation to the Department. Lab 6 hrs., Pre-req: CHEM 411.

**CHEM425 Inorganic Chemistry (3)**
Studies atomic structure related to the periodic arrangement of elements. Discusses modern theories of bonding and acid-base systems. Includes structure, molecular symmetry, and group theory of inorganic compounds. Lec 3 hrs., Pre-req.: CHEM 351.

**CHEM426 Inorganic Chemistry Laboratory (2)**
Examines the preparation of inorganic and organometallic compounds, illustrating advanced preparation techniques, including characterization by spectroscopic methods. Includes equilibrium and kinetics of related reaction systems. Lab 4 hrs., Pre-req.: CHEM 353.

**CHEM435 Qualitative Organic Analysis (3)**
Illustrates the systematic identification of organic compounds. Includes separation of mixtures, functional group analysis, and preparation of derivatives for characterization and identification. Lec. 1 hr., Lab 4 hrs., Pre-req.: CHEM 232 and CHEM 234.

**CHEM436 Advanced Organic Synthesis (2)**
Features an advanced laboratory course in organic chemistry. Discusses the techniques for preparing, purifying, and identifying organic compounds, with an emphasis on newer developments. Determines mechanisms of reactions by kinetic and product analysis. Lab 4 hrs., Pre-req.: CHEM 234.

**CHEM437 Advanced Organic Chemistry (3)**
Examines theoretical organic chemistry. Discusses inductive, steric, and resonance effects, kinetic methods for determining reaction mechanisms, molecular rearrangements, and basic concepts in molecular orbital theory. Lec 3 hrs., Pre-req.: CHEM 232.

**CHEM445 Instrumental Methods of Analysis (3)**
Examines the theory of instrumental methods of analysis, including potentiometry, coulometry, polarography, absorption spectrophotometry, chromatography, atomic spectroscopy, and nuclear magnetic resonance. Lec 3 hrs., Pre-req.: CHEM 247 and CHEM 352.

**CHEM447 Instrumental Analysis Laboratory (2)**
Provides practice in electroanalytic methods, including potentiometry, coulometry, and polarography as well as optical methods, including visible, ultraviolet, infrared, and atomic absorption spectroscopy. Also discusses gas and high performance liquid chromatography and nuclear magnetic resonance. Lab 4 hrs., Co-req.: CHEM 445.

**CHEM461 Biochemistry I (3)**
Discusses the chemistry and function of biologically important compounds (amino acids and proteins, enzymes, carbohydrates, lipids, nucleic acids),
membrane structure and transport, and the thermodynamics of biological systems. Lec 3 hrs., Pre-req.: CHEM 232.

**CHEM462 Biochemistry II (3)**
Studies the chemistry and regulation of major metabolic pathways, and fundamentals of molecular biology (replication of DNA, transcription, the genetic code, protein biosynthesis, and modern genetic technology) including a discussion of the ethical implications of contemporary practices. Lec 3 hrs., Pre-req.: CHEM 461.

**CHEM463 Experimental Biochemistry I (2)**
Introduces techniques and applications of modern biochemistry, such as physicochemical studies of amino acids, purification, characterization, and kinetic study of an enzyme, isolation and characterization of DNA, utilization of chromatographic and electrophoretic methods. Lab 6 hrs., Pre-req.: CHEM 234. Co-req.: CHEM 461.

**CHEM464 Experimental Biochemistry II (2)**
Introduces techniques to study gene expression, gene identification and sequencing, and protein sequencing;. Also introduces current concepts such as genomics, proteomics, and metabolomics. Lab 6 hrs., Pre-req.: CHEM 462,. Co-req.: CHEM 463.

## Mathematics (BS)

**Bachelor of Science in Mathematics**

- Concentration in Pure Mathematics
- Concentration in Statistics

The Mathematics and Statistics program prepares degree-seeking students in mathematics with the knowledge and life-long learners as they pursue a career in mathematics, a mathematics-related field, or graduate studies.

The Bachelor of Science degree program offers two options: Pure Mathematics and Statistics. Each program option prepares students for careers or graduate study in mathematics, statistics, or in a mathematics-related field. The smaller-size advanced mathematics classes enable faculty to give each student personal attention as needed.

**Student Organizations**
Honor Society: Pi Mu Epsilon
Club Student Group: Math Club

**Graduation Credit Hours**
This bachelor's degree program requires the fulfillment of 121 credit hours, including specific courses identified in the program of study and applicable IGED requirements.

**GPA Statement**
In the undergraduate program, students must earn a minimum grade of "C" in all required courses and in the Mathematics major program and each mathematics elective course.

## Mathematics (BS)
## Concentration in Pure Mathematics

All new students, including students transferring less than 27 semester hours, will be placed in the appropriate mathematics courses pursuant to the Mathematics Program's assessment. Students should consult with their major advisor to determine mathematics courses required in that discipline.

**Required Courses**
**(IGED Requirements: 28 credits + substitutions: see IGED Table of Substitutions)**

**Program Core Requirements (59 Credits)**

PHIL 105 Introduction to Logic (3)
APCT 231 Introduction to Computer Science I *(Satisfies IGED 250)* (3)
APCT 233 Introduction to Computer Science I Lab (1)
FREN 101 Beginning French I (3)
FREN 102 Beginning French II (3)
MATH 151, 155 Calculus I, Calculus I Lab *(Satisfies IGED 120)* (4)
MATH 152, 156 Calculus II, Calculus II Lab *(Satisfies IGED 220* (4)
MATH 225 Linear Algebra (3)
MATH 253, 255 Calculus III, Calculus III Lab (4)
MATH 176 Introduction to Mathematical Concepts (3)
MATH 254 Differential Equation (3)
Or
MATH 260 Differential Equation w/Linear Algebra (4)
MATH 351 Advanced Calculus I (3)
MATH 411 Abstract Algebra I (3)
MATH 490 Seminar I (1)
MATH 461 Complex Analysis I (3)
**At least one (1) of the following three courses**
MATH 352 Advanced Calculus II (3)
MATH 412 Abstract Algebra II (3)
MATH 462 Complex Analysis II (3)

**Four (4) Mathematics Electives must be chosen from the following list and must be approved by the Mathematics Program:**

MATH 316 Number Theory (3)
MATH 335 Classical Geometry* (3)
MATH 381 Probability and Statistics (3)
MATH 382 Probability with Applications (3)
MATH 385 Regression Analysis with Applications (3)
MATH 409 History of Mathematics* (3)
MATH 425 Advanced Linear Algebra (3)
MATH 431 Modern Geometry I* (3)
MATH 432 Modern Geometry II* (3)
MATH 435 Differential Geometry (3)
MATH 445 Topology (3)
MATH 451 Analysis I (3)
MATH 452 Real Analysis II (3)
MATH 475 Mathematical Logic (3)
MATH 480 Mathematical Statistics I (3)
MATH 481 Mathematical Statistics II (3)
MATH 482 Numerical Analysis I (3)
MATH 483 Numerical Analysis II (3)
MATH 485 Mathematical Modeling (3)
MATH 495 Independent Study (3)
MATH 499 Special Topics in Mathematics (3)
*At most, two of these courses may be chosen in the Pure Mathematics Option

**Requires 35 credits of general electives**

**Total credit hours: 121**

## Mathematics (BS)
## Concentration in Statistics

All new students, including students transferring less than 27 semester hours, will be placed in the appropriate mathematics courses pursuant to the Mathematics Program's assessment. Students should consult with their major advisor to determine mathematics courses required in that discipline.

**Graduation Credit Hours**
This bachelor's degree program requires the fulfillment of 121 credit hours, including specific courses identified in the program of study and the applicable IGED requirements.

**(IGED Requirements: 28 credits + substitutions: see IGED Table of Substitutions)**

**Program Core Requirements (71 Credits)**

PHIL 105 Introduction to Logic (3)
APCT 231 Introduction to Computer Science I *(Satisfies IGED 250)* (3)
APCT 233 Introduction to Computer Science I Lab (1)
MATH 151, 155 Calculus I, Calculus I Lab *(Satisfies IGED 120)* (4)
MATH 152, 156 Calculus II, Calculus II Lab *(Satisfies IGED 220)* (4)
MATH 225 Linear Algebra (3)
MATH 253, 255 Calculus III, Calculus III Lab (4)
MATH 176 Introduction to Mathematical Concepts (3)
MATH 254 Differential Equation (3)
or
MATH 260 Differential Equation w/Linear Algebra (4)
MATH 351 Advanced Calculus I (3)
MATH 411 Abstract Algebra I (3)
MATH 490 Seminar I (1)

**Four Mathematics Electives must be chosen from the following list and must be approved by the Program of Mathematics:**

MATH 316 Number Theory (3)

MATH 335 Classical Geometry (3)
MATH 352 Advanced Calculus II (3)
MATH 409 History of Mathematics (3)
MATH 412 Abstract Algebra II (3)
MATH 425 Advanced Linear Algebra (3)
MATH 431 Modern Geometry I (3)
MATH 432 Modern Geometry II (3)
MATH 435 Differential Geometry (3)
MATH 445 Topology (3)
MATH 451 Analysis I (3)
MATH 452 Real Analysis II (3)
MATH 462 Complex Analysis II (3)
MATH 475 Mathematical Logic (3)
MATH 482 Numerical Analysis I (3)
MATH 483 Numerical Analysis II (3)
MATH 485 Mathematical Modeling (3)
MATH 495 Independent Study (3)
MATH 499 Special Topics in Mathematics (3)

**Program Requirements: Statistics**

MATH 381 Probability and Statistics (3)
MATH 382 Probability with Applications (3)
MATH 385 Regression Analysis with Applications (3)
MATH 386 Analysis of Variance with Applications (3)
MATH 480 Mathematical Statistics I (3)
MATH 481 Mathematical Statistics II (3)

**Requires 23 credits of general electives**

## COURSE DESCRIPTIONS: MATHEMATICS (MATH)

**MATH105 Intermediate Algebra (3)**
Develops basic geometric ideas, the real number system and algebraic expressions, radicals, rational expressions, first degree equations and inequalities, quadratic equations, the Cartesian plane, and systems of equations. Provides intermediate algebra instruction for students with competence in introductory algebra but who require additional preparation prior to enrollment in courses that lead to calculus (e.g., MATH 113 or MATH 115).
Lec. 3 hrs. Pre-req: appropriate score on the Mathematics Placement Test.

**MATH113 Pre-Calculus with Trigonometry I (3)**
Examines algebraic notation and symbolism, exponents and radicals, algebraic functions, solution of linear and quadratic equations and inequalities, relations and functions, rational functions and graphs, conic sections, exponential and logarithmic functions and graphs. Provides instruction primarily for students preparing to take calculus. Lec. 3 hrs. Pre-req.: MATH 105 **Important note:** credit will be given for only one of MATH 113 or MATH 115.

**MATH114 Pre-Calculus with Trigonometry II (3)**
Continues MATH 113. Examines trigonometric functions, identities, and the applications. Includes solving trigonometric equations, exploring systems of equations and inequalities, examining operations with complex numbers, polynomials, and mathematical induction. Lec. 3 hrs. Pre-req..: Math 113. **Important note**: credit will be given for only one of MATH 114 or MATH 115.

**MATH115 Pre-Calculus Intensive (3)**
Covers all the material in MATH 113 and MATH 114. Designed for students who have three or four years of secondary school mathematics. The technical laboratory is an integral part of the course. Students taking MATH 115 must take the same section of MATH 120. Lec. 3 hrs. Co-req.: MATH 120; Pre-req.: Completion of algebra, geometry, and trigonometry in high school and permission of the Department of Mathematics**. Important note:** credit will be awarded for only one of the following sequences: MATH 113, MATH 114 or MATH 115.

**MATH120 Pre-Calculus Intensive Lab (1)**
Uses technology to provide visual and/or numerical support when solving problems by algebraic methods and when algebraic methods are impossible or impractical. Students taking MATH 120 must take the same section of MATH 115. Lab. 2 hrs. Co-req.: MATH 115.

**MATH116 Finite Math (3)**
Investigates systems of linear equations, matrices and linear programming, elementary functions, especially logarithmic and exponential functions, and applications to business situations. Lec. 3 hrs. Pre-req.: Math 105 or appropriate scores on the Mathematics Placement Test.

**MATH151 Calculus I (3)**
Develops concepts and skills for limits and continuity. Also covers derivatives and the applications, integrals, The Fundamental Theorem of Calculus, and elementary transcendental functions. Computer laboratory is an integral part of the course. Lec. 3 hrs. Co-req.: MATH 155; Pre-req.: MATH 151 or permission of the Department of Mathematics.

**MATH152 Calculus II (3)**
Continues Math 151. Explores further applications of the integral, and techniques of integration. Additional topics include the calculus of one variable, analytic geometry, sequences, and infinite series. Computer laboratory is an integral part of the course. Lec. 3hrs. Co-req.: MATH 156; Pre-req.: Math 151 or permission of the Department of Mathematics.

**MATH155 Calculus I Lab (1)**
Explores theoretical concepts and applications of Calculus I (MATH 151). Provides an experimental environment designed to employ symbolic, numerical, and graphics capabilities of a computer algebra system. Lab. 1 hr., Co-req.: MATH 151.

**MATH156 Calculus II Lab (1)**
Explores theoretical concepts and applications of Calculus II (MATH 152). Provides an experimental environment designed to employ symbolic, numerical, and graphics capabilities of a computer algebra system. Lab. 1 hr., Co-req.; MATH 152.

**MATH176 Introduction to Mathematical Concepts (3)**
Examines elementary set theory and logic. Involves axiomatic systems taken from both numbers and geometry, mathematical induction, basic techniques for structuring and performing elementary proofs, and mathematical systems. Provides instruction primarily for mathematics majors. Lec. 3 hrs. Pre-req.: MATH 152, and PHIL 105.

**MATH185 Elementary Statistics I (3)**
Introduces concepts and techniques of probability and statistics, including measures of central tendency and dispersion. Also includes probability and probability distributions, correlation, and regression. Also introduces statistical inference and computer applications using Minitab. Lec. 3hrs., Pre-req. Math 105.

**MATH186 Elementary Statistics II (3)**
Continues MATH 185. Develops concepts, skills, and applications for hypothesis testing. Also includes analysis of variance, the chi-square distribution, correlation and regression analysis in addition to non-parametric statistics and computer applications using Minitab. Lec. 3 hrs. Pre-req.: MATH 185.

**MATH215 Calculus for Business, Economics, the Social and Life Sciences (4)**
Presents concepts and skills on limits and continuity. Examines differential and integral calculus with applications from business, economics, and the social and biological sciences. Lec. 4 hrs. Pre-req.: MATH 113, MATH 116 or equivalent.

**MATH220 Discrete Mathematics (3)**
The course examines counting principles, logic, set theory, functions, properties of the natural numbers and of the integers, mathematical induction, complexity of algorithms, matrices, relations, and graph theory. It provides instruction primarily for engineering and computer science students.

**Pre-req.** MATH 113 or the permission of the Department of Mathematics is required. ***Important Note:*** *MATH 220 does not meet the requirements for a major in mathematics*

**MATH225 Linear Algebra (3)**
Investigates systems of linear equations and methods of solution, matrices and matrix solutions of linear systems, and matrix algebra. Also involves determinants, vectors, and vector spaces. Examines linear transformations, inner products, and norms. Lec. 3 hrs. Pre-req.: MATH 151 or permission of the Department of Mathematics.

**MATH253 Calculus III (3)**
Continues MATH 152. Provides additional topics in the calculus of several variables, vector and analytic geometry in space, vector-valued functions, partial differentiation, multiple integration, and integration of vector fields. Also includes Green's, Stokes', and Gauss' Theorems. Computer laboratory is an integral part of the course. Lec. 3 hrs. Co-req.: MATH 255; Pre-req.: MATH 152 or permission of the Department of Mathematics.

**MATH254 Differential Equations (3)**
Examines first order equations, linear and systems of linear differential equations, higher order equations, and first order equations with non-constant coefficients. Also covers applications series solutions, and Laplace Transform solution of partial differential equations as well as elliptic and hyperbolic equations. Lec. 3 hrs. Pre-req.: MATH152 or permission of the Department of Mathematics.

**MATH255 Calculus III Laboratory (1)**
Explores theoretical concepts and applications of Calculus III (MATH 253) in an experimental environment designed to employ symbolic, numeral, and graphics capabilities of a computer algebra system. Lab 2 hrs. Co-req.: MATH 253.

**MATH 260 Diff. Equations with Linear Algebra (4)**
Covers ordinary differential equations and topics from linear algebra and the applications to differential equations. Examines first order equations, higher order equations systems of first order linear differential equations, matrices, determinants, vector spaces, eigenvalues, and other selected topics from Linear Algebra. Provides instruction for mathematics, science, and engineering students. Lec. 4 hrs. Pre-req.: MATH 152 or permission of the Department of Mathematics.

**MATH 315 Number Structures with Applications (3)**
Introduces the real number system, its subsystems, and applications. Includes the elementary number theory. Lec. 3 hrs. Pre-req. MATH 151 or MATH 215 or permission of the Department of Mathematics.

**MATH316 Number Theory (3)**
Examines divisibility, numerical functions, the arithmetic of congruency classes, solving congruence's, theory of primitive roots, and quadratic reciprocity. Lec. 3 hrs. Prereq.: MATH 151 or permission of the Department of Mathematics.

**MATH335 Classical Geometry (3)**
Investigates plane and solid Euclidean geometry from a theoretical and historical perspective, including congruence; parallel postulate and its consequences. Also covers similarity, area and area functions, constructions, volume, and elementary transformations of the plane. Lec. 3 hrs. Pre-req.: MATH 151 or permission of the Department of Mathematics.

**MATH351 Advanced Calculus I (3)**
Explores completeness and order properties of the real numbers, sequences and their limits, the Bolzano-Weierstrass and Heine-Borel theorems. Also covers limits and continuity, and theory of differentiation and integration as well as infinite series of numbers and infinite series of functions. Lec. 3 hrs. Pre-req.: MATH 253 and MATH 176, or permission of the Department.

**MATH352 Advanced Calculus II (3)**
Continues MATH 351. Examines n-dimensional Euclidean space and its topology, convergence of sequences, metric spaces, differentiation and integration of functions and several variables, and vector analysis. Lec. 3 hrs. Pre-req.: MATH 351 or permission of the Department.

**MATH381 Probability and Statistics (3)**
Explores mathematical models of random phenomena, basic probability theory, discrete probability spaces, combinatorial methods, conditional probability, independent and dependent events. Explores distribution functions, mean and variance of a probability law, notion of average, and expectation of a function. Investigates the normal, Poisson, exponential, gamma, and related probability laws, and computer applications. Lec. 3 hrs. Pre-req.: MATH 152 or permission of the Department.

**MATH382 Probability with Applications (3)**
Continues MATH 381. Examines approximations of binomial and Poisson distributions by the normal distribution, probabilities of functions of random variables, law of large numbers, central limit theorem, related topics, statistical inference, and hypothesis testing. Also covers computer applications using Minitab. Lec. 3 hrs. Prereq.: MATH 381. Co-req.: MATH 253 or permission of Department of Mathematics.

**MATH385 Introduction to Regression Analysis and its Application (3)**
Introduces simple and multiple linear regression, stepwise regression procedure, and regression diagnostics, including residual analysis, collinearity and scaling problems.
Also covers computer applications using Minitab or SPSSX. Lec. 3 hrs. Pre-req.: MATH 381 or permission or the Department of Mathematics.

**MATH386 Analysis of Variance and its Application (3)**
Introduces and illustrates design of experiments and analysis of variance, randomized blocks, factorial analysis, and Latin Square designs, and analysis of covariance. Includes computer applications. Lec. 3 hrs. Pre-req.: MATH 385 or permission of Department.

**MATH393 Theory and Applications of Mathematics (3)**
Explores structure of a mathematical system including sets and whole numbers, sets and arithmetic, system of whole numbers, base-ten arithmetic, arithmetic in bases other than ten, and elementary number theory. Also covers system of integers, system of rational numbers, decimal expansions and real numbers, the metric system, probability, and statistics. Provides instruction for students who intend to teach in elementary school. Lec. 3 hrs. Pre-req.: MATH 102 or permission of the Department.

**MATH394 Informal Geometry with Applications (3)**
Investigates intuitive plane geometry, measurement and coordinate geometry, elementary logic, geometric constructions, and Pythagorean Theorem. Provides instruction for students who intend to teach in elementary school. Lec. 3 hrs. Prereq.: MATH 393 or permission of the Department.

**MATH409 History of Mathematics (3)**
Investigates, among other topics, mathematics of early humans, the real number system, and the role of the ancient civilizations in its development. Also covers mathematics during the Dark Ages of Europe, mathematics during the Renaissance, and contributions of Africans, Asians, and non-Europeans to the development of mathematics. Lec. 3 hrs. Prereq.: MATH 152 or permission of the Department of Mathematics.

**MATH411 Abstract Algebra I (3)**
Studies binary operations, groups and subgroups, permutations, cyclic groups, isomorphism's, direct products, finitely generated Abelian groups, homomorphism's normal subgroups and factor groups, and series of groups. Lec. 3 hrs. Prereq.: MATH 176 and MATH 225 or permission of the Department.

**MATH412 Abstract Algebra II (3)**
Continues MATH 411. Investigates rings, integral domains, fields and fields of quotients of integral domains, quotient rings and ideals. Also includes homomorphism of rings, polynomials, factoring polynomials over a field, extension fields, splitting fields, separable extensions, finite fields, and Galois Theory. Lec. 3 hrs. Prereq.: MATH 411 or permission of the Department of Mathematics.

**MATH425 Advanced Linear Algebra (3)**
Examines vector spaces, dual spaces, and canonical forms. Also covers eigenvalues and eigenvectors, inner product spaces, and spectral theory and applications. Lec. 3 hrs. Prereq.: MATH 176 and MATH 225, or permission of the Department of Mathematics.

**MATH431 Modern Geometry I (3)**
Explains the foundation and structure of how geometry develops, including projective, Euclidean, non-Euclidean and finite geometries studied by means of transformations and axiom systems. Lec. 3 hrs. Prereq.: MATH 176 and MATH 225 or permission of the Department of Mathematics.

**MATH432 Modern Geometry II (3)**
Continues MATH 431. Studies algebraic projective geometry; linear algebra; vector algebra; generalized coordinate systems, and linear transformations. Lec. 3 hrs. Prereq.: MATH 431 or permission of the Department of Mathematics.

**MATH435 Differential Geometry (3)**
Develops tangent vectors, normal planes, curvature, principal normals, torsion, Frenet equations, co-ordinate systems, tangent planes,and normal lines. Also involves the first and second fundamental forms, normal and principal curves, Gaussian, and mean curvature, in addition to the fundamental theorem of surfaces, applications of multilinear algebra to surfaces, geodesics, and differential forms. Lec. 3 hrs. Prereq.: MATH 254 or MATH 260, and MATH 352 or permission of the Department of Mathematics.

**MATH445 Topology (3)**
Examines open sets, topologies, closed sets, neighborhoods, limit points, and closures and interiors. Also covers derived sets, bases, continuity, homeomorphisms, and connectedness and compactness. Lec. 3 hrs. Prereq.: MATH 176 or permission of the Chairperson of the Department of Mathematics.

**MATH451 Real Analysis I (3)**
Examines metric spaces, the Bolzano-Weierstrass theorem, Cantor sets, sequences of functions, Borel sets and Baire functions. Also examines well orderings, measure and measurable sets, and Lebesgue integration and measure. Lec. 3 hrs. Prereq.: MATH 352 or permission of the Chairperson of the Department of Mathematics.

**MATH452 Real Analysis II (3)**
Continuation of MATH 451. Includes Banach and Hilbert spaces, the Hahn-Banach theorem, the open-mapping theorem, operators, dual and double dual spaces, and reflexive Banach spaces. Lec. 3 hrs. Prereq.: MATH.451 or permission of the Chairperson of the Department of Mathematics.

**MATH461 Complex Analysis I (3)**
Investigates complex numbers and their geometry, functions and limits, derivatives and elementary functions, line integrals, and Cauchy's theorems and applications. Also includes power and Laurent series, and residues and applications. Lec. 3 hrs. Prereq.: MATH 351 or permission of the Department of Mathematics.

**MATH 462 Complex Analysis II (3)**
Continues MATH 461. Further examines topics in power series, conformal mappings, and harmonic functions and their applications. Lec. 3 hrs. Prereq.: MATH 461 or permission of the Department of Mathematics.

**MATH475 Mathematical Logic (3)**
Includes propositional logic and predicate logic Also covers the formalization of arithmetic and Gödel's theorems, and applications to automata and data structures. Provides instruction for students who have had some experience proving theorems and desire a rigorous introduction to the foundations of mathematics. Lec. 3 hrs. Prereq.: MATH 411 or permission of the Department of Mathematics.

**MATH480 Mathematical Statistics I (3)**
Explores distribution and functions of random variables, sampling theory, order statistics, point estimation, confidence intervals, and introduction to tests of hypothesis and analysis of variance from mathematical point of view. Usually offered every fall. Lec. 3 hrs. Prereq: MATH351 and MATH382 or permission of department.

**MATH481 Mathematical Statistics II (3)**
Continues MATH480. With generating functions; maximum likelihood techniques, tests of hypothesis, and analysis of variance and linear regression from mathematical point of view. Special topics include Bayesian procedures and applications. Includes computer applications using MINITAB, SPSS or SAS. Usually offered every spring. LEC. 3 hrs. Pre-req: MATH 480 or permission of the department.

**MATH482 Numerical Analysis I (3)**
Two-semester course which introduces basic computational methods for nonlinear equations, acceleration of convergence, interpolation, approximation, and numerical differentiation and integration. Supplements theoretical study with computer programming assignments. Lec. 3 hrs. Prereq.: MATH 152 and competency in a programming language or permission of the Department of Mathematics.

**MATH483 Numerical Analysis II (3)**
Continues MATH 482. Investigates initial value problems for ordinary differential equations, direct and iterative methods for solving systems of linear equations, the symmetric eigenvalue problem, and the least squares problem. Includes computer programming assignments. Lec. 3 hrs. Prereq.: MATH225, MATH482 and either MATH254 or MATH260 or permission of the Department of Mathematics.

**MATH485 Mathematical Modeling (3)**
Introduces mathematical techniques in modeling the behavior of various systems. Includes linear programming and differential equations. Lec. 3 hrs. Prereq.: MATH254 or MATH260 or permission of the Department of Mathematics.

**MATH490 Senior Seminar (1)**
Describes methods of presenting seminars, new mathematical discoveries, career opportunities in mathematics, and other topics not covered in formal courses. Serves as a requirement for all senior mathematics majors. Lec 1 hr., Prereq.: Math 351, MATH411, and senior status in mathematics or permission of the Department of Mathematics.

**MATH495 Independent Study VC (1-6)**
Explores a mathematical topic not covered in any other undergraduate course. May be repeated for credit, but no more than six credit hours will be awarded. Offers independent study under the direction of a faculty member. Pre-req.: An agreement with an instructor describing the subject matter, method of study, and written approval of the Chairperson of the Department of Mathematics.

## COURSE DESCRIPTIONS: PHYSICS (PHYS)

**PHYS101 Introduction to College Physics I (3)**
Introduces laws of motion and the concept of energy, thermal and elastic properties of matter, and theories of waves and sound. Fulfills physics requirement for biology, premed, and other science majors. Includes one additional hour per week for problem solving. Lec 3 hrs., Pre-req.: MATH 105 or equivalent. Co-req.: PHYS 103.

**PHYS102 Introduction to College Physics II (3)**
Continues Introduction to College Physics I Lecture. Includes the study of electricity and magnetism, electronics, geometrical and physical optics, and a description of atomic and nuclear structure. Fulfills physics requirement for biology, premed, and other science majors. Includes one additional hour for problem solving. Lec 3 hrs., Pre-req.: PHYS 101, Co-req.: PHYS 104.

**PHYS103 Introduction to College Physics I Laboratory (1)**
Accompanies Introduction to College Physics I Lecture and must be taken concurrently with the lecture course. Lab 2 hrs. Laboratory section must correspond to the lecture section.

**PHYS104 Introduction to College Physics II Laboratory (1)**
Accompanies Introduction to College Physics II Lecture and must be taken concurrently with the lecture course. Lab 2 hrs. Laboratory section must correspond to the lecture section.

**PHYS114 Astronomy and Space Science (3)**
Introduces the principles of astronomy, which includes a discussion of the origin of the universe, theories of the nature of the universe, fundamental principles of solar and stellar systems, stellar phenomena, and space flight dynamics. Lec 3 hrs., Co-req.: PHYS 116.

**PHYS115 Physics of Music (3)**
Introduces acoustics and the theory of wave phenomena as related to the physical aspects of music. Primarily for music majors. Lec 3 hrs. Pre-req.: MATH 105. Co-req.: PHYS 117.

**PHYS116 Astronomy and Space Science Lab (1)**
Accompanies Astronomy and Space Science Lecture. Includes experiments in physics as related to topics covered in the lecture. Includes visits to a planetarium located in the area. To be taken concurrently with PHYS 114. Lab 2 hrs.

**PHYS117 Physics of Music Laboratory (1)**
Accompanies Physics of Music Lecture. To be taken concurrently with PHYS 115. Lab 2 hrs.

**PHYS201 University Physics I (3)**
Begins a sequence designed for physics majors and others who want a rigorous, calculus-level study on the general topics of classical and modern physics, with emphasis on problem solving. Includes Newtonian mechanics which emphasizes the conservation laws of physics, fluid mechanics, heat, and thermodynamics. Lec 3 hrs. Requires a weekly two-hour discussion and problem solving session. Pre-req.: MATH 151. Co-req.: PHYS 205.

**PHYS202 University Physics II (3)**
Continues University Physics I. Includes the study of wave motion, electric and magnetic fields, DC and AC electrical circuits, electromagnetic waves, and optics. Emphasizes problem solving. Requires a passing grade on a physics objective test to obtain credit for the course. Requires a weekly two hour discussion and problem solving session. Pre-req: PHYS 201, MATH 152. Co-req: PHYS 206.

**PHYS203 University Physics III (3)**
Continues University Physics II. Includes the study of relativity, quantum theory, atomic, molecular and nuclear physics, and an introduction to solid state physics. Required for physics and engineering majors. Requires a weekly two-hour discussion and problem solving session. Pre-req.: PHYS 202. Co-req.: For engineering majors, PHYS 207.

**PHYS205 University Physics I Laboratory (1)**
Concentrates on experiments in the principles of physics, and must be taken concurrently with PHYS 201. Lab 2 hrs.

**PHYS206 University Physics II Laboratory (1)**
Continues University Physics I Laboratory, and must be taken concurrently with PHYS 202. Lab 2 hrs.

**PHYS207 University Physics III Laboratory (1)**
Accompanies University Physics III Lecture, and must be taken concurrently with PHYS 203. Lab 2 hrs.

**PHYS211 Laboratory Techniques I (1)**
Introduces important techniques including electronic circuit construction and the use of science instruments. Provides instruction for science majors and students interested in experimentation. Lab 2 hrs., Pre-req.: PHYS 101 or PHYS 201.

**PHYS212 Laboratory Techniques II (1)**
Continues Lab Techniques I. Introduces instruments and methods used in research laboratories in the physical sciences. Explores the use and calibration of standard electrical and electronic instruments. Provides instruction for science majors and others interested in instrumentation. Lab 2 hrs., Pre-req.: PHYS 211.

**PHYS331 Mechanics I (3)**
Studies mechanics using Newton's laws of motion. Includes a discussion of velocity and acceleration in plane polar coordinates, cylindrical coordinates, and spherical coordinates. Covers simple harmonic motion, damped harmonic motion and forced harmonic resonance, and constrained motion of a pendulum in addition to Kepler's three laws of motion and dynamics many particled- systems. Lec 3 hrs., Pre-req.: PHYS 202, MATH 152.

**PHYS332 Mechanics II (3)**
Continues Mechanics I. Includes a discussion of mechanics of rigid bodies in two and three dimensions. Discusses physical pendulum, and Lagrange's and Hamilton's equations of motion, in addition to the dynamics of oscillating systems, and coupled harmonic oscillators. Lec 3 hrs., Pre-req.: PHYS 331.

**PHYS341 Advanced Physics Laboratory I (1)**
Concentrates on laboratory experiments in modern physics and various experiments using scientific apparatus in laser spectroscopy, magnetics, ultra-sonics, x-rays, or nuclear physics. Designed for science majors. Lab 2 hrs., Pre-req.: Permission of Department chair.

**PHYS342 Advanced Physics Laboratory II (1)**
Continues Advanced Physics Laboratory I in an area of study other than the one chosen in Advanced Physics Laboratory I. Lab 2 hrs., Pre-req.: PHYS 341.

**PHYS345 Optics (3)**
Explores the techniques and instruments of both classical and modern optics from lenses to lasers. Provides instruction for science majors. Pre-req.: PHYS 202.

**PHYS346 Thermodynamics (3)**
Examines thermodynamic systems making use of equations of state. Covers the first, second, and third laws of thermodynamics. Includes a discussion of some engineering applications and topics for physical chemistry. Lec 3 hrs., Pre-req.: PHYS 202, MATH 152.

**PHYS381 Mathematical Methods in Science I (3)**
Explores various mathematical techniques, including series, complex variable theory, vector calculus, and differential equations, with emphasis on solving practical problems in chemistry, engineering, and physics. Lec 3 hrs., Pre-req.: PHYS 202, MATH 152.

**PHYS382 Mathematical Methods in Science II (3)**
Continues Mathematical Methods in Science I. Applies applications to more advanced problems including differential equations, and boundary value problems. Lec 3 hrs., Pre-req.: PHYS 381

**PHYS418 Statistical Mechanics (3)**
Discusses the development of certain thermodynamic concepts from the statistical point of view. Uses kinetic theory of gases where applicable. Lec 3 hrs., Prereq.: PHYS 346.

**PHYS441 Modern Physics I (3)**
Introduces quantum mechanics, covering the Schrodinger equation, tunneling phenomena, the hydrogen atom,

multielectron atoms, and a survey of statistical mechanics. Lec 3 hrs. Pre-req.: PHYS203, MATH254.

**PHYS 442 Modern Physics II (3)**
Continues Modern Physics I. Applies the theory set forth in Modern Physics I to more specialized areas. Includes the physics of molecules and lasers, an introduction to physics of solids, and the study of nuclear and particle physics. Lec. 3 hrs. Pre-req.: PHYS441.

**PHYS446 SEL TOPICS SOLID STATE PHYSICS**
Introduces periodic arrays of atoms, fundamental types of lattices, simple crystal structures, phonon and lattice vibrations, thermal properties of insulators, and free electron Fermi gas.

**PHYS451 Senior Project I (VC)**
Investigates research problems using facilities of the laboratory and library. Requires approval and supervision by designated physics faculty. Prereq.: Permission of chairperson.

**PHYS452 Senior Project II (VC)**
Continues Senior Project I. Requires each major to write a scientific paper based on senior project research and make an oral presentation of the paper to the physics faculty and students. Pre-req.: PHYS 451

**PHYS461 Electricity and Magnetism I**
Provides mathematical treatment of the theory of electricity and magnetism with emphasis on electrostatic fields, the electric potential, and an introduction to the laws of magnetic interactions.
Lec 3 hrs. Prereq 1539-202, 1539-254

**PHYS462 Electricity and Magnetism II**
Continues electricity and magnetism I, including the study of electromagnetic induction, linear networks, dielectric and magnetic materials, Maxwell's equations, and electromagnetic waves Lec 3 hrs Prereq 1539-461

**PHYS471 Quantum Mechanics I**
Introduces the origins of quantum mechanics, the one dimensional Schrodinger equation for simple systems, the formalism of quantum mechanics, quantum mechanics for three dimensional systems, and identical particles. Lec 3 hrs Pre-req 1539-203, 1539-254

**PHYS472 Quantum Mechanics II (3)**
Continues Introduction to Quantum Mechanics I. Covers time independent perturbation theory, time dependent perturbation theory , the variational principle, the WKB approximations and scattering theory. Prereq: PHYS 471.

**PHYS481 Mathematical Methods of Physics I (3)**
Examines several topics in mathematics of special importance in physical sciences. Includes vector and tensor analysis, integration in the complex plane, boundary value problems, and special functions. Emphasizes the physical interpretation of problem solutions. Prereq: PHYS 382.

**PHYS482 Mathematical Methods of Physics II**
Continues Mathematical Methods of Physics I with applications to the topics related to real physical problems. Lec 3 hrs Prereq PHYS 481

**PHYS499 General Examination in Physics**
Involves reading problems and a weekly discussion in a seminar setting. Requires a passing grade on the Departmental's general examinations. Lec 1 hr Prereq Permission of Chairperson.

## Division of Education, Health, and Social Work

The division houses programs in education, counseling, social work, and speech language pathology. All of these programs provide students with clinical experience and a curriculum that represents national trends and research reflective of the needs of tomorrow's workforce.

**Bachelor Degrees:**

- Bachelor of Arts in Early Childhood Education
- Bachelor of Arts in Elementary Education
- Bachelor of Science in Special Education
- Bachelor of Science in Social Work

**Graduate Certificates:**
Adult Education

**Graduate Degrees:**
Master of Science in Speech-Language Pathology
Master of Arts in Adult Education
Master of Science in Counseling
Concentration options:

- School Counseling
- Mental Health Counseling
- Master of Arts in Rehabilitation Counseling

Master of Arts in Early Childhood Education
Master of Arts in Teaching

- Elementary Education
- Secondary & Middle School
- English Language Arts
- Mathematics
- Social Studies

**Admissions Statement**
In addition to the University's graduate admissions requirements, applicants to the graduate programs must have completed prescribed courses or their equivalents. Please contact a program advisor for details.

**Graduation Credit Hours**
Refer to the program-specific pages for master's degree credit hour requirements.

**GPA Statement for Undergraduate Students**
Students must earn a minimum of "C" in major courses for these courses to be accepted towards completion of the bachelor's degree.

**GPA Statement for Graduate Students**
In the graduate program, students must earn a minimum grade of "B" in all required and elective courses and maintain a 3.0 cumulative grade point average.

**Graduate Transfer Credit (click for details)**
**Graduate Academic Probation (click for details)**

**Advancement to Candidacy**
Students must submit a request to advance to candidacy upon successfully completing a minimum of 12 semester hours. Readiness for candidacy will be determined by the cumulative grade point average, an acceptable score on a comprehensive examination, and successful completion of all core requirements.

**Thesis**
(Optional) The submission of an acceptable thesis in lieu of six additional credit hours of course work may be approved by the student's academic advisor.

**Accrediting Bodies**
Educator Preparation Programs are recognized and approved by the Office of the State Superintendent of Education (OSSE): https://osse.dc.gov/

Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA): https://caa.asha.org/

Council on Social Work Education (CSWE)
https://www.cswe.org/

Council for Accreditation of Educator Preparation (CAEP)
http://www.ncate.org/

Council for Accreditation of Counseling and Related Educational Programs (CACREP):
https://www.cacrep.org/

# Education (BA)

**Bachelor Degrees:**

- Bachelor of Arts in Early Childhood Education
- Bachelor of Arts in Elementary Education
- Bachelor of Science in Special Education

**Association**
American Association of Colleges for Teacher Education (AACTE): https://aacte.org/

The Undergraduate Program of Education administers both pre-service and in-service professional education programs for the University of the District of Columbia. In keeping with the mission of the University of the District of Columbia, the programs and activities are designed to respond to the University's responsibilities as an urban land-grant institution. To this end, the Education Program: (a) prepares certified teachers and other professionals who desire leadership roles in diverse human service settings, and (b) provides an adequate Foundation for advanced study for students to continue their educational preparation.

The Program holds membership in the American Association of Colleges for Teacher Education (AACTE), and the unit is accredited by the Council for the Accreditation of Educator Preparation (CAEP). The institutional pass rate, required by Higher Education (HEA) - Title II, for teacher candidates from the UDC Program of Education continues to meet and surpass the requisite 80 percent.

**Admission to Teacher Education Programs**
Students who wish to major in any of the undergraduate teacher education programs must apply for admission to the Teacher Education program during the second semester of the sophomore year and not later than the first semester of the junior year. Transfer students with 45 or more credit hours of college-level work should apply during the first semester of enrollment in the University. Application forms and related information are available in the Program's office, as well as in each academic Program offering a teacher education program. A student must meet the following criteria to be accepted into a teacher education program:

- Complete a minimum of 45 credit hours of college-level work (including Foundation writing I and II and two courses in college-level mathematics with a grade of "C" or better);
- Must have a cumulative grade point average of 2.5 or better;
- Pass Foundation Communication with a minimum grade of "C";

- Submit two letters of recommendation that must be completed by persons who have direct knowledge of the candidate's potential to become an effective teacher;
- Earn a qualifying score on the Praxis I (which has now been renamed Praxis Core): Academic Skills Assessments in Reading, Writing, and Mathematics; (see an advisor for substitution possibilities);
- Complete a voluntary or paid experience working with children in an organized program;
- Have an interview with the Admissions Committee of the Teacher Education Council. Interview dates for the Fall Semester: 3rd Thursday in September and November. Dates for the Spring Semester: 3rd Thursday in February and April;
- Complete an online technology assessment for the Spring Semester: 3rd Thursday in February and April; and
- Complete an online technology assessment.

**Background Checks and Investigations**

DC law requires police clearances and criminal background checks of all Education majors before advancement to candidacy and/or placement in student teaching. Failure to acquire clearance may result in students not being admitted to the program. Adverse reports from either of these investigations will preclude students from their advancement toward degree and placement in the District of Columbia Schools. Those who do not meet all of the above criteria may be granted provisional acceptance upon recommendation by the Program Coordinator. Final acceptance into a teacher education program will be made by the Admissions Committee of the Teacher Education Council and the Coordinator of the Program.

**Field Services, Student Teaching, and Teacher Certification**

The Coordinator of Field Services, Student Teaching, and Teacher Certification arranges all field services activities and teacher certification courses and programs offered by the Program. The coordinator serves as a liaison between educational agencies in surrounding jurisdictions and the Program to provide a wide range of field experiences for prospective teachers, as well as staff development courses for in-service teachers. In cooperation with the District of Columbia Public Schools, the Field Services Coordinator:

- Arranges field practicum activities;
- Determines student eligibility for field service placements;
- Processes student applications for field services and student teaching;
- Coordinates the offering of appropriate teacher certification courses as determined by the District of Columbia Public School's Office of Academic Credentialing and Standards; and
- Oversees validation of students' certification requirements.

Applications for student teaching ("Observation and Student Teaching" course) are secured from and submitted to the Field Services Coordinator. Closing dates for submission of applications for student teaching are the **third Friday in March and the third Friday in September** for the fall and spring semesters, respectively. Applications may be made at any time prior to the closing dates. Student teaching is a full-day experience that requires students to be available from 8:00 a.m. until 3:30 p.m. Monday through Friday, for the entire semester. Adjustments to the schedule may be made by the administrators of the school to which the student is assigned. Failure to complete satisfactorily the requirements for student teaching with a grade no less than "B" after two attempts may result in a student not being allowed to complete this requirement at the University. Transfer students who wish to student teach must meet the Program's requirements for admission to teacher education and student teaching, which includes a minimum of eighteen semester hours of professional education courses in residence.

To be admitted to the student teaching program, students must:

- be fully admitted into a teacher education program at least three semesters prior to student teaching;
- have completed of all courses in the student's academic program;
- have a cumulative grade point average of at least 2.5;
- have a grade point average of 2.5 or better in the major teaching field;
- be approved by the Chair of the Program or a designee;
- demonstrate evidence of good health, including TB test;
- have police clearance (fingerprinting); and
- have signed verification of eligibility by faculty advisor.

Students who wish to enroll in courses for purposes of certification need meet only with a faculty advisor in their disciplines to determine the appropriate course(s) that satisfy the competencies identified in the licensing and

certification requirements for the District of Columbia or other jurisdictions. Students may enroll in no more than three (3) semester hours (non-major courses) concurrently with the course, Observation and Student Teaching. Approval is required by the Chair of the Program in consultation with the Coordinator of Field Services, Student Teaching, and Teacher Certification.

**Teacher Education Council**
The Teacher Education Council is the body within the Program of Education that is responsible for the coordination of all of the University's teacher education programs. The Council serves as the coordinating body that:

- assures consistency, uniformity, and quality of the teacher education programs;
- determines and establishes policies and procedures in teacher education on such academic matters as student admissions, retention, exit, follow-up, program monitoring and evaluation, and development of new programs;
- assumes responsibility for stimulating innovations for improved practices and new departures in programs in education; and
- serves to facilitate communication among the various Programs of the University in matters affecting programs that prepare teachers.

The Council consists of at least one representative from each area of the University that offers a teacher education program and includes the Coordinator of the Office of Field Services, Student Teaching, and Teacher Certification Program of Education. The Council provides professional education courses which include Early Childhood Education, Elementary Education, Secondary Education, Special Education, and Adult Education. The Council meets the fourth Friday of each month during the academic year (beginning in September), and its standing committees are Student Admissions, Retention, and Exit; Program Evaluation and Follow-up; and In-service and Resource Linkage.

## Early Childhood Education (BA)

The Bachelor of Arts degree in Early Childhood Education focuses on comprehensive care and education of children (birth through 8 years) and professional interaction with their families. Emphasis is placed on responding to the developmental and cultural uniqueness of each child, as candidates in the program learn to design, implement, and evaluate learning environments and curricular activities. Each student completes student teaching experience in grades PK-to-3 settings.

The Bachelor of Arts program enables students to fulfill teacher certification and other requirements in early childhood fields, and it provides the opportunity to advance on the career ladder of professional early childhood education. Candidates must complete practicum and field experiences which are a part of many of the courses in the curriculum. The University's Child Development Center and the District of Columbia Public Schools serve as the practicum and field experience sites for students in the program.

**Graduation Credit Hours:**
This bachelor's degree program requires the fulfillment of 126 credit hours, including specific courses identified in the program of study and the applicable General Education requirements.

**GPA statement**
Candidates must earn a grade of at least a "C" in all required education courses, except Observation and Student Teaching, which requires a grade of a least a "B". Candidates must take and pass Praxis II before or during the last semester of their senior year.

**Accrediting Body**
*National Association for the Education of Young Children*
https://www.naeyc.org/

**IGED Table of Substitutions (37 Credits)**

| **Required Core Courses (12 Credits)** |
|---|
| ECED 104 History and Philosophy of Early Childhood Education (3) |
| ECED 105 Principles of Child Development (3) |
| ELED 222 Children and Youth in Urban Schools (3) |
| SPED 204 Introduction to Education of Exceptional Children (3) |
| **Required Ancillary Courses (34 credits)** |
| Fine Arts Elective (3) |
| Physical education Elective (1) |
| HIST 101 U.S. History I (3) |
| HIST 102 U.S. History II (3) |
| GEOG 105 World Cultural Geography (3) |
| HIST 279 History of the District of Columbia (3) |
| ECED 304 Play Activities and Materials (3) |
| RDNG 305 Children's Literature (3) |
| ECED 314 Teacher, Child, School, and Community Interaction (3) |
| NUDT 318 Child Health and Nutrition (3) |
| MATH 393 Theory and Application of Math (3) |

**Suggested Electives:**
EDPY 215 Technology for Teachers (3)

RDNG 406 Techniques/Procedures for Corrective and Remedial Reading (3)
EDPY 475 Measurement and Evaluation of Teaching and Learning (3)

**Professional Studies/Academic Specialization (42 credits).**
ECED 208 Emergent Literacy (3)
ECED 230 Practicum I-Early Childhood (3)
EDPY 300 Educational Psychology (3)
EDFN 405 Classroom Management (3)

Students must be admitted into the teacher education program before taking courses in the major beyond these four courses (above). Once admitted, students may take the courses listed below (Methods courses, Practicum II, and Student Teaching course).

ECED 301 Methods and Materials for Teaching Math, Science, and Technology in Early Childhood Education (3)
ECED 302 Methods and Materials for Teaching Language Arts and Social Studies in Early Childhood Education (3)
RDNG 314 Methods and Materials for Teaching Reading in Elementary Schools (3)
ECED 326 Practicum II - Early Childhood (3)
PHED 394 Methods and Materials for Teaching Health, Physical Education, and Safety in Elementary Schools (3)
EDFN 461 Methods and Materials for Teaching Creative Arts (3)
ECED 406 Observation and Student Teaching in Early Childhood Education (12)

## Elementary Education (BA)

The Bachelor of Arts degree in Elementary Education prepares candidates to teach children in grades one through six. The program is designed to provide courses and field-based learning experiences which enable students to develop the skills and competencies required to effectively meet the educational needs of children in a multi-ethnic urban environment. The program emphasizes multi-faceted curriculum approaches designed to help candidates function in a school environment which provides outcomes-oriented learning experiences, as well as standards-based curriculum designs.

Additionally, elementary education majors are exposed to opportunities to understand and become empowered to actively participate in innovative and creative approaches to teaching and curriculum reforms. The scope of the program is also intended to prepare candidates for advanced study and education-related careers in educational technology, computer-assisted instruction, and research. Culminating with student teaching in lower and upper elementary school grades, this reflective process is organized sequentially as outlined below. The minimum number of credits required to graduate with a Bachelor of Arts degree in Elementary Education is 126 semester hours.

**Graduation Credit Hours:**
This bachelor's degree program requires the fulfillment of 126 credit hours, including specific courses identified in the program of study and the applicable General Education requirements.

**GPA statement**
Candidates must earn a grade of at least a "C" in all required education courses, except Observation and Student Teaching, which requires a grade of a least a "B". Candidates must take and pass Praxis II before or during the last semester of their senior year.

**Required IGED Courses (37 cr.) See IGED Table**

**Required Core Courses (12 credits)**
SPED 204 Introduction to Education of Exceptional Children (3)
ELED 220 Foundations of Education (3)
ELED 222 Children and Youth in Urban Schools (3)
EDPY 244 Human Development and Behavior (3)
EDPY 300 Educational Psychology (3)
ELED 330 Practicum I –Elementary Education (3)
ELED 428 Classroom Management in Elem. Schools (3)
RDNG 406 Technique/Procedures for Corrective and Remedial Reading (3)
**Students must be admitted into the teacher education program before taking courses in the major beyond this level. any of the education Method Courses, Practicum II and Student Teaching Course.**

**Professional Studies/Academic Specialization (45 credits)**
ELED 304 MM for Teaching Language Arts in Elementary Schools (3)
ELED 305 MM for Teaching Social Studies in Elementary Schools (3)
ELED 306 MM for Teaching Math in Elementary Schools (3)
ELED 307 MM for Teaching Science in Elementary Schools (3)
RDNG 314 MM for Teaching Reading in Elementary Schools (3)
PHED 394 MM for Tchg. Health, Phys. Ed. and Safety in Elem. Schools (3)
ELED 430 Practicum II- Elementary Education (3)
EDFN 461 MM for Teaching Creative Arts in Elementary Schools (3)

ELED 436 Observation and Student Teaching in Elementary Schools (12)

**Other Required Courses Required Ancillary Courses (29 credits)**

Fine Arts Elective (3)
Physical Education elective (1)
BIOL 101 Biological Science I (3)
BIOL 103 Biological Science Laboratory (1)
HIST 101 U.S. History I (3)
HIST 102 U.S. History II (3)
GEOG 105 World Cultural Geography (3)
HIST 279 History of the District of Columbia (3)
RDNG 305 Children's Literature (3)
ECED 314 Teacher, Child, School, and Community Interaction (3)
MATH 393 Theory and Application of Math (3)
Writing Intensive Course (EDPY 300 Can be used for the Writing Intensive Course Credit . Consult with your Faculty Advisor) (3)

**Suggested Electives: 3**

EDPY 215 Special Topics: Technology for Teachers
NUDT 318 Child Health and Nutrition
SPED 411 Developing and Implementing IEP
EDPY 475 Measurement and Evaluation of Teaching and Learning

## Special Education (BS)

The Bachelor of Science degree in Special Education is designed to meet the non-categorical teacher certification requirements for the District of Columbia and other school jurisdictions. Upon completion of the program, students will be prepared for careers as teachers in public, private, and charter schools or as special educators who provide direct services to children and youth with special needs.

The program of study is designed to provide courses and learning experiences that enable candidates to develop teaching skills and competencies required to assess the academic, social, and behavioral needs of exceptional children and youth within a multi-ethnic urban school setting; to acquire and apply teaching methods, learning strategies, and instructional interventions that are based on sound research and best practices; to effectively manage a performance-based, behaviorally-oriented learning environment in grades K-12; and to prepare students for advanced graduate study. Candidates must complete practicum and field experiences which are a part of many of the courses in the curriculum. These experiences allow for progressive application of the educational principles and practices required to meet the objectives of the program.

**Graduation Credit Hours:**
This bachelor's degree program requires the fulfillment of 126 credit hours, including specific courses identified in the program of study and the applicable General Education requirements.

**GPA statement**
Candidates must earn a grade of at least a "C" in all required education courses, except Observation and Student Teaching, which requires a grade of a least a "B." Candidates must take and pass Praxis II before or during the last semester of their senior year.

**Professional Membership Organization**
The program in Special Education is nationally recognized by the *Council for Exceptional Children (CEC)*
https://www.cec.sped.org/

**Required IGED Courses (37 cr.) See IGED Table**
**Required Courses**

**Core Courses (12 credits)**

EDPY 244 Human Development and Behavior (3)
SPED 204 Introduction to Education of Exceptional Children (3)
ELED 220 Foundations of Education (3)
EDFN 220 Children and Youth in Urban School (3)

**Professional Studies/Academic Specialization Courses (45 credits)**

SPED 214 Field Experience in Special Education I (3)
SPED 314 Field Experience in Special Education II (3)
EDPY 300 Educational Psychology (3)
SPED 305 Intro. to Legal Issues in Special Education (3)
SPED 306 Behavior Management in the Classroom (3)
*RDNG 314 MM for Teaching Reading in Elementary (3) Or*
*RDNG 315 MM for Teaching Reading in Secondary Schools (3)*
SPED 435 Methods I: Teaching Math and Science to Special Populations (3)
SPED 436 Methods II: Teaching Language Arts and Social Studies for Special Populations (3)
SPED 485 Assessment of Exceptional Children (3)
SPED 454 Vocational Aspects of Disabilities (3)
SPED 411 Development of -IEPs (3)
SPED 474 Observation and Student Teaching -Special Ed. Elem. (12) Or
SPED 475 Observation and Student Teaching - Special Ed. Secondary. (12)

**Other Required Courses Required Ancillary Courses (18 credits)***

GEOG 105 World Cultural Geography (3)
HIST 279 History of the District of Columbia (3)
SPLP 312 Language Acquisition (3)
RDNG 406 Tech/Corrective Remedial Reading (3)
PHED 390 Introduction to Adaptive Physical Education (3)

MATH 393 Theory and Application of Math (3)
PSYC 201 Principles of Psychology (3)
Fine Arts Elective (3)
BIOL 101 Biological Science I (3)
BIOL 103 Biological Science Laboratory (1)
Physical Education Elective (1)
Writing Intensive Course (Consult with your Faculty Advisor) (3)
***Suggested Electives: 3***
EDPY 215 Special Topics: Technology for Teachers
NUDT 318 Child Health and Nutrition
RDNG 305 Children's Literature

***Comments: Candidates must earn a grade of "C" or better in all required education courses, except Observation and Student Teaching, which requires a grade of "B" or better.***

## Education Graduate Degrees (MA and Graduate Certificate)

The graduate education programs embrace the demands, challenges, and opportunities that educators and other service professionals encounter in educating and meeting the needs of students from all ages and developmental levels.

Master of Arts in Early Childhood Education
Master of Arts in Adult Education
Master of Arts in Teaching

- Elementary Education
- Secondary English Language Arts
- Secondary Mathematics
- Music
- Secondary Science
- Secondary Social Studies

Certificate Program

- Adult Education (Graduate)

**Admission to Graduate Education Programs**
The graduate education programs and courses are crafted to build on students' prior experiences and to provide the essential background and knowledge for quality teaching, student learning and achievement. Coursework is coupled and enriched with authentic field and clinical experience requirements. Courses are scheduled with working professionals in mind. The graduate education faculty are accomplished educators with impressive backgrounds, knowledge of their disciplines and significant experience in their initial and continuing professional development. To be accepted into the graduate education program, the student must demonstrate:

- An interest in teaching generally, and in an urban environment, specifically;
- A commitment to the learning and achievement of students from all backgrounds; and
- The ability to successfully complete a comprehensive and rigorous graduate-level program of study

In addition, to requirements for admission to the University of the District of Columbia Graduate School, MA and MAT Center applicants are required to meet the District of Columbia's PRAXIS CORE® assessment score; respond to a written prompt in real time; and interview with program faculty. The completion requirements for both the MA and MAT programs include, but are not limited to 32 earned credit hours.

Subject-area content knowledge is reviewed on a case by case basis, depending on the concentration of choice. Applicants who are admitted without a related degree or work experience must demonstrate content-area proficiency through additional testing in their first semester of enrollment.

**How to Apply**
1. Submit to the UDC Office of Admissions a complete application packet which consists of the following documents;

- Application for Graduate Admission;
- The non-refundable Admission Application Fee or Application for Readmission Fee - Money Order, Certified Check or Bank Check;
- A 500-word personal statement,
- An official transcript, in the original sealed envelope, from each undergraduate/graduate institution attended;
- GRE scores submitted directly to UDC via the test provider, ETS, using UDC's recipient code RA5929. Indicate that UDC is the recipient when registering for the GRE and Praxis I or Praxis Core and
- Two letters of recommendation.

2. Participate in an admissions interview. After a review of application materials, selected applicants will be invited to an in-person interview day, which will include:

- Personal interview with panel of faculty;
- Writing exercise.

Successful applicants are notified of their acceptance through the Office of Graduate Admissions.
**Graduation Credit Hours**

The master's degree programs each require a minimum number of credit hours. Visit the program advisor for specifics.

**GPA Statement (Master's program):**
In the graduate program, students must earn a minimum grade of "B" in all required and elective courses.

**Transfer Credit**
**Academic Probation**
**See also Graduate Dismissal.**

## Early Childhood Education (MA)

The Master of Arts in Early Childhood Education prepares candidates for careers as master teachers or early childhood specialists in classrooms in pre-school through grade levels, both in private and public sectors. The degree consists of 35 credit hours. The graduate education programs and courses are crafted to build on students' prior experiences and to provide the essential background and knowledge for quality teaching, student learning and achievement. Coursework is coupled and enriched with authentic field and clinical experience requirements. Courses are scheduled with working professionals in mind.

In addition, to requirements for admission to the University of the District of Columbia Graduate School, MA and MAT Center applicants are required to meet the District of Columbia's PRAXIS CORE® assessment, respond to a written prompt in real time; and interview with program faculty. The completion requirements for both the MA and MAT programs include, but are not limited to 32 earned credit hours.

Subject-area content knowledge is reviewed on a case by case basis, depending on the concentration of choice. Applicants who are admitted without a related degree or work experience must demonstrate content-area proficiency through additional testing in their first semester of enrollment.

**How to Apply**
1. Submit a complete application packet seeking admission to the University. Submit the following documents to the UDC Office of Admissions:

- Application for Graduate Admission;
- The non-refundable Admission Application Fee or Application for Readmission Fee - Money Order, Certified Check or Bank Check;
- A 500-word personal statement;
- One official transcript, in the original sealed envelope, from each undergraduate institution attended;
- GRE scores submitted directly to UDC via the test provider, ETS, using UDC's recipient code RA5929. Indicate that UDC is the recipient when registering for the GRE and Praxis I or Praxis Core; and
- Two letters of recommendation.

2. Participate in an admissions interview. After a review of application materials, selected applicants will be invited to an in-person interview day, which will include:

- Personal interview with panel of faculty;
- Interactive/group activity with other applicants;
- Writing exercise.

Successful applicants are notified of their acceptance through the Office of Graduate Admissions.

**Transfer Credit**

**GPA Statement (Master's program):**
In the graduate program, students must earn a minimum grade of "B" in all required and elective courses.

**Academic Probation: See Graduate Probation**
and **Graduate Dismissal**

**Required Courses**
**Foundations of Urban Education Core Courses:**
Courses that prepare students to make a difference with diverse, high-needs learners.
EDUC 500: Introduction to Urban Teaching (1)
ECED 505: Applying Child Development Theories in Early Childhood Education (3)
EDUC 515: Impact of Home, Community, and Culture in Urban Early Childhood Education (3)
SPED504: Foundation of Special Education (3)
ECED 517: Assessing Learning in Early Childhood (3)
ECED 580: Managing Early Childhood Environment (3)

**Content-Area Pedagogy Strand:**
Courses that prepare students to teach P-3 grade curriculum across content areas through inquiry.
ECED 504: Developing Language and Literacy in Urban Early Childhood Education (3)
ECED 506: Teaching Math, Science, and Technology to Young Urban Learners (3)
ECED 525: Teaching through Play (3)
ECED 523: Teaching Social Studies, Science, Health, and Physical Education (3)
Field Experience
The course that builds the skills of effective teaching through first-hand observations and supervised student teaching in P-3 settings.

EDTE 501: Practicum I: Observation in Diverse Urban Setting (3-6 )
EDTE 501: Practicum II: Student Teaching (3-6)

# Teaching (MAT)

**Master of Arts in Teaching Concentrations**

- Elementary Education
- Secondary & Middle School
  - English Language Arts
  - Mathematics
  - Music
  - Social Studies
  - Science

**Elementary Education Concentration**

The Elementary Education option prepares teacher candidates for classrooms in grades 1-6. Coursework is held in evening hours to accommodate working professionals. Field experiences - which take place in P-6 school settings- require some daytime availability. Recommended semesters for each course are indicated in parentheses. Part-time students may work through pre-service requirements at their own pace.

**Foundations of Urban Education Strand:**

Courses that prepare students to make a difference with diverse, high-needs learners.
EDUC 500: Introduction to Urban Teaching (1)
EDUC 501: Human Development, Learning, and Motivation in Classroom Context (3)
EDUC 502: Classroom Management and Cases in Effective Urban Teaching (3)
EDUC 503: Culture, Context, and Critical Pedagogy in Urban Classrooms (3)

**Content-Area Pedagogy Strand:**

Courses that prepare students for the specific grade or subject they wish to teach.

EDRD 501: Teaching Reading & Language Arts (3)
EDCI 521: Teaching Elementary Mathematics (3)
EDCI 522: Teaching Science and Social Studies through Inquiry (3)
EDCI 523: The Integrated, Collaborative Curriculum (3)
SPED504: Foundations of Special Education (3)

**Field Experiences Strand:**

Courses that build the skills of effective teaching through first-hand observations and actual teaching in P-12 settings.
EDTE 501: Practicum I: Observations in Diverse Urban settings (3-6)
EDTE 502: Practicum II: Student Teaching (3-6)

# Master of Arts in Teaching:

**Secondary Concentrations**

The secondary concentrations prepare teacher candidates for classrooms in grades 7-12. All candidates in secondary concentrations complete the courses listed in the Foundations and Field Experience strands. Content pedagogy courses differ by concentration. Coursework is held in the evening to accommodate working professionals. Field experiences -which take place in P-12 school settings - require some daytime availability.

**Foundations for all Secondary Concentrations**

EDUC 500: Introduction to Urban Teaching (1)
EDUC 501: Human Development, Learning, and Motivation in Classroom Context (3)
EDUC 502: Classroom Management and Cases in Effective Urban Teaching (3)
EDUC 503: Culture, Context, and Critical Pedagogy in Urban Classrooms (3)
EDTE 501: Practicum I: Observation in Diverse Urban Classrooms (3-6)
EDTE 502: Practicum II: Student Teaching (3-6)
SPED 504 Foundations of Special Education (3)

**Content-Area Pedagogy Strand Secondary English Language Arts:**

EDRD 505: Teaching Adolescent Readers (3; Spring)
EDCI 551: Teaching Adolescent Writers (3; Fall)
EDCI 552: Teaching through Literature (3; Spring)

**Content-Area Pedagogy Strand Secondary Mathematics:**

EDRD 505: Teaching Adolescent Readers (3)
EDCI 571: Scope and Methods of Middle School Math (3)
EDCI 572: Math Curriculum & Instruction I: Number System; Ratios & Proportions; Statistics & Probability (3)
EDCI 573: Math Curriculum & Instruction II: Geometry & Algebra (3)

**Content-Area Pedagogy Strand Music:**

EDRD 505: Teaching Adolescent Readers (3)
EDUC 590: Scope and Methods of Teaching Music I (3)
EDUC 590: Scope and Methods of Teaching Music II (3)
Students also select one of the following courses:

- EDUC 595 Teaching Choral Music
- EDUC 595 Teaching Instrumental Music

**Content-Area Pedagogy Strand Secondary Science:**

EDRD 505: Teaching Adolescent Readers (3)
EDTE 520: Scope and Methods of Teaching, Physical, Earth, and Space Science (3)
EDTE 525: Scope and Methods of Teaching Chemistry, Life, and Earth Science (3)

EDTE 530 The Practice of Science (4)

**Content-Area Pedagogy Social Studies:**
EDRD 505: Teaching Adolescent Readers (3)
EDCI 561: Scope and Methods of Teaching History I (3)
EDCI 562: Scope and Methods of Teaching Social Studies (3)

**Field Experiences Strand** for all Secondary concentrations: Courses that build the skills of effective teaching through first-hand observations and actual teaching in P-12 settings.
EDTE 501: Practicum I: Observation in Diverse Urban Classrooms (3-6)
EDTE 502: Practicum II: Student Teaching
(3-6)

## GRADUATE COURSE DESCRIPTIONS: EDUCATION (ECED) (EDCI) (EDRD) (EDTE) (EDUC) (ELED) (EDPY) (RDNG) (SPED)

## EARLY CHILDHOOD EDUCATION (ECED)

**ECED104 History and Philosophy of Early Childhood Education (3)**
Traces the theoretical, social, and political roots of early childhood education. Discusses the impetus for the development of nursery schools, Head Start, special education programs, multicultural education, and child care. Highlights policy issues affecting young children and their families. Field experiences required.

**ECED105 Principles of Child Development (3)**
Presents human development through the life span, with special emphasis on cognitive, language, physical, social, and emotional development, both typical and atypical, from birth through age 8. Requires twenty hours of clinical observation.

**ECED204 Curriculum Content in ECE (3)**
Analyzes existing curricula emphases in Early Childhood Education as a basis for designing, developing, and evaluating curricula for use in early childhood education settings. Prereq.: ECED104 and 105.

**ECED205 Advanced Child Development (3)**
Examines the principles of development with emphasis on school age and adolescence. Stresses positive physical, cognitive, social and emotional development, along with building self-esteem. Prereq.: ECED 104, 105.

**ECED206 Infant Education (3)**
Focuses on developmental characteristics of infants from the prenatal period through two years of age with emphasis on guidance of infants and toddlers within family and group care settings, and development in the context of the family, program, and society. Requires participation with infants. Prereq.: ECED 104 and 105.

**ECED207 Understanding Self and Relationships (3)**
Explores dynamic socialization processes involving children, adolescents, peers, parents, and society. Discusses sources of developmental and individual differences in identity formation and attainment, as well as theory and research related to social and emotional development of children and adolescents.

**ECED208 Emergent Literacy (3)**
Explores how language and literacy develop in young children. Students will identify literacy activities for young children that are appropriate to their age and development. Emphasis on creating an environment that encourages concepts and language development that make literacy practices practical.

**ECED224 Planning and Administration of Early Childhood Programs (3)**
Discusses guidelines to achieve quality programming for early childhood programs. Focuses on effective interpersonal communication skills in program management; principles of management and operation; and designing and scheduling appropriate space and activities. Prereq.: ECED 104 and 105.

**ECED225 Administration and Supervision of School Age Care Programs (3)**
Focuses on administration, financial, and program management and the foundations of quality school age programming. Focuses on planning a safe, healthy environment for before- and afterschool care and strategies for effective program management. Prereq.: ECED 104 and 105.

**ECE 230 Practicum I (3)**
Provides directed observation and participation with preschool and primary grade (1-3) children. Focuses on instruments, skills, and assessment strategies of young children. Provides experience in team assessments. Requires lecture and 30-hour practicum. Prereq.: ECED104 and 105.

**ECED245 The Child in the Family (3)**
Considers the influence of family interaction in the management of children and personality development and the impact of parental practices on child rearing. Examines current issues with appropriate multicultural examples, including child care and nontraditional parenting situations. Prereq.: ECED 104 and 105.

**ECED301 Methods and Materials for Teaching Mathematics, Science, and Technology in Early Childhood Education (3)**
Emphasizes activities and materials for teaching mathematics and science. Uses competency-based approach to define goals, concepts, and skills. Develops curriculum based on the stages of early childhood development and how learning can be evaluated. Emphasizes planning for teaching, classroom management, use of instructional resources, and related technology. Practicum required. Prereq.: Admission to the Teacher Education Program. Field experiences required.

**ECED302 Methods and Materials for Teaching Language Arts and Social Studies in Early Childhood Education (3)**
Emphasizes language and literacy skills, geography, culture, and heritage through speaking, listening, reading, and writing. Introduces students to strategies to promote pro-social behavior, social awareness, and interpersonal skills. Emphasizes planning for teaching; evaluative devices; classroom management; use of instructional resources; and related technology. Practicum required. Prereq.: Admission to the Teacher Education Program. Field experiences required.

**ECED304 Play Activities and Materials (3)**
Examines the principles of evaluation and selection of play activities and materials for pre-school and children in grades 1-3.Explores the design of learning environments and play strategies appropriate for individuals and groups and for appropriate developmental levels. Prereq.: ECED 104 and ECED 105.

**ECED314 Teacher, Child, School and Community Interaction (3)**
Concentrates on giving students an insight into parental involvement with the child, the school, and the multi-cultural community. Provides opportunities for students to have firsthand experiences with community organizations and government agencies concerned with the welfare of young children. Prereq.: ECED104, 105; ELED222.

**ECED326 Practicum II (3)**
Provides direct observation and participation with preschool and primary grade (1-3) children. Focuses on management strategies and program activities for early childhood education. Allows opportunities for students to gain experience in assisting the classroom teacher. Requires lecture and 30-hour practicum.
Prereq.: ECED 04, 105; ECED230.

**ECED 330 Practicum I (3)**
Provides directed observation of and participation with primary children. Focuses on one-to-one tutoring, developing mini lessons, providing individualized instruction, monitoring small groups, and related teaching activities. Lecture and 30-hour practicum are required. Prereq.: ELED220 and ELED222.

**ECED406 Observation and Student Teaching in Early Childhood Education (VC)**
Focuses on observation and practical experiences in prekindergarten and primary grades. Evaluates students' proficiency of theoretical concepts, content, and teaching strategies. Requires weekly professional development seminar. Prereq.: Clearance by major advisor and Coordinator of Field Services, Student Teaching, and Teacher Certification. Prereq: ECED230; ECED326.

**ECED408 The Young Child in a Multicultural Society (3)**
Concentrates on enhancing students' appreciation of and respect for other cultures. Employs modules of the study of cultures such as those of African, Asian, Spanish-speaking, and Native American traditions and values. Emphasizes strategies for utilizing these materials in the early childhood setting. Prereq.: EDPY300.

**ECED409 Workshop, Seminar, Institute (3)**
Presents topics/problems related to issues in education. Designed for special groups that wish to explore current topics and issues relevant to the field of education.

**ECED428 Classroom Management (Elementary) (3)**
Provides instruction in the various techniques for effective management of a K-6 classroom. Emphasis is on creating positive learning environments and developing effective classroom instructional practices.

**ECED430 Practicum II (3)**
Provides directed observation of and participation with intermediate children. Focuses on one-to-one tutoring, developing mini-lessons, providing
individualized instruction, monitoring small groups, and related teaching activities. Requires lecture and 30-hour practicum. Prereq.: ECED330

**ECED434 Observation and Student Teaching in the Elementary School (VC)**
Focuses on observation and full-time practical experiences in an elementary school setting under the guidance of a certified teacher and a college supervisor. Requires weekly professional development seminar. Prereq.: Clearance by major advisor and Coordinator of Field Services, Student

Teaching and Teacher Certification. Prereq: ECED 330; ECED 430.

**ECED435 Observation and Student Teaching in Elementary Schools (VC)** (For Music Majors Only)
Provides opportunities for students to teach one-half day for one semester or one whole day for one-half semester in an elementary school. Prereq.: Clearance by major advisor and Coordinator of Field Services, Student Teaching, and Teacher Certification.

**ECED501 Applying Theories of Child Development in Early Education (Fall)**
The most effective teachers of young children possess a deep, research-based understanding of how children learn, grow, and thrive, and draw on that knowledge to select developmentally appropriate teaching practices. Through careful examination of past and current theory and practice in human development, learning and motivational theories, this course grounds teacher candidates in theory and builds their skills in understanding and interpreting young children's child behaviors through a developmental lens. Drawing specific, actionable connections to effective teaching and management strategies receives special emphasis.

**ECED502 Impacts of Home, Community, Culture in Urban Early Childhood (Fall)**
The most dynamic, effective early childhood classrooms reflect a thorough understanding of the family, community, and cultural contexts of young students. Through readings, discussions, presentations from guest speakers, and examinations of exciting and inspiring approaches to teaching in urban schools, teachers examine the impact of diversity in early childhood classrooms. An emphasis on treating diversity as an opportunity is woven throughout, and teachers develop the ability to acknowledge the challenges that some urban learners face while maintaining a deeply respectful, asset-based stance toward children and families.

**ECED503 Exceptional Educations, Differentiation, and Inclusion in Early Childhood (Fall)**
What are the rights and needs of children who qualify for special education services or who have other exceptional learning needs? What does a teacher need to know about special education law and special education categories? What is the role of the general education teacher in ensuring that exceptional learners receive a high-quality classroom experience that meets their needs? Why are African American children and non-native speakers of English overrepresented in special education programs? This course surveys the legal and instructional implications of exceptional learners in the general education early childhood classroom and places special emphasis on contemporary best practices, such as inclusion, differentiation, and 'Response to intervention' . A field component is an integral part of this course.

**ECED504 Assessing Learning in Early Childhood (Spring)**
What constitutes developmentally appropriate assessment in early childhood? What assessments are early childhood teachers expected to use in local schools, and how can the data from those assessments inform a rich, responsive, rigorous curriculum for young learners? What are the secrets of truly effective 'observation' of learning in early childhood settings? What sorts of assessment are appropriate for play-based teaching techniques? Teachers examine these and other critical issues in early childhood assessment to develop a wide repertoire of techniques for assessment and interpretation.

**ECED505 Managing the Early Childhood Environment (Spring)**
What makes an early childhood classroom 'work'? What do highly effective teachers do to prevent and resolve conflicts in early childhood classrooms? How can classroom management build the essential social-emotional skills of self-regulation and cooperation in young children? By exploring the major theoretical and practical approaches to the ecology of the learning environment, teacher candidates develop skills to build and maintain developmentally and culturally responsive learning environments that facilitate child-centered, play-based learning for young children. The course includes strategies for involving students' families in classroom management . A field component is an integral part of this course.

**ECED501 Developing Language and Literacy in Urban Early Childhood (Spring)**
Early childhood is a critical time for the development of language and literacy skills. In this course, culturally focused research on initial language acquisition and second language acquisition among African American and Hispanic children from birth to age eight will be emphasized using a review of books, articles, websites and other instructional resources. The course will review the foundations of emergent literacy and explore methods of teaching early reading, with a focus on the use of children's literature. Teachers explore methods of teaching early reading, with a focus on the use of children's literature. Teachers explore and develop model curricula, instructional materials, and assessments designed to foster language and literacy development across early childhood, with a special emphasis on preschool through third grade.

**ECED502 Teaching Math, Science, & Technology to Young Urban Learners (Fall)**
Hands-on, cognitively challenging, conceptually sound instruction in math, science, and technology is essential for supporting children's development as critical and reflective thinkers. This course demonstrates how to apply developmental principles to investigate and devise experiences that employ mathematical reasoning and scientific processes. Using a hands-on approach, learners explore the various materials used in learning centers to stimulate and develop children's thinking and create lessons and learning experiences that work. A field component is an integral part of this course.

**ECED503 Exceptional Education, Differentiation, and Inclusion in Early Childhood**
If "play is child's work", what do highly effective teachers of young children do to make sure they "work smarter?" What specific cognitive and social emotional skills are developed through play, and how can a teacher identify, assess, and foster these skills? How must a classroom and a curriculum be designed for optimal play-based learning? What's the evidence that play-based learning leads to stronger outcomes for urban learners and exceptional learners? This course grounds teacher candidates in the theories and methods of play and creative arts as central approaches to teaching and learning, focusing on integrated approaches to what curriculum looks like and how it functions. A field component is an integral part of this course.

**ECED504 (ECED510) Teaching Young Learners about the Self, Physical Education and Society (Fall)**
What do young learners need to know about themselves, their bodies, their communities, and their worlds in order to foster cognitive development? How can teaching these topics advance educational equity and social justice? How do effective teachers help children make connections across the curriculum, and how do teachers integrate essential literacy skills into these subjects? This course grounds teacher candidates in the social science concepts that are taught in early childhood classroom as well as related, developmentally appropriate methods of instruction. Using a hands-on approach, students will explore methods and materials used in social studies, health and safety, and physical education curricula. The course will also explore strategies for engaging and empowering young learners to become active, democratic citizens and critical, reflective thinkers. Special emphasis will be placed on connecting all elements of a rich, responsive curriculum to the essential skills represented in the Common Core State Standards. A field component is an integral part of this course.

**ECED590 Apprenticeships in Urban Early Childhood Education (Spring)**
The final stage of the field experience enables students to participant full time in a student teaching internship in early childhood education, linking university course work to the real world of working with diverse young learners and their families. Teacher candidates serve as apprentice teachers under the supervision of experienced early childhood teachers and university-based clinical faculty. Over the course of sixteen weeks, teacher candidates take on gradually increasing responsibility for planning, instruction, assessment, and classroom management. The Teacher Performance Assessment completes the assessment process for this course. Prerequisite: Successful completion of ECCC and ECCI coursework sequences, successful completion of relevant licensing exams, and permission of program director.

**ECED590Thesis in Urban Early Childhood Education (Spring of Fall)**This course allows students an opportunity to design a study, review related literature, collect data, analyze and interpret research findings, draw conclusions, and make recommendations. Prereq: Completion of all core and specialization courses, and CNSL 532 or equivalent approved by advisor.

## EDUCATION CURRICULM & INSTRUCTION (EDCI)

**EDCI521 Teaching Elementary Mathematics (Fall)**
If urban learners are to become powerful citizens with full control over their lives, then they need to be able to reason mathematically – to think logically, analyze evidence, and reason with numbers. Yet nationwide data show that too few students are getting access to these essential math skills. This course prepares elementary teacher candidates to provide instruction that puts students on the path to deep, meaningful numeracy. Candidates experience and practice different approaches to math instruction and assessment as they wrestle with several key questions. What do elementary students need to learn, and what are the most effective ways of teaching it? How can I demystify math for young learners and prevent math phobia? How can I teach math so students really understand what they're doing? How can I, as a teacher, tell when students are truly mastering concepts? Taking these issues into account, candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that meet Common Core and NCTM standards for elementary mathematics. Methods of checking for understanding throughout instruction receive special emphasis.

**EDCI522 Teaching Science & Social Studies through Inquiry (Spring)**
A powerful and rigorous content-area curriculum engages students with significant ideas, encourages them to connect what they are learning to their prior knowledge and to current issues, to think critically and creatively about what they are learning, and to apply that learning to authentic situations. This course explores methods of inquiry-based teaching and assessment in elementary science and social studies, with a special emphasis on project-based learning, inquiry-based learning, and authentic assessment. Teacher candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that meet local and national standards for science and social studies education.

**EDCI523 Teaching the Integrated, Collaborative Curriculum (Spring)**
The most effective teachers understand that they teach children, not subjects. This course prepares teacher candidates to expand the elementary curriculum beyond the '3 Rs.' It provides creative methods, techniques, and materials for teaching the visual arts, movement, music, and health/nutrition, as well as ways to involve students' families and education professionals in the learning process. The course also explores ways to integrate teaching elements into other subject areas of instruction. Teacher candidates conceptualize and plan lessons that teach to the 'whole child' in the classroom.

**EDCI541 Scope and Methods of Teaching Creative Arts (Spring)**
This course explores the pedagogy of art and music education which is critical for teacher candidates to develop the knowledge and skills to plan, organize, and facilitate meaningful art curricula for students encompassing a range of needs and abilities. Teacher candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that meet local and national standards for arts education in the candidate's focus area (visual arts education or music education).

**EDCI551 Teaching Adolescent Writers (Fall)**
Through readings, discussions, and sample teaching activities, this course gives candidates a thorough understanding of the principles of effective pedagogy for writing instruction at the middle and secondary levels. Candidates closely examine several critical questions: "What is the purpose of teaching writing, and how do goals for composition connect to other aspects of the language arts curriculum? What instructional approaches and strategies can engage reluctant writers in finding their voice, even when their reading and composition skills are below grade level? How do I balance the ideal of a writer's workshop approach with the reality of short class periods and competing demands for instructional time? How do I translate my personal love of literature into positive outcomes for urban students? What are the most effective ways to take advantage of an urban writing classroom to promote greater social justice?" Taking these issues into account, candidates build on excellent examples of effective practice to create a personal, practical approach to writing instruction. Special emphasis is given to the nuts and bolts of managing the mammoth task of writing assessment in secondary schools – with techniques for offering effective written feedback, fostering self-assessment, and peer assessment that really works, using individual conferencing and multiple-traits rubrics.

**EDCI552 Teaching through Literature (Spring)**
Through readings, discussions, and sample teaching activities, this course gives candidates a thorough understanding of the principles of effective pedagogy for teaching literature and literary criticism at the middle and secondary levels. Candidates closely examine several critical questions: "What is the purpose of teaching literature, and how do goals for literature connect to other aspects of the language arts curriculum? What texts might I be expected to teach, and how do I decide what additional texts to use? How do I translate my personal love of literature into positive outcomes for urban students? What instructional approaches and strategies can engage students in critical textual analysis, even when their reading comprehension skills are below grade level? What are the secrets of leading a great discussion?" Taking these issues into account, candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that meet Common Core and NCTE standards for literature and literary analysis. Special emphasis is given to techniques for scaffolding student understanding -without lowering expectations.

**EDCI561 Scope & Methods of Teaching History (Fall)**
Through readings, discussions, and observations in local schools, this course provides teacher candidates with opportunities to become familiar with the wide-ranging opportunities and demands of middle and high school history classrooms. Candidates closely examine several questions: "How does a teacher who loves history translate that passion into student outcomes? What instructional approaches and strategies can engage students' natural curiosity, even on topics that seem distant from their daily lives? How does a teacher successfully cover 'history' in 36 weeks using a standards- based approach? What are the most effective ways to take advantage of an urban history classroom to promote greater social justice? How, given the narrowing of the curriculum to focus primarily on reading and math, can a history teacher support school-wide initiatives yet ensure that students develop an informed

perspective on the past?" Taking these issues into account, candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that meet local and national standards for American and world history.

**EDCI562 Scope & Methods of Teaching Social Studies (Spring)**
The purpose of the secondary social studies curriculum is to prepare middle and high school students to become informed, engaged participants in civic life. Through readings, discussions, curriculum development, and engagement with the unique resources of Washington, DC, this course prepares teacher candidates to advance this purpose in middle and high school urban classrooms. Candidates closely examine several questions: "What are the differences and similarities between history instruction and social studies instruction? How can a passionate DC teacher effectively integrate museums, government agencies, and other local resources into a standards-based curriculum? What instructional approaches and strategies can engage students' natural curiosity, even on topics that seem distant from their daily lives? How can social studies teachers support initiatives to improve student outcomes in literacy and math without sacrificing their own content? Taking these issues into account, candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that meet local and national standards for geography, civics, economics, and local history.

**EDCI571 Scope & Methods of Teaching Middle School Math (Fall – First 8 weeks)**
What does a teacher need to know and be able to do to ensure that middle school students not only learn math, but learn to love it? How do effective middle grades math teachers take into account the unique developmental cognitive and social-emotional needs of adolescents? What, exactly, are middle grades teachers expected to teach, and what are some tried-and-true ways of teaching it? This introductory content-pedagogy course helps aspiring middle grades math teachers explore the big ideas of their teaching field, develop an effective professional stance toward mathematics instruction, and begin to be able to use major methods of mathematics instruction. Unpacking the Common Core standards for middle grades math receives special emphasis.

**EDCI572 MS Math Curriculum & Instruction I: Number System; Ratios & Proportions; and Statistics & Probability**
**(Fall – Second 8 weeks)**
Proportionality is perhaps the most important connecting idea in middle school math. In other words, the ability to think deeply about ratios and proportions is needed to make sense of linear relationships, which opens the door to algebra and other advanced mathematical topics. What does a teacher need to know and be able to do to ensure that middle graders develop skills of proportional reasoning? How can teachers use proportionality as the 'big idea' that unifies math instruction across the all strands of math? This course is focused on practical, proven methods of planning, instruction, and assessment for middle grades instruction on these critical, powerful topics. Methods of checking for understanding throughout instruction receive special emphasis.

**EDCI573 MS Math Curriculum & Instruction II: Geometry & Algebra (Spring)**
Research shows that middle grade students who achieve in algebra not only go on to complete high school but also demonstrate a high degree of college readiness. What does a teacher need to know and be able to do to ensure that middle graders in high-needs urban schools are ready for high school math? How can students be successful in advanced math topics even if their foundational math skills are below grade-level? This course is focused on practical, proven methods of planning, instruction, and assessment for middle school geometry and algebra. Special emphasis will be placed on how to alignment these methods with Common Core standards and techniques for differentiation according to student needs.

## EDUCATION & READING (EDRD)

**EDRD501 Teaching Elementary Reading and Language Arts (Fall)**
Through readings, discussions, and sample teaching activities, this course gives candidates a thorough understanding of the principles of effective pedagogy for language arts instruction in the elementary grades, with a particular focus on reading. After providing a firm theoretical foundation in the process of reading and the principles of effective reading instruction, this course then explores how to apply those principles to classroom instruction through practical, proven methods of planning, instruction, and assessment. Teacher candidates examine key questions in the urban elementary language arts classroom such as, "How do I create a literacy-rich classroom environment where urban students learn to read and learn to love reading? What role might writing instruction play in creating powerful literacy experiences? What instructional strategies do I use when students are 'learning to read,' and how do I adjust my approach once students start 'reading to learn? How do I choose texts for instruction, and what are the social justice implications of my choices?" Taking these issues into account, candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that meet Common Core and NCTE/IRA standards for elementary literacy.

**EDRD505 Teaching Adolescent Readers (Fall)**
Although many secondary teachers are drawn to the profession by a passion for content, it is essential for every middle and high school teacher to possess the knowledge and skills necessary to facilitate reading comprehension. After providing a firm theoretical foundation in the process of reading and the principles of effective reading instruction, this course focuses on how to apply those principles to classroom instruction through practical, proven methods of planning, instruction, and assessment. Teacher candidates explore and develop model curriculum maps, unit plans, lesson plans, and assessments that address Common Core literacy standards through instruction in the candidate's area of content specialization. Special emphasis will be placed on facilitating literacy among struggling readers, English language learners, and students who require accommodations.

## EDUCATION TEACHING (EDTE)

**EDTE501 Practicum I: Observation in Multiple Urban Settings (Spring)**
The first in a series of intensive field experiences, this practicum offers candidates in the Urban Teacher Academy the opportunity to gain a broad, firsthand introduction to the diverse public schools of Washington, DC. Candidates are placed in a series of three schools, each for a period of 4-6 weeks, where they serve as participant observers in the classrooms of outstanding teachers. The practicum also makes strategic use of 'mini-clinics' that provide candidates with the opportunity to visit a wide array of learning contexts across all eight wards of the city, observe a range of effective and engaging teaching practices, and meet some of the city's best educators. Daytime availability (Tues, Weds, and Thurs, 8am-4pm) is required, in addition to attendance at biweekly class meetings on campus. Prerequisite: Successful completion of first-semester course sequence, or by permission of program director.

**EDTE 02 Practicum II: Student Teaching (Summer Session I)**
The second in a series of intensive field experiences, this practicum is an abbreviated student teaching experience for candidates in the Urban Teacher Academy program. From approximately May 1 to June 15, teacher candidates lead classroom instruction under the supervision of an outstanding teacher. Full-time availability (M-F, approximately 8am-4pm) is required, in addition to weekly class meetings on campus. Start dates, end dates, and daily hours may vary according to school needs. The Teacher Performance Assessment is the final activity for this course. Prerequisite: Successful completion of all pre-service coursework requirements, including methods coursework and Practicum I, or by permission of program director.

## EDUCATION URBAN CURRICULUM (EDUC)

**EDUC500 Introduction to Urban Teaching**
(Fall – first 2 weeks – one credit)
This highly interactive introductory experience for incoming participants in the Urban Teacher Academy orients aspiring teachers to basic premises, recent controversies, and unspoken assumptions in the local, national, and global discourses on urban education, and provides the opportunity for participants to articulate their personal stance toward teaching and learning in high-needs schools.

**EDUC501 Human Development, Learning & Motivation in Classroom Context (Fall)**
This course is a study of the principles of development, learning, and motivation during the school-age years, with a particular emphasis on applying developmental research to classroom contexts. Physical, cognitive, linguistic, social, and emotional domains of development are explored, as are theories of human behavior and motivation. Practical implications for the design of curriculum, instruction, and classroom management are explicitly drawn.

**EDUC502 Case Studies in Effective Urban Teaching and Learning (Fall)**
Part methods course and part critical seminar, this course explores and analyzes prevalent instructional methods in urban teaching using the case study method. Participants will examine, deconstruct, practice, and critique various approaches to urban teaching and learning, developing a nuanced understanding of the term 'effective' and a personal repertoire of teaching techniques.

**EDUC503 Culture, Context and Critical Pedagogy in Urban Classrooms (Spring)**
This course explores the historical, philosophical, racial, and socioeconomic factors that often impede effective teaching and learning in urban school contexts, using a systems-thinking approach in order to contextualize urban education, provide aspiring teachers with the skills necessary to serve as agents of positive change in the face of institutional challenges, and advance the learning of all students.

**EDUC504 Portfolio Seminar: Planning, Reflection, and Professionalism (Summer Session II)**
The portfolio capstone course encourages candidates at the end of the MAT course sequence to synthesize their graduate studies to reflect on what they have learned, make concrete plans for applying their learning in their own classrooms, and articulate their personal and professional goals for their future teaching career. Participants will

complete, revise, compile, or annotate the multiple work samples and key assessments into a portfolio that will serve as a major piece of evidence of mastery of standards for program completion and become a valuable resource during the challenging first year of teaching. Prerequisite: Practicum II or permission of program director.

## ELEMENTARY EDUCATION (ELED)

**ELED220 Foundations of Education (3)**
Presents historical, philosophical, psychological, and social foundations of education in America. Focuses on constitutional and statutory provisions for public school education. Emphasizes the role of teaching and learning in a multicultural environment. Field experience required.

**ELED222 Children and Youth in Urban Schools (3)**
Provides an overall perception and understanding of the school as an integral part of society in an urban environment. Emphasizes the role of the teacher in promoting and understanding multicultural awareness. Explores other major contemporary issues/concerns encountered by urban educators.

**ELED405 Classroom Management (3)**
Provides instruction in the various techniques for effective management of a K-12 classroom. Emphasis is on creating positive learning environments and developing effective classroom instructional practices.

**ELED434 Methods of Teaching Business Subjects in Secondary Schools (3)**
Focuses on current instructional strategies used to facilitate learning business in secondary schools. Emphasizes planning for teaching; effective utilization of instructional resources; and related technology for teaching specific content to the learner. Prereq.: Junior standing and permission of Department Chairperson. Field experience required.

**ELED445 Methods of Teaching Art (PreK-12) (3)**
Focuses on current instructional strategies used to facilitate learning art at the Pre-K-12 levels. Emphasis is on planning for teaching; effective utilization of instructional resources; evaluative devices; classroom management; and related technology for teaching specific content to the learner. Prereq.: Junior standing and permission of Department Chairperson. Field experience required.

**ELED446 Methods of Teaching Science in the Secondary Schools (3)**
Focuses on current instructional strategies used to facilitate learning science in secondary schools. Emphasizes planning for teaching; effective utilization of instructional resources; evaluative devices; classroom management; and related techniques for teaching specific content to the learner. Prereq.: Junior standing and permission of Department Chairperson. Field experience required.

**ELED449 Methods of Teaching English in the Secondary Schools (3)**
Focuses on current instructional strategies used to facilitate learning English in secondary schools. Emphasizes planning for teaching; effective utilization of instructional resources; evaluative devices; classroom management; and related techniques for teaching specific content to the learner. Prereq.: Junior standing and permission of Department Chairperson. Field experience required.

**ELED450 Methods of Teaching Foreign Languages (Pre-K -12 ) (3)**
Focuses on current instructional strategies used to facilitate learning foreign languages at the pre-K-12 levels. Emphasis is on planning for teaching; effective utilization of instructional resources; evaluative devices; classroom management; and related techniques for teaching specific content to the learner. Prereq.: Junior standing and permission of Department Chairperson. Field experience required.

**ELED452 Methods of Teaching Social Studies in the Secondary Schools (3)**
Focuses on current instructional strategies used to facilitate learning social studies in secondary schools. Emphasizes planning for teaching; effective utilization of instructional resources; evaluative devices; classroom management; and related technology for teaching specific content to the learner. Prereq.: Junior standing and permission of Department Chairperson. Field experience required.

**ELED454 Methods of Teaching Mathematics in Secondary Schools (3)**
Focuses on current instructional strategies used to facilitate learning mathematics in secondary schools. Emphasizes planning for teaching; effective utilization of instructional resources; evaluative devices; classroom management; and related technology for teaching specific content to the learner. Prereq.: Junior standing and permission of department chair. Field experience required

**ELED458 Music for the Specialist (Pre-K-12) (3)**
Studies music objectives, concepts, curricular plans, and materials; the development of techniques and strategies for the instruction of students, Pre-K-12; effective utilization of instructional resources; classroom management and related technology. Practicum is required. Prereq.: Junior standing in music and music education for vocal and instrumental majors.

**ELED461 Methods of Teaching Creative Arts in Elementary Schools (3)**
Focuses on methods, materials, and procedures to be used at the early childhood and elementary levels for teaching creative arts (art, music, drama, movement, literature, storytelling). Emphasizes lesson planning, classroom management, assessment, and use of technology in teaching. Prereq.: Junior standing.

**ELED470 Observation and Student Teaching in Secondary Schools (VC)** (For Music Majors Only) Provides opportunities for students to teach one-half day for one semester or one whole day for one-half semester in a junior or senior high school. Requires weekly professional development seminar. Prereq.: Clearance by major advisor and Coordinator of Field Services, Student Teaching, and Teacher Certification.

**ELED471 Observation and Student Teaching in Secondary Schools (VC)** Focuses on observation and full-time practical experiences in junior or senior high settings under the guidance of a certified teacher and college supervisor. Evaluates students' proficiency of theoretical concepts, content, and teaching strategies. Requires weekly professional development seminar. Prereq.: Clearance by major advisor and Coordinator of Field Services, Student Teaching, and Teacher Certification.

**ELED495 Independent Study (3)**
Allows students an opportunity to pursue any topic germane to the Department on an individual basis. Allows students to study subject matter of special interest under faculty supervision and counsel. Prereq.: Permission of Department Chairperson.

## EDUCATION PSYCHOLOGY (EDPY)

**EDPY215 Technology for Teachers (3)**
Incorporates technology tools and resources to locate Internet resources, collect data, develop lesson plans, create support materials, publications, multimedia presentations, and begin a web site.

**EDPY244 Human Development and Behavior (3)**
Presents a study of the intellectual, physical, emotional, and social growth processes over the life span. Emphasizes theories of growth, development, and learning. Field experience required.

**EDPY300 Educational Psychology (3)**
Examines current theory and practice in the teaching/ learning process. Explores implications of theories for teaching/learning activities. Discusses methods of assessing student learning, performance assessments, and standardized tests. Prereq.: ELED220 and ELED222. Field experience required.

**EDPY475 Measurement and Evaluation of Teaching and Learning (3)**
Provides techniques of measurement and evaluation of achievement, adjustment, and intelligence. Studies informal teacher made tests and standardized tests. Develops criteria for the selection of instruments of evaluation. Includes elementary statistics to enable the student to analyze and interpret the results of testing.

## READING (RDNG)

**RDNG305 Children's Literature (3)**
Enables pre-service teachers to develop the ability to select, present, and interpret literature appropriate to the ages and developmental stages of learners. Emphasizes the selection of books for children and the work of illustrators. A literature-based reading approach is used.

**RDNG314 Methods and Materials of Teaching Reading in Elementary Schools (3)**
Focuses on historical aspects of reading instruction in America and the analysis and evaluation of con-temporary methods and state-of-the-art reading instruction. Emphasizes planning; classroom management; use of instructional resources, and related technology. Requires practicum. Prereq.: Admission to Teacher Education Program. Field experience required.

**RDNG315 Methods and Materials of Teaching Reading in the Secondary Schools (3)**
Focuses on the nature of the reading process, cognitive skills, developing vocabulary, comprehension and interpretation skills, and recommended content area reading practices for grades 7-12. Emphasizes planning; classroom management; use of instructional resources, and related technology. Requires practicum. Prereq.: Admission to Teacher Education Program. Field experience required.

**RDNG406 Techniques and Procedures for Corrective and Remedial Reading (3)**
Enables students to understand the causes of reading disability and their impact upon reading performance. Emphasis is on the application of theory in developing competence in the use of procedures and materials for the diagnostic prescriptive teaching of reading. Requires practicum. Prereq.: RDNG314 or RDNG315.

**RDNG419 Methods and Materials of Teaching Reading in Content Areas (3)**
Focuses on providing pre-service teachers with assistance in recognizing, diagnosing, and solving basic problems and

questions relative to reading in their respective subject fields. Emphasizes the development of technical vocabulary and comprehension skills through a practicum approach. Requires practicum. Prereq.: RDNG 314 or RDNG 315. Field experience required.

**RDNG516 Teaching Reading to the Adult Learner (3)**
Focuses on providing theoretical and practical experience in identification of the specific needs of the adult learner, exploration and development of materials, and strategies for meeting the needs of adults at varying functional reading levels.

## SPECIAL EDUCATION (SPED)

**SPED204 Introduction to Education of Exceptional Children (3)**
Studies the characteristics of exceptionality and their effect on how students learn. An overview of each area of exceptionality is included, as well as historical development, basic concepts, current issues and programs, and future trends in special education. Emphasizes critical issues related to schools, family and society, existing attitudinal barriers, and current methods of support(Formerly Survey of Exceptional Children). Field experience required.

**SPED 214 Field Experiences in Special Ed. I (3)**
Provides opportunities for students to observe and assist with school or institutional curricula and extra-curricular program activities in special education at elementary level. Requires lecture and 30-hour practicum.

**SPED305 Introduction to Legal Issues in Special Education (3)**
Provides a study of national, state, and local laws, policies, and procedures affecting the education of exceptional children. Reviews rights of parents and children in the educational placement process. Prereq.: SPED204 AND EDPY244

**SPED306 Behavior Management in the Classroom (3)**
Studies the behavior management techniques, which include explanation and implementation of rewards, behavior modification, performance contracting, life-space interviewing, expectancy communication, and surface management for changing child behavior in the classroom. Prereq.: SPED 204 AND EDPY 244.

**SPED314 Field Experience in Special Ed. II (3)**
Provides opportunities for students to observe and assist with school or institution curricula and extra-curricula program activities in special education at the middle or secondary level. Requires lecture and 30-hour practicum.

**SPED 335 Special Topics (VC)**
Provides an opportunity for students to study a specific area of interest as related to exceptional children and youth. Emphasis on contemporary issues in special education. Course topics may be offered by other departments in the University.

**SPED337 Understanding Exceptional Children and Youth (3)**
Focuses on the psychological manifestations of disabling conditions and how children, youth, and adults with disabilities react to societal norms. Prereq.: SPED204.

**SPED411 Development of Individualized Educational Programs - IEPs (3)**
Focuses on the development of Individualized Educational Programs (IEPs) for children and youth with special educational and behavioral needs. Emphasis also on how to implement and monitor IEPs. Prereq: SPED204; EDPY300.

**SPED435 Methods I: Teaching Math, Science, and Technology for Special Population (3)**
Focuses on current instructional strategies used to facilitate teaching in a special education environment. Emphasizes planning for teaching; effective utilization of instructional resources; evaluative devices; classroom management; and related technology. Includes lecture and practicum. Prereq: Admission to Teacher Education Program. Field experience required.

**SPED436 Methods II: Teaching Language Arts and Social Sciences for Special Populations (3)**
Focuses on current instructional strategies used to facilitate learning language arts, social studies, and creative arts in special education environments. Emphasizes planning for teaching, effective utilization of instructional resources, evaluative devices; classroom management; and related technology. Includes lecture and practicum. Prereq.: Admission to Teacher Education Program. Field experience required.

**SPED454 Vocational Aspects of Disabilities (3)**
Focuses on transition from school to work for persons with disabilities. Discusses career awareness, exploration, and preparation concepts. Discusses pre-vocational, vocational, and work activities with emphasis on the relationship between disabilities and employment opportunities. Prereq.: SPED 306.

**SPED474 Observation and Student Teaching in Special Education(Elementary Schools) (VC)**
Focuses on observation and full-time practical experiences in an elementary school setting under the guidance of a

certified teacher and a University supervisor. Requires weekly professional development seminar. Prereq.: Clearance by major advisor and Coordinator of Field Services, Student Teaching, and Teacher Certification. Prereq SPED 214; SPED314.

**SPED475 Observation and Student Teaching in Special Education(Secondary Schools) (VC)**
Focuses on observation and full-time practical experiences in a secondary school setting under the guidance of a certified teacher and a University supervisor. Requires weekly professional development seminar. Prereq.: Clearance by major advisor and Office of Field Services, Student Teaching, and Teacher Certification. Prereq SPED214; SPED314.

**SPED485 Assessment of Exceptional Children (3)**
Provides demonstrated competence in the development, selection, administration, and interpretation of formal and informal assessment techniques. Prereq.: SPED204; EDPY244.

**SPED504 Foundations of Special Education (3)**
Surveys the background and contemporary role of special education in both public and private sectors. Studies the characteristics of exceptionality and their effect on how students learn. Emphasis on inclusive education, learning disabilities, family involvement, gifted and talented, and related services for students with special needs. Emphasis on the intellectual, social, and emotional characteristics of special needs population. Six hour practicum required.

**SPED505 Diagnostic and Prescriptive Teaching (3)**
Explores the methods of using diagnostic material in logical ways to prepare individual educational pro-grams for meeting the needs of children with learning problems.

**SPED 515 Developing Individualized Educational Programs (IEPs) (3)**
Focuses on the development of individual education programs for children and youth with special educational and behavioral needs. Emphasis on how to develop, implement, and monitor IEPs.

**SPED525 Teaching Adults with Learning Disabilities (3)**
Introduces students to appropriate strategies and techniques needed to teach adults with learning disabilities. Emphasis on helping adult learners choose, apply, and generalize previously learned information to new challenges in daily living, employment, training, participants to observe and assist with school curricula and extracurricular program activities in special education. Requires practicum and lecture.

**SPED535 Methods and Materials for Teaching Exceptional Children (3)**
Focuses on current instructional strategies used to facilitate learning by exceptional children. Emphasis planning for teaching effective utilization of instructional resources; evaluative devices; classroom management; and related technology for teaching specific content to the special needs learner. Practicum required.

**SPED537 Psychology of Exceptional Children (3)**
Emphasizes the intellectual, social, and emotional characteristics of handicapped and gifted children.

**SPED554 Vocational Aspects of Disabilities (3)**
Focuses on transition from school to work for persons with special needs. Discusses career awareness, exploration, and preparation concepts. Emphasis on pre-vocational, vocational and work activities as related to the relationship between disabilities and employment opportunities. Practicum required.

**SPED557 Behavior and Classroom Management (3)**
Focuses on the behavior and instructional components of effective classroom management. Students gain skills in assessing behavior problems, planning, implementing, and evaluating interventions and strategies used for students with special needs from diverse backgrounds.

**SPED585 Assessment of Exceptional Children (3)**
Discusses the principles and methods of psycho-educational testing and assessment. Requires demonstrated competence in the development, selection, administration, and interpretation of formal and informal tests and assessment instruments.

**SPED588 Current Trends and Legal Issues in Special Education (3)**
Provides an in-depth examination and analysis of national, state, and local laws and policies that affect the education of exceptional children and youth. Student rights, records, and due-process issues are studied. Discussions focus on the historical and current legislation.

**SPED589 Special Topics in Special Education (VC)**
Provides an opportunity for students to study a specific area of interest as related to exceptional children and youth. Emphasis on contemporary issues in special education.

**SPED590 Research Seminar in Special Education (3)**
Provides an in-depth review of basic research design used in special education. Required of students who opt to write a thesis. Students are provided individualized assistance and guidance toward the completion of their research.

**SPED591Psychological and Behavior Characteristics of the Serious Emotionally Disturbed (3)**
Examines the nature and needs of individual with serious emotional disturbance. In-depth discussion of psychiatric diagnostic categories, psycho-social development, etiology, behavioral interventions, and educational services.

**SPED592Behavior Management for Children and Youth with Serious Emotional Disturbance (3)**
Focuses on current behavior management techniques and instructional interventions that are used to teach and modify the behavior of individuals with serious emotional disturbance. Students gain knowledge and practical skills in behavioral assessments that can be used to develop and manage student behavior in varied school situations.

**SPED593 Educational Programming and Implementation for the Seriously Emotionally Disturbed (3)**
Involves theory and practice in planning and implementing educational programming for children and youth with learning disabilities. Emphasizes techniques for modifying curriculum and materials for individualized programming in basic academic and functional skills.

**SPED594 Psychological and Behavioral Characteristics of Children and Youth with Special Learning Disabilities (3)**
Discusses the psychological, social, behavioral, and cognitive development and characteristics of individuals with learning disabilities. In-depth examination of neurological and developmental aspects of specific learning disabilities and includes discussion of etiological theories, educational services, and policy issues.

**SPED595 Diagnostic Techniques & Intervention for Children and Youth with Specific Learning Disabilities (3)**
Focuses on current diagnostic techniques and instructional interventions that are used to identify and teach individuals with learning disabilities. Students gain knowledge and practical skills in administering and interpreting formal testing instruments and curriculum-based assessments to develop appropriate instructional interventions for individuals with specific learning disabilities.

**SPED596 Educational Programming and Curriculum Modification in Basic Skills Instruction for the Specific Learning Disabled (3)**
Involves theory and practice in planning and implementing educational programming for children and youth with learning disabilities. Emphasizes techniques for modifying curriculum and materials for individualized programming in basic academic and functional skills.

**SPED597 Internship in Special Education I (3)**
Provides a supervised teaching experience for students to apply academic work and teaching methods in educational settings appropriate to their professional interests. Students will complete a minimum of 250 clock hours in a non-categorical setting or a setting with children with serious emotional disturbance or specific learning disabilities.

**SPED598 Internship in Special Education II (3)**
Provides a supervised teaching experience for students to apply academic work and teaching methods in educational settings appropriate to their professional interests. Students will complete a minimum of 250 clock hours in a non categorical setting or a setting with children with serious emotional disturbance or specific learning disabilities.

**SPED679 Internship in Special Education (3)**
An on-site practicum experience under the supervision of a practicum coordinator.

**SPED695 Independent Research Study (VC)**
Provides an opportunity for the student who has selected an area of specialization to engage in additional directed reading, discussion, and research. Prereq.: Consent of professor and approval of Department Chairperson.

**SPED696 Thesis (3)**
Provides an opportunity for students to design a research study that includes literature review, data collection, analysis and interpretation of research findings, drawing conclusions, and making recommendations. Required of students who opt to write a thesis.

## Graduate Certificate in Adult Education

The Graduate Certificate Program in Adult Education provides a comprehensive, theoretical understanding of the field of adult education. The program addresses the current social, political and cultural issues that educators and practitioners of adult education face.

**How to Apply**

1. Submit a complete application packet seeking admission to the University; Submit the following documents to the UDC Office of Admissions:
    - The non-refundable Admission Application Fee or Application for Readmission Fee- Money Order, Certified Check, or Bank Check;
    - A 500-word personal statement, an official transcript, in the original sealed envelope, from each undergraduate/graduate institution attended; and
    - Two letters of recommendation.

2. Participate in an admissions interview. After a review of application materials, selected applicants will be invited to an in-person interview day, which will include:
    - Personal interview with panel of faculty;
    - Interactive/group activity with other applicants; and
    - Writing exercise.

    Successful applicants are notified of their acceptance through the Office of Graduate Admissions

**Graduation Credit Hours**
The Graduate Certificate in Adult Education requires a minimum number of 24 credits hours. Visit the program advisor for specifics.

**Transfer Credit**

**GPA Statement (Master's program)** Students in the graduate certificate program must earn a minimum grade of "B" in all required and elective courses.

**Academic probation: See Graduate Probation**

**Course Requirements (24 Credit Hours)**
Core Courses (18 credit hours)

| | | |
|---|---|---|
| ADED 503 | Culture, Context, and Critical Pedagogy | 3 |
| ADED504 | Orientation Adult and Continuing Education | 3 |
| ADED514 | Foundations of Adult Learning, Motivation and Development | 3 |
| ADED525 | Facilitating Learning in Adulthood | 3 |
| ADED537 | Communicating with the Adult Learner | 3 |
| ADED554 | Vocational and Foundational Aspects of Disabilities | 3 |
| ADED594 | Research and Assessment Methods | 3 |
| ADED599 | Instructional Technology and Integration | 3 |
| | Required Elective | 3 |
| ADED524 | Practicum/Reflective Seminar Internship | |

One (1) semester in recognized adult education program for students without 1 year fulltime or 2 years part-time experience teaching adult learning in a recognized program.

## ADULT LEARNING COURSES (ADED)

**ADED 503 Culture, Context, and Critical Pedagogy (3)**
Explores historical, philosophical, racial, and socioeconomic factors that influence teaching and learning in urban schools, using a system thinking approach in order to contextualize urban education. Teachers develop a framework for analyzing schools in society and develop the critical skills necessary to serve as agents of positive change in the face of institutional challenges and advance the learning of all students.

**ADED 504 Orientation to Adult and Continuing Education (3)**
This course introduces students to information and procedures foundational to matriculating through the program, and to the field of adult education. Targeted learning includes a thorough understanding of program design and tools essential to navigating the program, historical, sociological, psychological and philosophical foundations of adult and continuing education, the changing field of adult education, and vital information about self as educator and leader.

**ADED 514 Foundations of Adult Learning, Motivation and Development (3)**
Develops in the educator a thorough understanding of the adult learner. Provides contextualization of the adult education field through an appreciation of the socio-cultural and political contributors to main schools of thought in the field. Explores theories and ideologies about how adults learn and develop cognitively, behaviorally, and experientially, and are motivated educationally and in their daily living. Introduces a range of theories of adult development and learning styles and teaches techniques for accommodating different learning preferences. Explores how to build an environment that inspires learning and raises the esteem and confidence of students from differing backgrounds and cultures. Examines how to empower adult learners to become self-directed lifelong learners.

**ADED525 Facilitating Learning in Adulthood (3)**
Immerses the student in methods and best practices for facilitating the knowledge-acquisition in adult learners. Reinforces students' future role as facilitator, coach and mentor. Trains students to identify methods and techniques suited to adult learning in a variety of settings, with a thorough understanding of the concepts, theories and principles relevant to the selection, use, and evaluation of appropriate instructional strategies. Students learn the difference between didactic and learner-centered approaches, explore different methods of communication, and a employ a variety of teaching and learning resources, including electronic modes in their strategies for teaching.

**ADED 537Communicating with the Adult Learner (3)**
Develops the student's communication skills with adults. It is structured to give the student an understanding of the adult audience and the methodology for organizing and presenting materials and information in ways appropriate

for adults. The course will cover information gathering, speech outlining, small group discussions, informative speaking and persuasive speaking. It also addresses intercultural communications.

**ADED554 Vocational and Foundational Aspects of Disabilities (3)**
Focuses on transition from school to work of persons with special needs. It discusses career awareness, exploration, and preparation concepts. Emphasis is placed on pre-vocational, vocational and work activities, as related to the relationship between disabilities and employment opportunities. Understanding adult learner development and individual learning differences, and how to analyze the impact of individuals with exceptional learning needs (ELN), academic and social abilities, attitudes, interests, and values on instruction and career development, are also goals of this course.

**ADED 594 Research and Assessment Methods (3)**
Provides an overview of foundations of education research approaches used in behavioral science settings, including critical review and interpretation of published research and discussions on both qualitative and quantitative designs. Students discover theory and methods of research for knowledge creation and sharing. They learn methods to assess and evaluate needs at individual, group, organization and societal levels. Explores tools, techniques and strategies for establishing goals, performance objectives and learning requirements. Students analyze major research approaches to educational problems and how to use that data to inform appropriate ameliorating changes in adult education.

**ADED 599 Instructional Tech. and Integration (3)**
Students learn the legal, ethical, cultural and social issues that are associated with the use of technology. They will acquire basic computer literacy skills and be versed in assistive technology for special needs learners. They will be taught how to evaluate when the use of technology and electronic media is appropriate. They will also be coached how to use and integrate a variety of audio/visual equipment and materials into the learning process and the learning environment.

## Counseling (MS)

**Degree/Concentrations***
The MS Counseling degree offers two program concentrations:

- School Counseling
- Mental Health Counseling

***Note: These degrees do not lead to professional licensure or clinical certification; however, they do provide students the opportunity to seek school counseling certification and licensure for professional counseling within the District of Columbia.

The school counseling concentration is accredited by the Council for Accreditation of Counseling and related Educational Programs (CACREP). The school concentration meets course requirements of the District of Columbia Public Schools, Office of the State Superintendent of Education (OSSE) for school counselor certification. Students entering the School Counseling Concentration are expected to complete field experience requirements in early childhood, elementary middle or high school. Field placements for the school concentrations are available during the summer, fall and spring semesters only.

Although the mental health counseling concentration is not professionally accredited, it prepares students to function professionally as treatment providers in mental health agencies, substance abuse facilities, employee assistance programs, career counseling, and in employment centers, therapeutic group homes, and rehabilitation centers. Students completing the mental health counseling concentration are eligible to seek licensure for professional counseling within the District of Columbia.

All Counseling students, school and mental health, must commit a minimum of 8-10 hours weekly, during practicum and 20-25 hours weekly during internship courses. Students enrolled in the counseling program (school and mental health) have the option of extending their field experience during the summer sessions with the approval of the faculty. Students interested in professional licensure or clinical certification will be supported in making application by program faculty. Specific standards for professional licensure and clinical certification by state can be found online.

The counseling program has a common core curriculum of study for both school and mental health concentrations. Additionally, each concentration requires nine (9) concentration course hours. All students (school and mental health) complete a minimum of sixty (60) credit hours including; nine (9) hours covering professional orientation, theoretical knowledge, research and evaluation; nine (9) hours of field experience; (30) hours of basic program requirements; and a minimum of (6) hours of course electives. Electives are chosen from areas of preference and in consultation with the faculty advisor. Students must maintain a grade point average of 3.0 or better to remain in good standing and a 3.0 in all major courses. A student may repeat a required course no more than one time.

**Admission Requirements**

To be considered for admission to graduate study in counseling, the applicant must meet the following requirements:

1. Hold a baccalaureate degree from an accredited college or university, preferably a major in education and/or social sciences.
2. Submit two official transcripts from all prior undergraduate and graduate work. Applicants must have an undergraduate grade point average of 2.8 or higher.
3. Submit official scores from a recent administration (within the last two years) of the Graduate Record Exam Verbal, Quantitative, Analytical Reasoning and Essay tests.
4. Submit three letters of recommendation. One letter should be from an individual familiar with the applicant's capacity for relating to clients, professionalism, and personal attributes.
5. A 500-word essay articulating reasons for pursuing graduate studies in counseling, familiarity with the profession, and related work experience.

**GPA Statement**

Students must maintain a grade point average of 3.0 or better to remain in good standing and a 3.0 in all major courses. A student may repeat a required course no more than one time. If the student is unable to achieve a "B" or better in the required course, the student may petition the faculty for a review of his/her status to continue in the program.

**Graduation Requirements**

Students must satisfy one of the following requirements to exit the program:

1. School Counseling - 60 hours including: 54 semester hours, thesis (6 additional semester hours) and the Counselor Preparation Comprehensive Exam (CPCE) and/or Professional School Counselor Praxis (5421).
2. Mental Health Counseling – 60 hours including: 48 semester hours of core and basic requirements, 12 semester hours of electives that include a special project with a seminar paper and the Counselor Preparation Comprehensive Exam (CPCE).

**Internship Opportunities**

Graduate students with concentrations in School and Mental Health Counseling receive support from faculty in seeking out and obtaining opportunities to receive training and supervision within school and treatment facilities. For students pursuing a concentration in School Counseling, opportunities are available within elementary, middle, junior and high school settings located within Washington, DC. For students pursuing a concentration in Mental Health Counseling, opportunities are available within psychiatric hospital programs, mental health treatment facilities, substance abuse clinics, homeless shelters, and community mental health programs located within the Washington, DC, area.

**Student Organizations/Honor Societies**

*Chi Sigma Iota (CSI)* is an international honor society for students, professionals, counselors, and counselor educators.

*The Graduate Counseling Club (GCC).* The GCC meets regularly to engage students in activities designed to enhance students' professional identity as counselors.

**Accreditation**

The School Counseling Concentration is accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP). Students in the School Counseling Concentration meet the coursework requirements to obtain K-12 certification from the Office of the State Superintendent (OSSE) in the District of Columbia.

https://www.cacrep.org/ (CACREP)
http://www.ncate.org/ (CAEP)

**Professional Affiliations**

Students are encouraged to become members of the American Counseling Association (ACA) and the American School Counseling Association (ASCA) These professional associations provide professional affiliation and opportunities to serve in leadership positions.
https://www.counseling.org/
https://www.schoolcounselor.org/

**Advancement to Graduation Requirements**

Students must apply for the Final Comprehensive Exam by one semester prior to their graduation date.

The Counselor Preparation Comprehensive Exam is a standardized assessment provided by the Center for Credentialing and Education. *(CCE):* https://www.cce-global.org/

The Professional School Counselor Praxis (5421) is a standardized assessment provided by Educational Testing Service (ETS):
https://www.ets.org/praxis/prepare/materials/5421

**Course Requirements**

| *Program Core Requirements (21 Credits)* |
|---|
| CNSL-509 Counseling Philosophies |
| CNSL -514 Theories of Counseling |
| CNSL-532 Introduction to Research and Program Evaluation |
| CNSL -531 Ethics, Legal & Legislative Issues |
| CNSL -557 Human Growth and Development |

CNSL -517 Career Theories and Development
CNSL -519 Appraisal Techniques in Counseling

*Program General Requirements*

CNSL -530 Techniques of Counseling
CNSL -510 Group Counseling
CNSL-518 Supervision in Practicum & Field Experience (100 field hours required)
CNSL -521 Internship & Field Experience I (300 field hours required)
CNSL -522 Internship & Field Experience II (300 field hours required)
CNSL -513 Cultural Diversity Issues and Multicultural Counseling

**Comments: Students must submit their request to enroll in Practicum and Internships one semester in advance. The request must be submitted to the faculty advisor. All placements for field experiences must be completed with the schools or agencies one semester in advance.**

*Elective Requirements (18 credits)*

CNSL-507 Grief Counseling
CNSL-529 Human Sexuality and Sexual Dysfunctions
CNSL-533 Trauma and Crisis Intervention
CNSL-543 Addiction Disorders
CNSL-544 Family Counseling
CNSL-555 Counseling the Elderly
CNSL-596 Special Topics in Counseling Identify Course Topic: (e.g., Couples Counseling)
CNSL-528 Drug Abuse Prevention/Treatment
PSYC-505 Advanced Personality Theory & Learning Process
PSYC-543 Advanced Statistics & Research Design
PSYC-548 Psychopharmacology

**Thesis (6 credits) /Thesis Project (3 credits) Graduation Requirements:**

The M.S. Counseling program complies with university guidelines for the Master's Thesis and Thesis Projects. Students completing the M.S. Counseling Degree must complete either a Graduate Thesis for (6) credits or a Thesis Project for (3) credits. The Thesis is a scientific inquiry using rigorous and very structured research methods chosen by students who plan to go on and pursue a doctorate degree. The Thesis Project is an application of knowledge for students interested in being practitioners.

- CNSL-545 Independent Research Study (Thesis Project)
- CNSL-599 Thesis

**Graduate Counseling Concentrations Course Requirements *(9 credits)***

Graduate students pursuing their M. S. Degree in Counseling select a concentration/specialization in either School Counseling or Mental Health Counseling. In addition to the Core Course requirements, M.S. Counseling Students must also take the following concentration/specialization course requirements.

**School Counseling (Required) Specialization Course Requirements**

- CNSL-556 Seminar School Counseling
- CNSL-546 Counseling Children and Adolescents
- CNSL-508 Organization and Administration of Counseling

**Mental Health/Agency Counseling (Required) Specialization Course Requirements**

- PSYC-595 Diagnosis & Treatment Planning
- CNSL-544 Family Counseling
- CNSL-538 Mental Health Treatment Techniques (Advanced)

**NOTE:** Students selecting to complete the **Thesis Project** will need to complete an additional 3-credit elective to fulfill the 54-credit graduation requirement. However, students selecting to complete the **Thesis** will not need any additional courses to meet the 60-credit graduation requirement.

## COURSE DESCRIPTIONS: COUNSELING (CNSL)

**CNSL507 Grief Counseling (3)**

Explores philosophical, theoretical, and practical considerations necessary for work with individuals experiencing death, grief, and loss. Prepares students for work with those dying and bereaved loved ones.

**CNSL508 Organization and Administration of Counseling (3)**

Examines management and organizational concepts in general and highlights how these relate to educational and human service delivery systems in particular. Reviews management theory with a focus on key management functions. Examines development and functioning of school counseling.

**CNSL509 Counseling Philosophies (3)**

Surveys counseling as a discipline by examining its philosophical foundations and the major undergirding principles and practice, including models of human development, principles of learning, and principles of counseling.

**CNSL510 Group Counseling (3)**

Examines the major schools, as well as contemporary trends, in group counseling including didactic and experiential models. Provides laboratory exercises which demonstrate different group approaches, offering

opportunities to experience both group leadership and group participation. Prereq: CNSL 509 & 514.

**CNSL513 Cultural Diversity Issues and Multicultural Counseling (3)**
Reviews counseling theories and the appropriateness of each for counseling minorities including the aged, handicapped, gifted, mentally disabled, women, and members of racial and ethnic groups. Prereq: CNSL 509.

**CNSL514 Theories of Counseling (3)**
Examines conceptual frameworks of major counseling theories and guides counselors in the development of theoretical preference.

**CNSL517 Career Theories and Development (3)**
Reviews information related to training and educating for jobs and careers, marriage and careers, and retirement careers. Utilizes a series of practical class projects, such as performing a job analysis, studying an occupational information program, reviewing systems for classifying materials and information. Also involves critically reviewing and analyzing occupational materials from commercial publishers and professional associations to teach concepts. Explores the rationale behind the contributions of major career theorists. CNSL 514.

**CNSL518 Supervision in Practicum & Field Experience (3)**
Facilitates the development of counseling skills in preparation for internship experience. Prereq: Advancement to Candidacy.

**CNSL519 Appraisal Techniques of Counseling (3)**
Examines techniques and methods of human appraisal, including standardized testing, autobiographical techniques, case histories, case studies, and interviews.

**CNSL521 Practicum & Field Experience in Counseling I (3)**
Requires hands-on work in a counseling setting under the direction of a qualified professional. Requires on-site and classroom hours. Prereq.: Completion of core courses and PSYC 537, CNSL 510, CNSL 514, CNSL 530 and 531.

**CNSL522 Practicum & Field Experience in Counseling II (3)**
Continues the field experience with additional responsibilities to enhance continued skill development. Requires on-site and classroom hours. Prereq.: CNSL 521.

**CNSL528 Drug Abuse Prevention and Treatment (3)**
Examines the psychological aspects of addiction to alcohol, narcotics, stimulants, psychotropics, hallucinogenic drugs, gambling, and sex. Integrates discussions of psychosocial factors leading to addictive states and explores approaches and strategies for prevention, control, counseling, and treatment across the course curriculum. Prereq: CNSL-514.

**CNSL529 Human Sexuality and Sexual Dysfunction (3)**
Discusses topics that are germane to the counselor's roles as sex educator and sex counselor. Covers reproductive processes, sexual behavior, sex and gender, marriage, family and interpersonal relationships, and sex and health. Analyzes theories and empirical studies of social processes and sexual practices.

**CNSL530 Techniques of Counseling (3)**
Focuses on interviewing and counseling skills for effective therapeutic relationships. Develops counseling goals, design intervention strategies, assess client outcomes ,and methods used to effectively terminate counseling relationships. Prereq: CNSL 514.

**CNSL531 Ethics, Legal and Legislative Issues (3)**
Surveys ethics in counseling and current legislation and laws impacting the counseling profession. Provides an overview of basic legal terminology and techniques for recognizing legal problems and issues. Prepares the counselor to serve as a client advocate and expert judicial witness. Examines the legal implications of controversial issues concerning contemporary, social welfare issues.

**CNSL532 Introduction to Research and Program Evaluation (3)**
Examines qualitative and quantitative methods used in human services research. Prepares students to read, analyze, and evaluate research and equips them to evaluate the effectiveness of service delivery programs. Cross-listed with PSYC 552.

**CNSL533 Crisis Intervention (3)**
Overviews theories of self-destructive behavior, crisis intervention, and suicide prevention. Explores treatment approaches for crises situations that occur in schools and other institutional settings. Prereq.: CNSL 530.

**CNSL538 Mental Health Treatment Techniques (3)**
Examines traditional and contemporary mental health treatment approaches with special emphasis on techniques used in outpatient, community-based care. Prereq.: CNSL 514.

**CNSL543 Addiction Disorders (3)**
Examines the physiological and psychological aspects of addiction to alcohol, narcotics, stimulants, psychotropics, hallucinogenic drugs, gambling, and sex. Assesses

psychosocial factors associated with addiction. Explores a variety of treatment approaches.

**CNSL544 Family Counseling (3)**
Focuses on traditional and non-traditional family life styles (including single-parent families, commune families, and the family in which two unmarried persons live together and procreate), family structures of racial and economic groups, communication, and communication breakdowns in family relationships. Prerequisites: CNSL 509 & 514.

**CNSL5 545 Independent Research Study (1-6)**
Provides the counselor-in-training who has selected an area of specialization an opportunity for in-depth reading, discussion, and/or field or laboratory experience in an area of interest. Prereq: Permission of instructor and Department Chair. May be repeated for credit.

**CNSL546 Counseling Children and Adolescents (3)**
Explores a variety of models for effecting behavioral change in the early stages of the lifespan. Exposes a variety of techniques for helping children and youth through counseling processes. Prerequisites: PSYC 537, CNSL 509 & 514.

**CNSL549 Tests in Counseling (3)**
Examines the major types of tests and how these are administered and scored. Also discusses the use of tests in decision-making, research, and treatment the criteria used for judging tests, the basic concepts, and the terminology of tests and measurements.

**CNSL555 Counseling the Elderly (3)**
Examines theories and methods for counseling senior citizens. Reviews biological and sociocultural aspects of aging and the impact these have on behavior and behavioral change. Prereq: 509 & 514

**CNSL596 Special Topics in Counseling (VC)**
Presents and discusses special topics pertaining to counseling that are of interest to students.

## Rehabilitation Counseling (MA)

UDC's Rehabilitation Counseling Program (RCP), requiring 60 semester hours, offers the Master of Arts Degree preparing students for work with individuals experiencing disabilities including physical, emotional, personal, family, social, educational, and career problems that impede individuals from becoming fully employable.

**Transfer Credit**
**Internship Opportunities**
With faculty support and mentorship, students may seek internships designed to help ultimately achieve professional certification credentials as a CRC (Certified Rehabilitation Counselor).

**Accrediting Body**
The Rehabilitation Counseling Program is accredited by the Council for Accreditation of Counseling and Related Programs (CACREP): https://www.cacrep.org/

**Admission Requirements**
To be considered for admission to the Master of Arts in Rehabilitation Counseling program, the applicant must meet the following requirements:
1. Submit a complete UDC graduate application.
2. Hold a baccalaureate degree in rehabilitation counseling, psychology, sociology, allied health science, education and/or related human services from an accredited college or university with a cumulative GPA of 2.5.
3. Submit two (2) official transcripts from all prior college and graduate work.
4. Submit three (3) professional references addressing character, academic promise, and professional suitability for the Rehabilitation program.
5. Submit a personal statement of no more than 500 words detailing the student's interest in the RCP program, personal characteristics and professional experiences that influenced his/her interest in pursuing a degree in rehabilitation counseling.
6. Submit official scores from a recent administration of the Graduate Record Examination.
7. For applicants without the baccalaureate in education and/or social science maybe required to take additional courses as determined by the admission committee upon review of official transcripts.

**GPA statement**
Students must maintain a grade point average of 3.0 or better to remain in good standing and a 3.0 in all major courses. A student may repeat a required course no more than one time. If the student is unable to achieve a B or better in the required course, the student may petition the faculty to continue in the program.

**Graduation Requirements**
Students must satisfy one of the following requirements to exit the Program:
1. The program of study requires the completion of 60 semester hours that include core and program requirements, specialization courses, and field experience. and the Counselor Preparation Comprehensive Exam.
2. Forty-two (42) semester hours of core and basic requirements, 12 semester hours of electives that include a

special project with a seminar paper and the Counselor Preparation Comprehensive Exam.

At the conclusion of the student's major courses (minimum 54 semester hours), each student will prepare and submit a professional portfolio and successfully pass a comprehensive examination. The development of a professional portfolio is a summative assessment which enables students to document and verify the knowledge, skills, and competencies acquired during program matriculation and requires documentation of knowledge and skills with supporting evidence in core competency areas. The RCP utilizes the Certified Rehabilitation Counseling Examination as its comprehensive examination. This additional summative assessment will measure the student's integration of knowledge in rehabilitation counseling, ensuring competence in the field.

**Course Requirements**

**First Semester**
RHCN-500 Foundations of Rehabilitation Counseling
RHCN-507 Career Counseling in Rehabilitation
RHCN-508 Rehabilitation Counseling Theories RHCN-513 Job Development and Placement in Rehabilitation
RHCN-524 Ethics in Rehabilitation Counseling
**Second Semester**
RHCN-504 Principles and Practices of Case Management
RHCN-506 Psychosocial and Medical Aspects of Disability in Rehabilitation Counseling I
RHCN-522 Application of Rehabilitation Counseling in a Field Based Setting
RHCN-509 Introduction to Rehabilitation Research
**Summer Session**
Elective-2-4
**Third Semester**
CNSL-513 Cultural Diversity Issues & Multicultural Counseling
CNSL-519 Appraisal Techniques
RHCN-513 Job Development and Placement in Rehabilitation
CNSL-557 Human Growth & Development
**Fourth Semester**
RHCN-510 Practicum in Rehabilitation Counseling
CNSL-543 Addictions
CNSL-544 Marriage and Family
CNSL-Introduction to Research and Program
PSYC-595 Diagnosis & Treatment Planning Evaluation
**Summer**
Elective or Internship I
**Fifth Semester**
RHCN-511 Internship I in Rehabilitation Counseling
**Sixth Semester**
RHCN-512 Internship II in Rehabilitation Counseling
**Electives**
RHCN-515 Developmental Disorders in Rehab
CNSL-543 Addiction Disorders
PSYC-523 Assessment of Intelligence Lecture
PSYC-530 Assessment of Intelligence Lab
**Electives & Specialization Courses** (con't.)
PSYC-525 Assessment of Personality Lecture
PSYC-526 Assessment of Personality Lab
**Electives & Specialization Courses** (con't.)
PSYC-525 Assessment of Personality Lecture
PSYC-526 Assessment of Personality Lab

## COURSE DESCRIPTIONS
## REHABILITATION COUNSELING (RHCN)

**RHCN500 Foundations of Rehab. Counseling (3)**
Examines the history, philosophy, and legislation related to the development of the field. Focuses is on research findings, current policies, government entities, and ethical issues.

**RHCN501 Psycho-social and Medical Aspect of Disability in Rehabilitation (3)**
Overview of major physical, cognitive, and sensory impairments. Emphasizes functional limitations, intervention resources, contributions of medical and allied health professions, and the psychosocial implications of adjusting to disabling conditions.

**RHCN502 Career Counseling and Job Development and Placement in Rehabilitation (3)**
Explores occupational information job matching systems and job placement approaches. Focuses on demand-side job development, job-seeking skills, training, supported employment, transitional work, and placement techniques, including job analyses, ADA
implementation, and labor market surveys.

**RHCN503 Introduction to Assistive Technology Rehabilitation Counseling (3)**
Examines rehabilitative technology used to support individuals with physical, cognitive, and sensory disabilities.

**RHCN504 Principles and Practices of Case Management in Rehabilitation (3)**
Examines personalized processes to assess needs, coordinate care, and ensure optimum outcomes. Identifies problem-solving techniques for case management, variables that affect health, functioning, and skills in the development of case management
plans.

**RHCN505 Directed Readings in Rehabilitation (3)**
Provides intensive study in one or more topical areas of rehabilitation through directed readings and the evaluation of rehabilitation delivery systems and resources.

**RHCN506 Psychosocial and Medical Aspects of Disability in Rehabilitation I (3)**
Overview of major physical, cognitive, neurological, developmental, substance use and psychiatric disorders, and sensory impairments. Emphasizes functional limitations, intervention resources, contributions of medical and allied health professions, and psychosocial implications of adjusting to disabling conditions. Course includes a module on DSM-IV-TR.

**RHCN507 Career Counseling in Rehabilitation (3)**
Explores career theories and other practices associated with successful job placement activities. Examines transferable skills analysis, labor market analysis, job seeking skills training, employer identification, management of job development campaign, as well as supported employment strategies. Explores technology related to these areas.

**RHCN508 Rehabilitation Counseling Theories (3)**
Examines conceptual frameworks of major counseling theories and guides rehabilitation counselors in the development of conceptual and theoretical preference. Focuses on principles and approaches relevant to rehabilitation counseling and supervision. Includes a module on family and systems theory.

**RHCN509 Introduction to Rehabilitation Rsrch (3)**
Examines quantitative and qualitative methods used in human services research. Prepares students to read, analyze, and evaluate research, and equips them with the skills to evaluate the effectiveness of service delivery programs.

**RHCN510 Practicum in Rehabilitation Counseling (3)**
Students supervised by Certified Rehabilitation Counselors (CRC) complete a 100-hour practicum. Provides opportunities to demonstrate counseling skills with disabled individuals in a rehabilitation agency or community rehabilitation centers.

**RHCN511 Internship in Rehab. Counseling I (3)**
Provides opportunities to demonstrate counseling skills in a rehabilitation setting, agencies, and community rehabilitation centers with primary supervision by a qualified CRC. Students spend significant time within an agency functioning as a professional rehabilitation counselor. Students should complete 300 hours in part I and II totaling 600 hours.

**RHCN512 Internship in Rehab. Counseling II (3)**
Provides opportunities to demonstrate advanced rehabilitation counseling skills in a rehabilitation setting, agencies, and community rehabilitation centers with primary supervision by a qualified CRC. Students are required to spend significant time within an agency functioning as a professional rehabilitation counselor. Students will complete 300 hours during Internship I and II totaling 600 hours.

**RHCN513 Job Development and Placement in Rehabilitation (3)** Explores occupational information job matching systems and job placement approaches. Focuses on demand-side job development, job-seeking skills training, supported employment, transitional work, and placement techniques, including job analyses, ADA implementation, and labor market surveys. Includes a module on assistive technology.

**RHCN514 Psychosocial & Medical Aspects of Disability II (3)** Psychosocial and Medical Aspects Part II focuses on the psychosocial and psychological aspects of medical conditions. Covers cardiovascular, respiratory, renal, gastrointestinal, musculoskeletal, blood/immune systems, endocrine and dermatologic conditions disability. Emphasizes functional limitations, intervention resources, contributions of medical and allied health professions. Explores implications of adjusting to disabling medical conditions.

**RHCN515 Developmental Disorders & Rehab. (3)**
Uses a 20-hour field experience component involving individuals with developmental disabilities in local DRS agencies. Provides an opportunity for students to better understand the unique challenges of individuals with developmental disabilities and to learn about the ways in which rehabilitation adapts to meet these challenges. Utilizes a life span approach to increase awareness and sensitivity about the variety of issues an individual with a developmental disability and his/her family may encounter.

**RHCN516 Rehab. and Traumatic Brain Injury (3)**
Uses a 20-hour field experience component involving individuals with developmental disabilities in local DRS agencies. Reviews various types of traumatic brain injury and common physical, cognitive and behavioral consequences. Provides information on head injury and methods for discussing common causes of traumatic brain injury, continuum of care, and factors that contribute to the successful rehabilitation and recovery of a person from traumatic brain injury.

**RHCN517 Rehab. & Psychiatric Disabilities (3)**
Uses a 20-hour field experience component involving individuals with psychiatric disabilities in local DRS agencies. Provides an overview of psychiatric disability and rehabilitation approaches, and reviews current and evolving evidence-based practices in employing individuals with psychiatric disabilities, including supported employment.

**RHCN518 Rehabilitation, Transition and the Educational Setting (3)** Uses a 20-hour field experience component involving visiting sites that prepare individuals with disabilities to enter the post-school environment, this course provides an opportunity for students to better understand the unique challenges of individuals with educational disabilities and transition challenges. A key focus will be on the vocational choices, training and education available to young adults with educational disabilities as they make the transition into adulthood. Another key component focuses on differentiating the legal requirements of IDEA and ADA.

**RHCN519 Neuropsychological Assessment Lec. (3)**
Surveys representative tests and techniques utilized in neuropsychological assessment of brain functioning. Explores methodologies in the administration, scoring, and interpretation of selected neuropsychological tests. Provides instruction in how to prepare a written neuropsychological profile and explains the terminology used in reaching diagnostic decisions.

**RHCN520 Neuropsychological Assessment Laboratory (1)**
Provides a laboratory setting for teaching applied psychological assessment using neuropsychological tests.

**RHCN521 Clinical Report Writing in Rehab. (3)**
Provides intensive training in report writing which integrates relevant, psychological, and developmental test and non-test data results into a coherent, comprehensive report which describes psychological functioning. Includes a module on medical terminology.

**RHCN522 Application of Rehabilitation Counseling in a Field-Based Setting (3)**
Examines the major approaches and best practices of counseling techniques with a focus on individuals with disabilities. Incorporates traditional counseling microskills, from a rehabilitation perspective that may be understood contextually and operationally.. Demonstrates how microskills can be used to evaluate, analyze, coordinate, teach, confer, and advocate on behalf of consumers with disabilities in a way that strengthens the consumer's capacity to live independently, become employed, and become more integrated with the community-at-large. Significant time is spent on experiential activities including dyads, triads, and role-playing.

**RHCN523 Applications of Assistive Technology in Rehabilitation (3)**
Reviews assistive technology applications as applied to the critical needs of consumers with disabilities. Through experiential, on-site visits (such as field trips and professional shadowing), and the internet, the course covers various forms of assistive technology including: electronic devices, home and joITe modifications, wheelchairs and seating, vehicle modifications, computer access, and augmentative communication. Explores the components of conducting vocational evaluations, developing implementation plans, rendering clinical decisions, prompting appropriate recommendations, and locating the resources for assistive technology devices and services.

**RHCN524 Ethics in Rehabilitation Counseling (3)**
Examines ethical and legal practice guidelines that are critical to rehabilitation counseling. Also addresses growing, emergent issues within the profession and in the disability arena as these relate to the future direction of rehabilitation counseling. Emphasizes professional identity development and professional behavior which influences effective, ethical decision making in practice and research.

**RHCN525 Introduction to Vocational Evaluation(3)**
Reviews foundations of vocational evaluation, including philosophical and historical aspects as these relate to consumers with disabilities. Incorporates didactic and practical methods. Examines standardized assessment tools including interest rating scales, career development instruments, intelligence, achievement, and ability tests, projective techniques, personality measures, and adaptive behavioral measures. Discusses the impact of the information derived from these instruments on job and career development and the independent living potential of consumers with disabilities.

## Speech-Language Pathology (MS)

The Master of Science in Speech-Language Pathology degree program is accredited by the Council on Academic Accreditation in Audiology and Speech-Language Pathology (CAA) of the American Speech-Language Hearing Association (ASHA) and is a member of the Council on Academic Programs in Communication Sciences and Disorders (CAPCSD). The program is designed to provide training for individuals who wish to become certified in speech-language pathology by ASHA, the national certifying agency for professional speech-language pathologists. Students will gain knowledge in evidence-based practice and research in communication

disorders, and be able to provide diagnostic and treatment services to clients/patients in schools, hospitals, health maintenance organizations, private clinics, and other healthcare/educational settings. Emphasis is placed on communication behavior and disorders in linguistically and culturally diverse urban populations.
ASHA: https://www.asha.org/
CAA: https://caa.asha.org/
CAPCSD: https://www.capcsd.org/

**Graduate Admission Statement**
The Masters of Science in Speech-Language Pathology is restricted to students who have been accepted into the Speech-Language Pathology program. Applicants must have an undergraduate degree from an accredited institution and a minimum grade point average of 3.0. A degree in speech-language pathology is preferred, but not required. Students must submit three letters of recommendation, a final copy of the undergraduate transcript, a letter of intent, and GRE general test scores with their application for admission. Prospective applicants may be required to participate in an interview with an admission committee representative.

**Graduate Transfer Credit**

**Graduation Credit Hours**
The Master of Science in Speech-Language Pathology requires 57 credit hours (75 for students without a subject background in Speech-Language Pathology), not including credit hours for prerequisite coursework; a minimum of 400 clock hours of supervised practicum, of which a minimum of 375 must be in direct client/patient contact; and at least 25 clock hours in clinical observation. At least 325 of the 375 clock hours must be at the graduate level. All current and prospective graduate students are encouraged to visit or call the Program Office for curricular information and advising assistance. Students are encouraged to become members of the National Student Speech-Language-Hearing Association (NSSLHA): https://www.nsslha.org/

**Qualifying Examination**
Students must successfully complete a thesis or the qualifying examination administered by the Program.

**Academic Standing**
The University requires that graduate students maintain a cumulative GPA (CGPA) of 3.0 and receive no less than a B in all courses in order to be considered in good standing.

**Pre-requisites Course Requirements**
SPLP 115 Intro to Linguistic Analysis (Phonetics) (3)
SPLP 224 Anatomy and Physiology of Speech and Hearing (3)
ADUL 334 Audiology (3)
SPLP 312 Language Acquisition (3)
SPLP 434 Diagnostics (required of all students) (3)
SPLP 507 Speech/Hearing Disorders and Related Disciplines (3)
MATH 480 (3) Mathematical Statistics (Statistics)

**Required Courses**

SPLP 500 Sociolinguistic and Theoretical Perspectives on Language (3)
SPLP 520 Neuroanatomy of the Speech and Hearing Mechanism (3)
SPLP 534 Stuttering (3)
SPLP 535 Language Disorders (3)
SPLP 536 Articulation and Phonological Disorder (3)
SPLP 555 Communication Modalities (3)
SPLP 560 - 564 Practicum in Speech (Minimum of 5 semesters required)
SPLP 634 Aphasia (3)
SPLP 635 Voice Disorders (3)
SPLP 637 Motor Speech Disorders (3)
SPLP 638 Dysphagia (3)
ADUL 552 Aural Rehabilitation (3)
SPLP 610 Speech Science (3)
SPLP 674 Research Methods in Comms. Sciences (3)
SPLP 698 Elective (3)

**Additional Courses**
SPLP 695 Independent Study
SPLP 699 Thesis

**Total credit hours: 57**

**Program of Study**
The Master of Science degree program in Speech-Language Pathology requires two years of full-time study (with summers) to complete for students entering with a background in the discipline. Students entering without an undergraduate degree in a related field require additional semesters of study. In such cases, program duration is determined by prerequisite course requirements.

Students entering the program with a background in SLP typically follow the two-year program of study below:

| First Year - Fall Semester | | |
|---|---|---|
| SPLP 520 | Neuroanatomy of the Speech & Hearing Mechanism | 3 |
| SPLP 535 | Language Disorders | 3 |
| SPLP 536 | Articulation and Phonological Disorders | 3 |
| SPLP 560 | Clinical Practicum – Level 1 | 3 |
| | | Total 12 |
| **First Year - Spring Semester** | | |
| SPLP 561 | Clinical Practicum – Level 2 | 3 |

| | | |
|---|---|---|
| SPLP 634 | Aphasia | 3 |
| SPLP 638 | Dysphagia | 3 |
| SPLP 674 | Research Methods in Communication Disorders | 3 |
| | | Total 12 |
| | **First Year - Summer Semester** | |
| SPLP 500 | Sociolinguistic and Theoretical Perspectives on Language | 3 |
| SPLP 562 | Clinical Practicum – Level 3 | 3 |
| SPLP 698 | Special Topics | 3 |
| | | Total 9 |
| | **Second Year - Fall Semester** | |
| SPLP 555 | Communication Modalities | 3 |
| SPLP 534 | Stuttering | 3 |
| SPLP 562 | Clinical Practicum – Level 4(a) | 3 |
| SPLP 635 | Voice Disorders | 3 |
| | | Total 12 |
| | **Second Year - Spring Semester** | |
| ADUL 552 | Aural Rehabilitation | 3 |
| SPLP 637 | Motor Speech Disorders | 3 |
| SPLP 560 | Clinical Practicum – Level 4(b) | 3 |
| SPLP 610 | Speech Science | 3 |
| | | Total 12 |

**Total credit hours: 57**

## COURSE DESCRIPTIONS: SPEECH LANGUAGE PATHOLOGY (SPLP)

**SPLP507 Speech and Hearing Disorders and Related Disciplines (3)**
Provides an overview of the practice of speech-language pathology including requirements for certification as an SLP, the discipline's code of ethics, disorders, and client populations served by the SLP. This course is required for new graduate students without an SLP background. Prereq: Graduate standing.

**SPLP510 Survey of Linguistic Theory (3)**
Surveys descriptive and theoretical models for analyzing the grammar of a language. Gives particular attention to traditional and current models of grammatical analysis. Includes exercises in rule-writing for particular aspects of English syntax. Prereq: Graduate standing.

**SPLP513 Sociolinguistics: Survey of Soc. Dialects (3)**
Surveys the linguistics rules characterizing various social dialects of American English, including historical and social issues which have led to diversity in American English. Includes as assignments the extraction of socially diagnostic linguistic variables from samples of English Dialects.

**SPLP520 Neuroanatomy of the Speech and Hearing Mechanism (3)**
Examines the anatomy and physiology of the central and peripheral nervous systems as these relate to the speech and hearing mechanisms. Prereq: Graduate standing.

**SPLP534 Stuttering (3)**
Examines the definition and description of stuttering as a disorder of fluency, discussion of speech and non-speech behaviors, types of stuttering, forms of stuttering, incidence and prevalence of stuttering, etiology, onset and development of stuttering, assessment, and treatment strategies..Prereq: Graduate standing.

**SPLP535 Language Disorders (3)**
Examines the pragmatic, semantic, and syntactic features of children exhibiting disorders in oral and written language. Provides practical experience in the use of common language assessment protocols and the application of various language intervention strategies. Requires a basic knowledge of normal language acquisition.

**SPLP536 Phonological Disorders (3)**
Focuses on systems of speakers exhibiting phonological disorders, with emphases on diagnosis, analysis of phonological data, and remediation strategies. Discusses normal phonological acquisition as a baseline for examining disordered systems.

**SPLP560 Practicum in Speech (3)**
Provides supervised clinical practicum in the identification, diagnosis, and treatment of communication disorders. Including techniques of interviewing and counseling. Includes discussion of requirements for the profession and professionalism. Prereq: Permission of the clinical director.

**SPLP611 Physiological and Acoustic Phonetics (3)**
Examines anatomical and physiological factors that relate to the acoustic analysis of features found in connected speech. Also includes laboratory exercises in speech acoustics.

**SPLP617 Manual Communications Systems (3)**
Examines the linguistic bases for AMESLAN, SEE, Signed English, and other manual systems used by the severely hearing-impaired and the deaf. Considers sociolinguistics issues.

**SPLP634 Aphasia (3)**
Focuses on language disorders in adults and children caused by lesions of the central and peripheral nervous systems. Discusses specific disorders such as aphasia due to left hemisphere lesions. Course also examines congenital aphasia, language disturbances caused by right hemisphere

lesions, traumatic brain injury and dementia, including Alzheimer's disease. Prereq: SPLP520

**SPLP635 Structural Abnormalities/ Voice Disorders (3)**
Examines the perceptual and physical characteristics of disorders of voice. Discusses the etiology of these disorders and various assessment and treatment procedures. Prereq: SPLP520.

**SPLP636 Neurophysiological Disorders and Speech Swallowing (3)**
Focuses on speech and swallowing disorders related to central and peripheral nervous system disturbances, motor speech disorders and dysphagia, and the etiology and specific sites of lesion and resultant effects upon communication. Also discusses clinical management of these disorders. Prereq: SPLP520 or permission of instructor.

**SPLP674 Research Methods in Communication Sciences (3)**
Introduces students to basic research and statistical procedures in the communication sciences. Demonstrates how research can be used to answer important questions in speech-language-hearing disorders. Prereq: Graduate standing.

**SPLP695 Independent Study (3)**
Allows graduate students the opportunity to explore areas of academic interest in which no formal course is available. Gives the graduate student the opportunity to explore an area which may lead to a thesis problem or which will further understanding in a particular area. Prereq: Permission of Program Director

**SPLP698 Elective Subject varies. (3)**

**SPLP699 Thesis (Variable Credits)**
Gives the student an opportunity to apply research theories and methodologies to the study of a topic of importance in the selected discipline. Enrolls students in the course according to their areas of concentration and faculty availability. Prereq: Permission of Program Director

**ADUL520 Diagnostic Audiology (3)**
Focuses on techniques and interpretation of diagnostic test batteries. Introduces pure tone, speech, immittance audiometry and the role these play in differential diagnosis of hearing impairment;. Also includes an overview of special diagnostic testing, calibrating test equipment, and environment. Prereq: SPLP- 225.

**ADUL552 Aural Rehabilitation (3)**
Provides an overview of acoustical and perceptual phonetics and the impact of hearing loss. Addresses assessment of hearing-impairment and its implications for habilitation. Reviews techniques for speech-reading, auditory training and counseling, including an overview of cued speech, manual communication systems and amplification systems (auditory training units, hearing aids and assistive listening devices). Prereq: SPLP 520.

## Social Work (BSW)

The Social Work program offers a Bachelor of Social Work degree that prepares students to enter the professional field of social work as ethically-based, culturally competent, generalist practitioners who address issues and problems in contemporary urban living, and promote social and economic justice. Emphasis is on knowledge and skills for effective practice within diverse settings such as family and children, mental health, educational, substance use, and services for the elderly, as well as with diverse client populations. The social work curriculum is designed for students who elect to pursue careers in social work and social welfare services or graduate study in social work.

**Admission Statement**
Students interested in majoring in social work are encouraged to declare their intent with the Office of the Registrar as early as possible during their undergraduate studies. These students are to report to the Social Work program for an initial interview and assignment to a faculty member for professional advising, mentoring, and career counseling. A formal application for admission to the Social Work program is required upon successful completion of general education requirements and professional Foundation pre-requisites. In addition, the student must complete SOWK 292 - Critical Thinking, SOWK 310- Social Welfare as a Social Institution I, and SOWK-320- Human Behavior and Social Environment I, prior to applying for formal admission. Students should submit all admissions materials by December 15th of the year of their eligibility. To qualify for full admission to the program, students must maintain a GPA of 2.5 or higher in the professional Foundation courses.

**Credit Statement**
Total credit hours of college-level courses required for graduation with a Bachelor of Social Work: 120

**GPA Statement**
Students must maintain a minimum 2.5 grade point average in professional Foundation course work. In addition, the University requires a minimum overall quality point average of 2.0 for the BSW degree.

**Accreditation**
The undergraduate Social Work Program is accredited by the Council on Social Work Education (CSWE).
https://cswe.org/

**Honor Societies**
Nu Kappa Chapter of Phi Alpha Social Work Honor Society

The Social Work program is involved in the National Association of Social Workers, National Association of Black Social Workers, DC Metro Chapter of the National Association of Social Workers, Council on Social Work Education and the Phi Alpha National Social Work Honor society.

**Residency Statement**
The University Social Work program requires that the last 21 credits of its program of study be completed at UDC. Students must maintain a minimum cumulative grade point average of 2.0.

**Required Courses: IGED Courses (27 credits)**

**Professional Foundation Pre-requisites (27)**

**Social Work majors should enroll in Biology with/labs I & II or Anatomy & Physiology with/labs I and II.**

PHIL 105 Introduction to Logic (3)
SOWK 105 Introduction to Social Science (3)
ANTH 115 Introduction to Anthropology (3)
POLI 205 Introduction to Political Science (3) or
POLI 206 Introduction to American Government (3)
World Language I (3)
World Language II (3)
Biological Science I and II with Lab (8) or
Human Anatomy and Physiology I and II with Lab (8)
**Select one (1) of the following:**
GEOG 103 World Regional Geography (3)
GEOG 105 World Cultural Geography (3)
GEOG 224 Economic Geography (3)
GEOG 347 Urban Geography (3)
HIST 279 History of the District of Columbia (3)

**Professional Foundation Courses (45)**

SOWK 292 Critical Thinking & Intensive Writing in Social Work (3)
SOWK 310 Social Welfare as a Social Institution I (3)
SOWK 311 Social Welfare as a Social Institution II (3)
SOWK 320 Human Behavior and Social Env. I (3)
SOWK321 Human Behavior and Social Env. II (3)
SOWK 334 Approaches to Group Work (3)
SOWK 332 Social Work Practice I (3)
SOWK 333 Social Work Practice II (3)
SOWK 433 Social Work Practice III (3)
SOWK 340 Research in Social Welfare I (3)
SOWK 341 Research in Social Welfare II (3)
SOWK 342 Statistical Lab I (1)
SOWK 343 Statistical Lab II (1)
SOWK 490 Practicum I (5)
SOWK 491 Practicum II (5)
Social work majors complete **thirteen (13) credits of general electives** and six **(6) credits of Social Work practice electives** including Black Families in Urban Communities, Mental Health Issues in Social Work Practice, Contemporary Youth: Risk and Resiliency, Ecology of Health, Illness, and Aging.

## COURSE DESCRIPTIONS: SOCIAL WORK (SOWK)

**SOWK110 Introduction to Social Welfare & Social Work (3)**
Survey course which introduces the fields of social welfare and social work. Explores the nature, purpose, and processes of social welfare as a public and private enterprise. Emphasizes the philosophical, theoretical, and operational aspects of social work as a professional practice.

**SOWK264 Concepts of Alcohol Abuse: Preventive Intervention Strategies (3)**
Investigates the basic issues surrounding the problem of alcoholic beverage abuse. Explores ideas concerning the use of terms "alcoholism," "alcoholic," "disease," and "treatment" through a historical perspective on beverage alcohol distillation, attitudes toward drinking, and the politics surrounding the production and sale of liquor. Discusses current treatment approaches and methods of control

**SOWK265 Introduction to Substance Use Disorders and the Role of the Professional Practitioner (3)**
This course introduces students to substance use disorders (SUD) and the role of the professional practitioner in prevention and treatment. Substance use is viewed through a bio-socio-cultural-political context. Attention is given to the opioid crisis and local impact. Students will be exposed to a variety of learning modalities (e.g., project-based learning, case studies, and group activities)..

**SOWK274 Introduction to Aging Studies and Special Problems of the Black Elderly (3)**
Introduces the field of Gerontology, including basic terminology, theories, and definitions as well as current perspectives on scientific and social issues. Examines demographic data on the Black aged and their strengths, needs and problems.

**SOWK275 Ecology of Health, Illness, and Aging (3)**
Explores the physical and psychosocial aspects impacting on the health of the aged individual. Explores the epidemiology of disease patterns, norms of mental and physical health, morbidity, mortality and chronic illness rates, and common pathologies and impairment associated with aging. Also explores the social and economic implications in future health care for the elderly .

**SOWK276 Introduction to the Econ. of Aging (3)**
Introduces the problem of economic security in the elderly population. Compares past, present, and future trends in income maintenance , reviews current insurance, pension, and annuity plans, and introduces income supplements as special services and benefits. Also provides an overview of public laws and policies relating to income and services for the elderly and implications for changes which may influence the economic status of elderly Americans.

**SOWK277 Working with Older People (3)**
Explores counseling services that older persons need to prepare for new careers, plan for retirement, and face the inevitability of death. Describes the various developmental crises of adulthood and methods of intervening. Includes an examination of theories and techniques of counseling along with interviewing techniques.

**SOWK292 Introduction to Critical Thinking and Intensive Writing in Social Work Practice (3)**
This course is designed to provide a practical framework for the development of critical thinking and professional writing in social work education and practice. Students will be introduced to critical theory as it pertains to the development of critical thinking skills and its relationship to social work practice. Concepts and skills requisite to becoming an effective critical thinker are examined through critical analysis of various social conditions, problems, and situations. Social issues are examined with a focus on contemporary urban living. Pre-req.: All IGED requirements and Professional Foundation prerequisites, except the foreign language requirement (Students should see their social work advisor).

**SOWK310 Social Welfare as a Social Institution I (3)**
Overview of the history, philosophy and development of the social work profession and of social welfare as an American institution. Traces the role of the profession as a foundational institution within American society its early beginnings to its evolved organization. Reflects on the social and political influences brought to bear on institutional development. Also examines the role and function of public and private human service agencies and service delivery systems and explores the historical progress of social work in the context of social policies developed to address social problems in civil society. Examines the impact of ideology, attitudes and values including those related to social and economic justice in the context of these evolving institutions. Pre-req.: All IGED requirements and Professional Foundation prerequisites, except the foreign language requirement (Students should see their social work advisor).

**SOWK311 Social Welfare as a Social Institution II (3)**
Explores the significance of social, economic and political factors that influence policy making and implementation and examines the content and process of social policy development. Examines social welfare policy issues (such as poverty, homelessness, and mental illness) and analyzes and critiques social welfare policy. Discusses several theoretically based approaches to policy analysis , in addition to strategies for achieving policy outcomes that reflect social and economic justice. Prereq.: SOWK 310 Social Welfare as a Social Institution I.

**SOWK320 Human Behavior and Social Env. I (3)**
Focuses on the development of the individual from conception through middle childhood and the impact of various aspects of the social environment on the course of that development. Examines various environmental factors at the micro, mezzo and macro levels that influence and shape the physiological, psychological, and social aspects of human development and behavior. Prereq.: All IGED requirements and Professional Foundation prerequisites, except the foreign language requirement (Students should see their social work advisor).

**SOWK321 Human Behavior and Social Environment II (3)**
Continues SOWK 320, focusing on studying the development of the individual from early adolescence through very old age and the impact of various aspects of the social environments on human development. Prereq.: SOWK 310 Social Welfare as a social institution I and SOWK 320 Human Behavior and Social Environment I.

**SOWK332 Social Work Practice I (3)**
First in a series of courses that prepares students with the knowledge, values and skills necessary for professional generalist social work practice. Examines the theoretical models, practice perspectives and approaches in practice with individuals families, groups, communities and organizations. Prereq: Must be taken concurrent with or following SOWK 321 Human Behavior and Social Environment II.

**SOWK333 Social Work Practice II (3)**
Describes and elaborates the nature and purposes of the interactional process in generalist social work practice with

a primary focus on the core process and skills used by the social work practitioner in the helping relationship and helping process with individuals and families. Prereq.: SOWK 332 and concurrent with or before SOWK 490

**SOWK334 Approaches to Group Work (3)**
Focuses on the use of groups in generalist social work practice. Introduces the history of social work practice with groups. Explores models of group development, process and dynamics in addition to group leadership skills over time; approaches to group work practice; an overview of four major group attributes about which the social work generalist must be sensitive, use of the ecological systems framework for generalist practitioners of social work with formal and informal groups; application of the ecological framework to problem solving in generalist practice in groups; and identification and application of social work generalist roles and skills in group settings,. Special attention is given to preparing beginning generalists social work practitioners for work in settings where the race/ethnicity, gender, sexual orientation, social class, and experiences of oppression and marginalization of the client population may be different from that of the worker. . Pre-req./Co-req: This course must be taken following SOWK 332 and prior to or concurrent with SOWK 390 Practicum I.

**SOWK340 Research in Social Welfare I (3)**
The first of two required courses on social work research for social work majors. Supports the generalist framework of practice and provides qualitative and quantitative research content enabling students to understand a scientific, analytic, and ethical approach to building knowledge for practice. Co-req./Pre-req.: This course must be taken concurrent with or after SOWK 311 Social Welfare as a Social Institution II and SOWK 321 Human Behavior and Social Environment II.

**SOWK341 Research in Social Welfare II (3)**
Course is the second of two required courses on social work research. Designed to equip students with the knowledge and skill needed to critically evaluate literature, conduct survey research and evaluate program efficacy and use research knowledge to improve practice, policy, and social service delivery; and to evaluate social work practice. Prereq: SOWK 340. Research in Social Welfare I.

**SOWK342 Research in Social Welfare Statistical Lab I (1)**
Laboratory course for SOWK340 and complementary to Research In Social Welfare I. Provides practical experience in the nature, forms, and applications of parametric statistics. Provides practice in the use of selected statistical models, e.g., measures of central tendency, and of variability, the normal curve, and standard scores. Co-req.: Must be taken concurrent with SOWK 340 Research in Social Welfare I

**SOWK343 Research in Social Welfare Stats. Lab II (1)**
Course is complementary to Research in Social Welfare II. Provides practical experience in the nature, forms, and applications of parametric and nonparametric statistics. Explores the use of inferential models of statistical analysis. Co-req.: Must be taken concurrent with SOWK41 Research in Social Welfare II

**SOWK364 Concepts of Family and Child Welfare (3)**
Focuses on the knowledge and value base required for beginning social work practice in major family and child welfare settings. Explores the historical and philosophical contexts of family and child welfare . Major emphasis on service delivery systems and upon the tasks and requisite skills of the social worker in the performance of the social worker's role. Critiques the policy and practices of service systems in terms of effectiveness particularly for Black families and children. Prereq.: SOWK 320 Human Behavior and Social Environment I

**SOWK367 Human Behavior and Social Structure (3)**
Explores how human behavior changes from normal to pathological. Emphasizes those forms of behavior characterized as deviant or pathological and often called "mental illness." Attention given to the etiology of such behavior and how its development may be influenced by biological, physiological, psychological, sociological, cultural, political, and economic factors. Explores the relevance and implications for the generalist social work practitioner. Prereq.: SOWK 321. Human Behavior and Social Environment II

**SOWK398 Independent Study (VC)**
Provides supervised study of a particular problem or issue selected by the student in consultation with a faculty advisor. Designed for students who have shown potential for independent work on a research project. Students must submit a proposal describing the plan of study to the Program for approval one semester prior to registration for the course. Majors can take a maximum of six credit hours. Prereq.: Junior or senior status, permission of program director. Social work majors only.

**SOWK433 Social Work Practice III (3)**
Focuses on frameworks and skills useful in decision making and action related and the macro change process with communities and organizations. Students work in groups to apply the problem solving process to a real live situation with a focus on large system impact and change. Prereq: SOWK333 and concurrent with/or before SOWK491

**SOWK464 Dynamics of Supervision in Social Work Practice (3)**
Explains the nature, purpose, and conduct of supervision in social work practice. Concentrates on how knowledge is developed about interactive supervisory roles and tasks, the process of supervision, and the problems with which it is concerned. Addresses specific strategies related to skill development as a supervisor. Prereq.: SOWK 332 or senior status.

**SOWK477 Mngmt of Extended Care Facilities (3)**
Presents the information necessary for the successful operation and management of extended care facilities. Focuses on the preparation and maintenance of physical facilities according to the standards prescribed by agencies such as housing, fire, and sanitation. Steps presented on how to administer, manage, and maintain the facility. Hands-on information provided on record keeping, budgeting, services available, nutrition, finance, insurance, and other relevant aspects.

**SOWK478 Social Psychology of the End of Life (3)**
Introduces the concept of thanatology, the study of death and dying. Examines the philosophical, social, and psychological aspects of death and dying within the context of the life cycle.

**SOWK490 Practicum I (5)**
The first component of a two (2)-part course that integrate and apply knowledge, skills, values and ethics learned in social work foundation courses to experiential agency-based learning. A combination of seminar and field instruction demonstrates generalist social work skills, knowledge and values, in social work practice. Students are placed in various agencies and organizations to learn through on-site social work supervised instruction and participation, complete a minimum of 200 hours in an agency/organization, and remain in the placement throughout the semester. Co-req./Prereq: Must take concurrent with or after SOWK 333 II.

**SOWK491 Practicum II (5)**
The second-component of a two-part course that continues the integration and application of knowledge, skills, values and ethics in agency-based learning. A combination of seminar and field instruction builds upon values, and are aimed at delivering practice experiences. Students continue their internship in the agency where placed during Practicum I. They must complete a minimum of 200 hours of generalist social work practice experiences and remain in the placement throughout the semester. Prereq: SOWK 490 Practicum I.

**Working with Black Families in Urban Communities (3)**
Explores the challenges faced by black families from an historical and developmental perspective, and the strategies, strengths and capacities used to address those challenges. Equips students with the knowledge values and skills required for effective culturally competent practice with black families in contemporary urban communities. Emphasizes the use of appropriate theoretical models and perspectives including use of evidence-based approaches and sensitivity to each family's needs and interests. Incorporates national and local public policy perspectives to address the needs and interests of black families.

**Contemporary Youth: Risk and Resiliency (3)**
One of four practice courses designed to meet a three credit social work practice elective requirement for the major. Utilizes a risk and resiliency approach within a contemporary urban context to examine how youth interpret various events and relationships that they experience within their socio-ecological environments. The course focuses in three primary areas; 1) biopsychosocial-spiritual development of adolescents and emerging adults in urban communities, 2) protective and risk factors associated with urban adolescents and emerging adults and 3) prevention and intervention models utilized to address positive adolescent development. In addition, various environmental factors at the micro, mezzo, and macro levels that influence and shape the physiological, psychological, and social aspects of human development and behavior are examined along with how the individual affects these systems. Examines individuals as they operate within social systems of development within both traditional and alternative environments, urban organizations, neighborhoods, families, groups, and communities. Explores how discrimination and oppression impact human development and behavior among youth in contemporary urban communities.

**Mental Health Issues in Social Work practice (3)**
Required course for all social work majors. Examines historical and contextual factors that influence the prevalence and treatment of mental health problems in the African American community. Explores the social, economic, and cultural factors that contribute to mental health challenges in the African American community. Investigates the intersection between the intrapersonal (cognitive, individual factors), interpersonal (relationships), and environment and develop basic practice skills that support a generalist framework of social work for working with individuals with mental health challenges. Examines person-in-environment perspective; effects of oppression; mental health issues that affect different sub-populations of the African American community; utilization of kinship care

and importance of family in the African American community; disparities in care among African American women and the elderly; and the Afrocentric Perspective.

# Division of Social and Behavioral Science

The Division of Social and Behavioral Sciences is an interdisciplinary unit consisting of diverse academic programs. Our undergraduate majors—Administration of Justice, Human Development, Political Science, and Psychology—are gateways to graduate and professional school as well as careers that involve understanding behavior and working with people. Our graduate program in Homeland Security offers the Master of Science degree and its focus on emergency management of natural, manmade or terrorist disasters prepares you for a range of opportunities in one of the fastest growing career fields.

**Bachelor Degrees:**
Bachelor of Arts in Administration of Justice
Bachelor of Arts in Human Development
Bachelor of Arts in Political Science
Bachelor of Science in Psychology
**Graduate Degree**
Master of Science in Homeland Security (MSHS)

**Graduation Credit Hours**
This bachelor's degree program requires the completion of 120 credit hours, including specific courses identified in the program of study and the applicable IGED requirements.

Application Requirements for Graduation

**Geography Courses**
Geography courses are a core set of spatial analytical courses and computer software application classes to enhance the curriculum of students in other majors. While students cannot major in Geography, they may select courses that strengthen their understanding of the role of physical and cultural factors in the development of societies in the world. Students majoring in any field may also acquire competencies in the application of geographic information systems (GIS) and computer cartography.

**Philosophy Courses**
While students cannot major in Philosophy, courses are offered that provide students with an understanding of major problems that have occupied philosophers in various traditions. Specific objectives are to teach students to raise fundamental questions about society, its institutions, policies, and objectives. Also, a grounding in Philosophy trains students to examine critically the philosophical assumptions of a body of thought and to develop and articulate alternative philosophical frameworks. The course in logic develops analytical and inferential skills.

## Crime, Justice & Security Studies

**Degree Offerings**
Bachelor of Arts in Administration of Justice (BA)

- Undergraduate concentration in Homeland Security Studies and Technology

Master's degree in Homeland Security (MSHS)

In addition to the degrees offered, the Crime, Justice & Security Studies Program houses the Institute for Public Safety and Justice, which addresses the University's urban land grant mission by strengthening communities to better resist crime, social decay, and social disorder through a tripartite mission of research, training, and evaluation as well as outreach to government agencies, community-based, faith-based, and other non-profit entities.

### Administration of Justice (B.A.)

The Administration of Justice Program at UDC creates learning experiences in the classroom and the field emphasizing empathy, cultural competency, ethical behavior, and evidence-based practices as the cornerstones of a professional commitment to equity and social justice. The program provides opportunities to study theories, research methods, and professional practices to examine how societies, institutions, organizations, and cultures impact the lives of adults, youth, and families in urban settings.

The Administration of Justice program is a research-oriented technology-driven program that offers opportunities for interdisciplinary learning, team work, civic commitments, and the engagement of technology to enhance the quality of students' academic performance as well as the ability to compete for graduate study or employment. Students have the opportunity to delve deeply into a specific area of interest as they pursue their B.A. in Administration of Justice and shape a curriculum that will assist them in pursuing their personal goals.

Students majoring in administration of justice, political science, or STEM disciplines may also seek an undergraduate academic focus in Homeland Security Science and Technology by successfully passing with a **"C" grade or above** in the following courses: **Constitutional Law, Terrorism, Homeland Security Science and Technology, and Cyber Security**. Electives in the Crime, Justice & Security Studies program permit students to enroll in courses that emphasize youth studies, law enforcement, women's issues in criminal justice, and re-entry issues.

**Credit Statement**
Total credit hours of college-level courses required for graduation are 120 which includes 37 credit hours in General Education and 83 credits required in Criminal Justice and ancillary science, language, and social science courses.

**Residency Requirements**
The Crime, Justice & Security Studies programs requires that 30 credits of the required 45 credits, must be taken in residence at the University of the District of Columbia. For general UDC policy on undergraduate residency and GPA requirements, please click here.

**Professional Associations**
The Criminal Justice discipline is affiliated with a variety of associations and professional organizations, such as the Academy of Criminal Justice Sciences, the American Correctional Association, The National Association of Blacks in Criminal Justice, and the DC chapter of Blacks in Criminal Justice.

**Student Organization**
UDC Criminal Justice Association

**Preparation for Graduate School**
The core curriculum of the Crime, Justice & Security undergraduate program prepares students to attend graduate school or law school as well as enter the world of work in entry level employment with a B.A. degree. Interested students should speak to an advisor.

The University is a member of the prestigious Oak Ridge Associated Universities (ORAU) that is a 101 University member consortium committed to bringing together faculty and students to collaborate on major scientific initiatives. Both undergraduate and graduate students are encouraged to pursue internships with ORAU by checking their website frequently www.orau.org.

**Background Checks and Investigations**
Students should be aware that federal law enforcement employment requires a minimum 3.0 GPA or above, so they should check the requirements of the specific law enforcement agency they are interested in for employment. Internship and co-op placements in federal law enforcement agencies may exclude specific 3.0 and above GPA requirements if student internship and co-op performances meet the eligibility criteria. Students interested in future employment in federal, state, county, or city law enforcement or corrections agencies should be prepared to meet physical strength and agility, age, criminal background checks and credit card clearance requirements.

**Transfer Credits**

**Probation and Suspension**
When a student's cumulative grade point average falls below 2.00, the students is placed on academic probation. **Click here for full undergraduate policy.**

**Residency Statement**
Of the last 36 required 120 credits, 21 must be taken in residence at UDC. Administration of Justice majors are expected to see their faculty advisor for advisement.

**Required Courses (See IGED Table of Substitutions: 37 credits)**

**Program Core Courses**

ADJA 100 Criminal Justice Systems (3)
ADJA 102 Criminology (3)
ADJA 175 Geospatial Analysis (3)
GEOG 103 World Regional Geography (3)
Or
GEOG 105 World Cultural Geography
PSYCH 201 Principles of Psychology (3)
POLI 206 American Government (3)
ADJA 232 Criminal Behavior (3)
ADJA 221 Criminal Procedure (3)
ADJA 224 Issues in Criminal Law (3)
ADJA 234 Juvenile Justice (3)
ADJA 271 Dynamics of Human Relations (3)
ADJA 272 Conflict Resolution and Mediation (3)
ADJA 203 Forensic Science/Investigation (3)
World Language I (3)
World Language II (3)
ADJA 300 Constitutional Law (3)
ADJA 390 Practicum (3)
ADJA 309 Justice in a Multicultural Society (3)
ADJA 310 Ethics in Public Service (3)
HIST 410 History of Crime and Punishment (3)
ADJA 450 Research in Justice Systems (3)
ADJA 451 Research in Justice Systems Lab (1)
ADJA 491 Senior Project (3)
ADJA 497 Program Design & Evaluation (3)
ADJA 294 Criminal Justice Special Topic Electives (12-15)
Natural Science Elective (4)

**Writing Intensive Course (Consult with your Faculty Advisor) Total credit hours: 120**

## COURSE DESCRIPTIONS: ADMINISTRATION OF JUSTICE (ADJA)

**ADJA 100 Criminal Justice System (3)**
Introduces the criminal justice system, its main organizational components, policies, and procedures. Also examines the social, political, and cultural considerations

that have influenced and shaped the system's policies and practices.

**ADJA 102 Criminology (3)**
Introduces the study of crime using computer software applications. Explores different types of crime and the issues of crime analysis. Designed to present students with the importance of a geographical and demographic analysis of the incidence of crime.

**ADJA 111 Contemp. Police Systems and Problems (3)**
Examines the philosophy of modern police systems in the U.S. Evaluates the purposes of the organization, jurisdiction, and law enforcement methods of specific law enforcement agencies.

**ADJA 115 History and Philosophy of Corrections (3)**
Traces the evolution of modern-day correctional thought in the United States, the development of institutional programs and architectural design, and the impact of theoretical and practical research on correctional standards and practices.

**ADJA 150 Justice Issues in Society (3)**
Examines a variety of contemporary justice issues in order to study the economic, political, and social basis of crime. Using a critical reasoning model, students develop a methodology of analytical reading and writing in order to study how social problems relate to crime and public safety issues.

**ADJA 175 Introduction to Geo-Spatial Analysis (3)**
Introduces the study of crime using mapping and special analysis to understand the relationship between geo-spatial environment and human habitation. Utilizes crime mapping techniques as well as quantitative and qualitative methodologies to explore topics of crime causation and analysis from a geo-spatial perspective. ADJA 100. 102

**ADJA 203 Forensic/ Investigation (3)**
Introduces the field of forensic science. Examines the application of science and technology to crime scene analysis. Explores the use of Utilizes computers, as well as be traditional laboratory equipment in criminal analysis. Prereq.: ADJA 100, 102, 175,232

**ADJA 221 Investigations (3)**
Explores methods and techniques of investigation, with emphasis on criminal investigations. Covers crime scene search, development of leads, recognition, handling and preservation of evidence, witness identification, and techniques of interview. Prereq.: ADJA 100, 102, 111, 232.

**ADJA 222 Criminal Procedure (3)**
Focuses on the procedural requirements of the fourth, fifth, and sixth amendments to the U.S. Constitution through a study of historical? Supreme Court cases. ADJA 100, 102,

**ADJA 224 Issues in Criminal Law (3)**
Examines issues and principles in criminal law utilizing legal concepts. Explores these issues and principles not only from the perspective of what is required (or prohibited), but from the implications and impact of the requirement or prohibition. Examines the systemic perspective as well as the manner in which various societal groups are advantaged or disadvantaged. Also covers conditions of pretrial release, grand jury, elements of offenses, affirmative defenses (such as insanity, entrapment), and sentencing and explores contemporary issues in criminal law. Prereq.: ADJA 100, 102 and 232.

**ADJA 232 Criminal Behavior (3)**
Introduces the scientific study of behavior. Uses a variety of behavioral problems to examine how criminologists study crime and criminal behavior. ADJA 100,102,175.

**ADJA 234 Juvenile Justice (3)**
Studies the complexity of juvenile delinquency as a behavioral pattern through the examination of contemporary cultural and ecological environments and the differing theories of delinquent behavior. Examines the juvenile court and focuses on special constitutional and legal concerns facing juvenile offenders. ADJA 100,102, 175,232.

**ADJA 235 Probation, Classification and Parole (3)**
Covers general probation and parole objectives, methods, and procedures, including a working knowledge of the duties of the correctional treatment specialist. Explores the review and formulation of routine? standard? case studies and understanding of the principles and methods involved. Prereq.: ADJA 100, 102, 115, 232.

**ADJA 271 Dynamics of Human Relations (3)**
Introduces theoretical analysis, current research findings, models of helping methods, intervention Provides opportunities to role play and assess human behavior and interaction, then evaluate and provide feedback. Prereq.: ADJA 100, 102, 232.

**ADJA 272 Conflict Resolution & Mediation Techniques (3)**
Examines the characteristics of these two approaches to determine each method's effective as both prevention and intervention techniques in avoiding or reducing violent confrontations. Develops an understanding of how appropriate use of these approaches can facilitate interaction between the criminal justice system practitioner

and individuals involved in one-on-one engagements. Provides an opportunity to role play and assess behavior, and to interact , evaluate, and provide feedback. Prereq.: ADJA 102, 232, 271.

**ADJA 294 Special Topics (3)**
Explore a variety of topical course offerings including (but not limited to) Homicide; Technology, Privacy and Justice in the 21st Century; Victimology; Female Offenders; Domestic Violence; Gangs and Gang Behavior; Cybercrime and Terrorism in the United States; and Weapons of Mass Destruction.

**ADJA 300 Constitutional Law (3)**
Through a study of prominent U.S. Supreme Court cases, explores federalism and separation of powers issues. Analyzes the authority to promulgate criminal laws and policy initiatives in relationship to these issues. Prereq.: ADJA 102, 222, 224.

**ADJA 301 Correctional Operations (3)**
Studies basic organization and objectives of a department of corrections. Examines specific administrative principles required for the effective conduct and operation of a correctional organization. Explores relationships among the following institutional units: custodial force, treatment staff, clerical, culinary, maintenance staffs, and residents. Prereq.: ADJA 115.

**ADJA 302 Police Community Relations (3)**
Examines various approaches to community-based policing and the relative advantages and disadvantages of each approach. Also examines the implications of the diversity within the Washington, D.C. community, the operations of the various community organizations in the city, and the barriers existing which hinder effective community policing. Emphasizes the development of methodologies for increasing constructive interaction between the police and residents. Prereq.: ADJA 111, 232, 271, 272.

**ADJA 303 Comparative Criminal Justice Systems (3)**
This course is a comparative study of justice systems worldwide. It utilizes descriptive, historical, and political approaches within which a comparative study is framed. Prereq.: ADJA 100.

**ADJA 305 Administration in Criminal Justice (3)**
Examines the organizational design, mission statements, staff roles, and relationship between administrative processes and outcome objectives of criminal justice agencies. Emphasizes the interrelationship of program goals, organizational design, and budget preparation. Prereq.: ADJA 100, 102.

**ADJA 309 Justice in a Multicultural Society (3)**
This course examines in broad historical outline the critical importance of race and similarly categorical distinctions (such as sex and religion) on the patterns of American society and how these patterns have affected the criminal justice system. Develops practical model for understanding racism which may be applied in a variety of settings. Prereq: Junior or senior classification.

**ADJA 390 Practicum (3)**
Provides a conceptual framework for reality testing of curriculum-related assumptions and strategies with cooperating public and private agencies. Course includes a ninety-hour internship. Prereq.: ADJA 100, 102, 232 and Junior or senior classification.

**ADJA 402 Community-Based Correctional Programs (3)**
Examines problems of work-release and school-release programs and institutional inmates, including an administration of half-way houses, nonresidential programs for probationers, parolees, and drug abusers. Also explores community residences for juvenile offenders and supervision of foster care programs. Prereq.: ADJA 115

**ADJA 405 Organized Crime in the United States (3)**
Examines the historic origins, organizational structure and method of operation, and goals and objectives of organized crime in the United States. Prereq: Juniors or seniors.

**ADJA 450 Research in Justice Systems (3)**
Laboratory course which covers the logic of scientific inquiry and its relationship to qualitative and quantitative research methodologies as applied to the justice field. Emphasizes the use of computer-based statistical programs, as well as other computer-based criminal justice research programs. Co-req.: ADJA 451. Prereq: ADJA 100, 102, 232, 234, Junior Standing.

**ADJA 460 Theories of Planned Change: Society, the Environment, and Justice (3)**
Examines theories and practices of both institutional and social change as these apply in the area of criminal justice. Analyzes and critiques a variety of intervention models applicable to criminal justice utilizing computer-based forecasting and prediction methodologies, Develops an understanding for the necessity of thorough anticipation of both manifest and latent functions of any planned change. Prereq.: Junior standing.

**ADJA 464 Evidence (3)**
This course covers the evidentiary rules applicable in criminal cases deriving from the U.S. Constitution, statutory, or case law. Using a problem solving approach,

students will apply the relevant legal authority to investigatory practice. Prereq.: Junior or senior standing.

**ADJA 491 Senior Project (3)**
Capstone course which requires, in consultation with faculty, a senior thesis paper on a criminal justice topic of the student's choice. Prereq.: Criminal Justice seniors only and ADJA 450, 451, 497.

**ADJA 495 Independent Study (VC)**
This course involves advanced independent research planned and carried out under the guidance of a faculty member. The topic, issue, or area of student interest must concern a problem in the area of crime, justice, or homeland security. Prereq.: Junior or senior standing and a 3.2 average in courses in the field.

**ADJA 496 Reading Course in Justice Systems (3)**
Seminar course involving a series of individual readings from an assigned reading culminating in an engaged discussion and analysis of issues raised by the readings related to the criminal justice system. Prereq.: Junior or senior standing.

**ADJA 497 Program Design and Evaluation Techniques (3)**
Investigates the techniques used to design, implement, and present the results of research culled from justice program evaluations. Prereq.: ADJA 450, 451.

## Homeland Security (M.S.)

The graduate program in Homeland Security at UDC creates learning experiences in the classroom and the field emphasizing empathy, cultural competency, ethical behavior, evidence-based practices, and leadership as the cornerstones of a professional commitment to protect local, national, and international territories and interests from threats, hazards and disasters; whether natural or human-made. UDC approaches Homeland Security as a multi-disciplinary field impacting all aspects of life; therefore students with any undergraduate major are eligible to seek admission to the program.

A strong research and technology emphasis run through the entire program with a thematic focus on community preparedness, response and recovery from catastrophic events. Students have the opportunity to pursue study in individualized specialization areas. Graduates from our Homeland Security program work in a variety of local, regional, national or international agencies or organizations, in the public as well as the private sector.

**Graduation Credit Statement**
The M.S. in Homeland Security requires 36 credit hours (39 with ENGL 515) to complete and includes three overlapping curricular components:

- Core Homeland Security courses
- Concentration of elective courses in Homeland Security or in another STEM discipline with permission from the host department
- Thesis or public policy paper representing a capstone experience

Academic concentrations offer students a unique opportunity to shape the specialization of their degrees, in consultation with a graduate advisor, in some of the cutting-edge career specializations in homeland security. Examples of areas of specialization include:

- Emergency Management
- Cybersecurity
- Terrorism and Counter Terrorism
- Continuity of Operations Planning
- Security and International Organizations

**Admission Statement**
The Master of Science Program in Homeland Security (HLSC) values the contribution to the education process made by a diverse student body. The applicant who will be successful in this program is intellectually curious and a self-motivated learner; committed to impacting the operation of the homeland security endeavor at the local, national or international level within the confines of the rule of law, individual rights and liberties.

The University of the District of Columbia requires submission of the following when applying for admission to a graduate program:

- Application, with Personal Statement,
- Official Transcript,
- GRE Scores,
- Two letters of recommendation.

Additional requirements apply for international applicants.

The Homeland Security Program uses a *holistic* approach to evaluating an applicant's packet. This means that taken collectively the applicant's package should reveal a mutuality of "fit" between the applicant and the program. Each of the individual application package items are discussed below.

Application, with Personal Statement
The personal statement should indicate an awareness of the homeland security enterprise, including at a minimum a description of the applicant's interest in the field. In addition, the personal statement should also be used to explain any deficiencies in the undergraduate transcript (i.e.

– low GPA, failed courses, etc.). The Personal Statement should not exceed 500 words.

Official Final Transcript

If an applicant is still enrolled in their undergraduate program when they submit their application, a preliminary decision can be made with a partial transcript. However, in those instances, the final official transcript must be submitted to the Graduate Admissions prior to enrolling and registering for classes. The applicant's transcript includes both the previous courses taken and the applicant's GPA. HLSC is an interdisciplinary program and no specific undergraduate major is required. However, the **previous course selection** should indicate the applicant's ability to be successful in our courses. The typical accepted applicant will have a **minimum GPA** of 2.50, although a 3.00 is preferred. In certain situations an applicant with a GPA below 2.50 will be accepted. A student with a low GPA whose application indicates professional promise, may be admitted as a **Provisional Student**. The Homeland Security program is not required to make provisional admissions. The determination of whether and how many provisional students may be admitted in a given semester is based on a combination of programmatic factors.

GRE Scores

The HLSC program will waive GRE scores upon request for the following reasons:

- Completion of another graduate or professional degree
- Professionally employed in the field
- Financial Hardship
- Other (must be specified)

However, the University does use the analytic writing score from the GRE to determine whether or not a student is required to take the Graduate ENGL 515. Students who have earned at least a 4.0 on the analytic writing portion of the GRE are exempt from taking ENGL 515. Students who earned less than a 4.0 as well as those students for whom the GRE was waived must take and pass ENGL 515 during the first semester of enrollment.

Letters of Recommendation (2)

Letters of Recommendation offer the Admissions Committee a third-person perspective on the applicant. They should generally speak to the applicant's abilities, character, or professional promise. At least one of the letters of recommendation should be an academic reference. For applicants who are not enrolled in an undergraduate program at the time of application, a professional reference letter can substitute for the academic reference.

**Graduate Transfer Credit**

**Graduate Writing Proficiency Requirement**

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**Graduate Academic Standing**

The University requires that graduate students maintain a cumulative GPA (CGPA) of 3.0 in order to be considered in good standing. Click here for complete policies on Academic Standing, Probation, and Suspension.

**Application Requirements for Graduation**

**Examples of Elective Offerings**

Security and International Organizations
Community Disaster Resilience
Bioterrorism
Cybersecurity
Chemical Warfare
Internship
Critical Infrastructure Protection
Sanctions

**Required Courses**

**The M.S. in Homeland Security requires 36 credit hours for completion and includes four curricular components:**

| **Required Courses** |
|---|
| HLSC 530 Homeland Security |
| HLSC 531 Individual Rights and Liberties |
| HLSC 532 Terrorism |
| HLSC 536 Intelligence and Security |
| HLSC 557 Ethics and Leadership |
| HLSC 570 Research Techniques |
| HLSC 571 Statistics for Homeland Security |
| **Concentration or Elective Courses (12 credits)** |
| **HLSC 760 Thesis or Public Policy Paper (3)** |

Students required to enroll in the English Graduate Writing Proficiency course ENGL 515 will require 39 credit hours for graduation. All others will require 36.

## COURSE DESCRIPTIONS: HOMELAND SECURITY (HLSC)

**HLSC530 Homeland Security (3)**

This course is designed to ensure that graduate students have an entry level exposure, broad overview, and understanding of the homeland security concept and its impact on our Nation's security. The course provides a new lens through which to explore the ancient and ever-present challenges surrounding, achieving, and maintaining, security in an unpredictable, complex, and dangerous world.

**HLSC531 Individual Rights & Liberties (3)**
Examines the "rule of law" and the tension between the individual rights and liberties guaranteed by the U.S. Constitution and national security concerns. Explores historical examples of how this tension has manifested in this country provides a framework within which to examine its contemporary manifestations. Also examines the challenges to privacy presented by an increasingly digital era.

**HLSC532 Terrorism**
Provides an overview of the typologies of terrorism both domestic and international, as well as the differing types of individuals who engage in terrorist activity. Explores the role of motivators in the emergence of terrorist activity, in addition to counter-terrorism strategies. Using case studies, simulations, and real-world events, examines the phenomena of terrorism in contemporary society. Offers the opportunity to explore a region, typology, or organization in-depth.

**HLSC533-Emergency Management**
Examines theories, principles, and practices of emergency management. Discusses the philosophy of comprehensive Emergency Management with the four attendant steps: mitigation, preparedness, response, and recovery. Explores federal laws affecting emergency operations and considers the location implications. Also examines the political processes and phenomena associated with mitigating the likely effects of catastrophic events, whether natural or man-made. Simulated emergency situations and utilization of virtual world environments provide opportunities to demonstrate application of course concepts.

**HLSC534 Weapons of Mass Destruction (WMD)**
Examines biological, chemical, radiological, nuclear and explosive weapons. Defines various weapons and U. S. policy, laws and regulations on WMD. Also explores terrorists' motives and use rationales. Assesses the effective of the All-Hazard Model's use in fighting the proliferation of WMD and evaluates the Geneva-Hague Convention Protocols and other international protocols relating to WMD use.

**HLSC535 Urban Spatial Analysis (3)**
Utilizing geographic information systems (GIS), evaluates and assesses urban population demographics, infrastructure, and governance as an aid and impediment in case of a high consequence event. Explores the unique needs of urban communities or communities possessing large numbers of vulnerable and disadvantaged populations within the context of "asset" modeling to facilitate community preparedness, response, and recovery.

**HLSC536 Intelligence and Security**
This course provides an overview of conceptual competencies and skills expected of those involved in the support of national security and intelligence activities. Includes an overview role and responsibilities of the U.S. Intelligence Agencies.

**HLSC 537 Chemical Weapons (2)**
Explores the use of chemical agents as weapons of mass destruction. Describes the characteristics, physical properties, persistency, availability, decontamination, and treatment. Explores the use of chemical agents from an historical context to a present perspective.

**HLSC538 Biological Weapons (2)**
Explores the use of biological agents as weapons of mass destruction. Describes the characteristics, physical properties, persistency, availability, decontamination, and treatment. Explores the use of biological agents from an historical context to a present perspective.

**HLSC539 Nuclear, Radiological, & Explosive Weapons (2)**
Explores nuclear, radiological, and explosive (NRE) weapons. Describes the characteristics, physical properties, persistency, availability, decontamination, and treatment. Explores NRE weapons from a historical context to a present perspective.

**HLSC540 Cybercrime (3)**
Introduces the increasing types of crimes involving computers. Examines theoretical perspectives on computers and crime, and the significance of computers as a terrorist target. Focuses primarily on cybersecurity as a critical infrastructure concern and the increasing challenges presented by ever-growing and pervasive cyber threats and the challenges of protecting cyberspace.

**HLSC550 Internship (3)**
Internship in an area of concentration to be selected by the student in consultation with the faculty advisor.
Requires two-hundred and forty (240) hours of internship activity.

**HLSC553 Directed Study ( variable credit)**
Independent research conducted either by an individual student or a research team with faculty supervision.

**HLSC560 Special Topics (3)**
Special topics courses addressing a variety of contemporary, cutting-edge issues in the discipline. Students may enroll in more than one special topic course.

**HLSC570 Research Techniques (3)**
This course introduces the sources, types, and uses of data relative to issues in homeland security. An in-depth exploration of research methodologies including quantitative, qualitative, mixed methods, and computational approaches and their utility in examination of particular issues will be explored. Also addressed are ethical standards in the conduct of research. This examination of research techniques is used to explore selected issues in homeland security and provide students with the ability to develop a research-based approach to examine a homeland security problem. This is the first course in the homeland security graduate research sequence.

**HLSC760 Thesis Project (variable credit)**
Students prepare and defend an original project based on their research or professional career interests. Requires a thesis in the student's concentration area of interest . The project may consist either of a traditional thesis or an in-depth policy paper relative to the concentration area.

## Human Development Program (BA)

The Bachelor of Arts in Human Development Program focuses on comprehensive care and education of children from birth to 5 years and interaction with students' families. This program forms the academic framework, which guides developmentally appropriate practices in early childhood settings. Emphasis is placed on responding to the developmental and cultural uniqueness of each child as students in the program learn to design, implement, and evaluate curricular activities and learning environments.

The program's curriculum uses an interdisciplinary approach to human development derived from multiple fields of study such as psychology, education, sociology, and speech and language courses.

Graduates of the Human Development program acquire knowledge about how humans grow, develop and learn in a variety of settings, and are equipped to successfully guide children and their families toward the types of experiences and interactions that produce long-term, positive benefits in the areas of social/emotional development, cognitive development and school readiness.

**Credit Statement**
The Human Development program includes 120 credit hours which includes 37 credits in General Education, 52 credits in Core/Foundation, 24 credits in two optional concentrations, and 7 credits in education and speech language courses.

**GPA Statement**
Students must earn a minimum grade of C and an average of C in all required ancillary science courses and in all required Human Development courses.

**Background Checks & Investigation**
DC law requires police clearances and criminal background checks of all Human Development majors before placement in Human Development Practicum and Advanced Practicum. Students must also demonstrate evidence of good health, including, the results of a TB test. Failure to acquire clearance may result in students not being continued in the program. Adverse reports from either of these investigations will preclude students from their advancement toward degree and placement in the early childhood learning centers and District of Columbia Schools.

**Transfer Credits**
All transfers are evaluated by a Transfer Student Counselor in the Office of Recruitment and Admissions. Academic departments reserve the right to determine those credits that will be used to satisfy degree requirements. Students are encouraged to meet with academic advisors, each semester, to ensure that degree requirements are being met.

**Probation and Suspension**
When a student's cumulative grade point average falls below 2.00, the student is placed on academic probation. Click here for full policies on probation and suspension.

**Graduation Credit Hours**
This bachelor's degree program requires the fulfillment of 120 credit hours, including specific courses identified in the program of study and the applicable IGED requirements.

**Residency Statement**
Of the 36 required Human Development credits, 21 must be taken in residence at the University of the District of Columbia. In addition, the University confers the bachelor degree upon students who complete the last 30 semester credit hours of study in residence at UDC. Students must complete all General Education requirements, as well as degree requirements, and attain a minimum cumulative grade point average of 2.00.

**Course Requirements**

**IGED Requirements (37 credits)**
**Program Core Requirements (52Credits)**
BIOL 101 Biological Science I Lecture (3)
BIOL 103 Biological Science I Lab (1)
HIST 101 U.S. History I (3)
HIST 102 U.S. History II (3)
ECED 104 History & Phil. of Early Childhood Ed (3)
PSYC 245 Developmental Psychology (3)

ECED 245 Child In The Family (3)
SOCY 244 The Family (3)
SPED 204 Introduction To Exceptional Children In Early Childhood Ed (3)
HMDV 211 Child Study And Assessment (3)
SPLP 312 Language Acquisition (3)
NUDT 318 Child Health & Nutrition (3)
ECED 390 Human Development Practicum (3)
HMDV 408 Children In Multi-Cultural Society (3)
HMDV 491 Advanced Practicum (12)

**Program Requirements: Early Childhood Infant/Toddler Concentration (24 Credits)**
ECED 105 Child Development: Neuro-Science And The Developing Child (3)
ECED 206 Infant Ed. I: The Learning Environment (3)
ECED 207 Infant Ed. II: Biological Development (3)
ECED 304 Play: Learning And Relating (3)
ECED 208 Emergent Literacy (3)
HMDV 308 Emergent Literacy II (3)
ECED 4__ Prevention And Intervention In Infant Development (3)
ECED 492 Current Practices In Early Childhood Education (3)

**Program Requirements: Early Childhood Preschool Concentration (24 Credits)**
ECED 104 Child Development: Neuro-Science And The Developing Child (3)
ECED 204 Curriculum Content In Early Childhood Education (3)
HMDV 295 Special Topics In Early Childhood (3)
ECED 304 Play: Learning & Relating (3)
ECED 208 Emergent Literacy I (3)
HMDV 308 Emergent Literacy II (3)
HMDV 410 Adaptive Learning And Teaching (3)
HMDV 492 Current Practices In Early Childhood Education (3)

**Electives (7 credits)** will include courses in Special Education (autism), Speech and Language Pathology, Dual Language Education and Neuroscience.

## COURSE DESCRIPTIONS
## HUMAN DEVELOPMENT (HMDV)

**HMDV 211 Child Study, Assessment and Evaluation (3)**
The Child Study, Assessment, and Evaluation course provides a comprehensive introduction to observation and early childhood education assessment. In this course learners will: review methods of observing young children in structured and unstructured situations; and respond to the identification, selection, and implementation of various screening and developmental assessment instruments and program evaluation tools and link results to planning, guidance, and instruction. Students will also discuss the diagnostic process and implications of evaluation. Topics will emphasize an ecological approach, family involvement, culturally sensitive approach to child assessment, and other critical issues in child study.

**HMDV 295 Special Topics (3): Delivery of Human Services**
This course presents an overview of the human services delivery system with a focus on development over the life course in the context of families. It also uses critical race theory to examine disproportionate contact across the human service system with select families. Students are expected to use this course as an opportunity to examine their own values and attitudes about human services, become knowledgeable about theories and methods of helping individuals and groups in human services settings, and consider potential careers in human services through a multipart career mapping assignment. Students are further expected to be able to apply knowledge about families to the development of a brief research-based program proposal with a logic model and budget.

**HMDV 308 Emergent Literacy II (3)**
The conceptual framework of the Human Development program is guided by the mission of the University to prepare students for immediate entry into the workforce, for the next level of education, for specialized employment opportunities, and for lifelong learning. This evolving framework is performance-based and provides a rationale for the course work, field experiences, practices, study, assessment and ongoing professional development that students engage in during their tenure with the program. The Program is committed to preparing distinguished educational professionals who possess the knowledge, skills, and dispositions needed to transform children, families, and schools in the 21st century.

**HMDV 408 Children in Multicultural Society (3)**
This course concentrates on enhancing students' appreciation of and respect for other cultures. It employs modules of the study of pluralistic identity and cultures. It emphasizes strategies for utilizing these materials in the early childhood setting.

**HMDV 410 Adaptive Teaching and Learning in Early childhood Education (3)**
This course explores early intervention for infants and preschoolers with disabilities, developmental delays, or deviations in development. Students will study the whole child and identify strategies to build and develop strengths and improve weaknesses. The five domains of

development, cognitive, social or emotional, adaptive, physical, and communicative, as recognized by the Individuals with Disabilities Education Act (IDEA) will be explored. Students will investigate each developmental domain.

**HMDV 491 Advanced Practicum (12)**
Through school-based field experiences, including direct observation and reflective observation, this course explores early intervention for infants and preschool-age children. Students will examine the historical, philosophical, and sociological foundations of education as these components relate to learning, students, and schools. This course also explores the need for understanding teacher experiences while highlighting the importance of creating learning communities. At the end of this course, participants will be able to reflect upon, associate, and recognize various philosophical approaches to education, value the sociocultural changes found within US schools, and understand multiple perspectives concerning current educational trends and issues. These experiences include instruments, skilled inventories, and assessment strategies used for establishing exemplary classroom characteristics, applying effective teacher behaviors, and establishing relationships as a basis for developmentally appropriate learning. Students must participate in a mandatory weekly seminar and a 9-week (144 clock hour) practicum in an infant/toddler or preschool/pre-k licensed center or public (ONLY available for those employed by DCPS) or charter school.

**HMDV 492 Current Practices in Early Childhood Education (3)**
Reviews the current science on young children's cognitive, physical, and social-emotional development related to education. Challenges current understanding of education and development using a cultural lens that engages discussion on learning in multiple ecologies. Discussions will link theoretical approaches of child development, current issues, and research applications. Students will increase content knowledge and skill in critical analysis and synthesis of research on child development in multiple ecologies. The primary goal of the course is to explore ways of enhancing the development of children through the application of relevant research.

## Political Science (BA)

**Option for Undergraduate Concentration in Global Studies**
The Political Science program seeks to empower students through a rigorous academic curriculum that broadens their knowledge of political institutions and processes, instills political awareness and social consciousness, and encourages public service and civic engagement in the District of Columbia, the nation, and the global community. The program serves students by providing co-curricular activities such as the Model Organization of American States and Model Arab League, Model Group of 20 experiential activities such as the Congressional Internship Program and internships in the public and private sectors, and a faculty dedicated to student learning and professional scholarship.

Students majoring in Political Science may also seek a concentration in Global Studies. A concentration in Global Studies emphasizes the need for an interdisciplinary approach to studying the rapidly globalizing world. The concentration requires 15 credits, of which one course, Introduction to Globalization & Global Studies, is required. The remaining courses are selected from offerings across disciplines such as World Cultural Geography, International Models and Simulations, Global Political Economy, and numerous special topic electives. Students are also required to participate in a study abroad experience or internship with a global focus.

The Bachelor of Arts degree in Political Science requires a minimum of one-hundred twenty (120) credits to complete, which includes thirty-seven (37) credits in the General Education core and thirty-three (33) credits in Political Science courses. Required courses are Introduction to Political Science, Introduction to American Government, Black Politics, Political Ideologies, Political Research Skills, Methods of Political Science, Senior Seminar, and Elementary Statistics. Majors must also complete nine (9) credit hours of major electives. A minimum grade of "C" is required in all required political science courses.

**GPA Statement**
Students must earn a minimum grade of "C" in all required Political Science courses and an average of "C" in all required ancillary courses.

**Probation and Suspension**
When a student's cumulative grade point average falls below 2.00, the student is placed on academic probation.

**Residency Statement**
The Political Science Program requires the completion of 15 credits of the required 33, must be taken in residence at the University of the District of Columbia.

**Student Organizations**
Chi Rho Chapter, Pi Sigma Alpha, National Political Science Honor Society
Political Science Students Organization (PSSO)
Global Affairs and Diplomacy Association (GADA)

(Both PSSO and GADA are UDC Student Government accredited organizations, active in promoting scholarly, social, and professional development activities for majors and interested students).

**Undergraduate Research Activities**
The Political Science program has a capstone experience which requires students to successfully complete three (3) research-based courses, in sequential order, and to apply acquired research skills in conducting a research project that results in the submission of an empirically researched paper, oral presentation, and defense. The three (3) building block courses are Political Research Skills (295), Methods of Political Science (497) and Senior Seminar (498). Under the tutelage of program faculty, Political Science majors present their research through poster sessions and presentations during the annual CAS Undergraduate Research Day and at annual meetings of discipline-related national conferences.

**Congressional and Public Sector Internships**
Washington, D.C., the center of the national government and the government of District of Columbia, serves as a laboratory offering students the opportunity to interact and observe the practical aspects of the discipline of Political Science. Students participate in numerous internships that provide opportunities for modeling future career options. The Congressional Internship Program (CIP) offers students the opportunity to serve as staff interns in a Congressional office while earning academic credit. Students acquire hands-on experience at the level of the federal government, establish professional networks, and integrate their internship experience and scholarship through rigorous academic mentorship with Program faculty.

**Co-Curricular Activities**
A major Political Science initiative is the annual participation of students in the Model Organization of American States and, Model Arab League and Group of 20, international simulations. These activities link students to opportunities for participation in global affairs by interacting with the diplomatic community and establishing relationships with students throughout the western hemisphere.

**Required Courses**

**IGED Requirements (37 Credits)**

**Political Science Program Core Courses (33 credits)**

POLI 205 Introduction to Political Science (3)
POLI 206 Introduction to American Government (3)
POLI 207 Black Politics (3)
POLI 285 Political Ideologies (3)
POLI 295 Political Research Skills (3)
POLI 497 Methods of Political Science (3)
POLI 498 Senior Seminar (3)
POLI Political Science Electives (9)
MATH 185 Elementary Statistics (3)
Writing Intensive Course (Consult with your Faculty Advisor) (3)

**Electives (50 credits)** – to be discussed and scheduled with an advisor
**Total credit hours: 120**

## COURSE DESCRIPTIONS
## POLITICAL SCIENCE (POLI)

**POLI205 Introduction to Political Science (3)**
Introduces the scope and range of the discipline of political science, the role of politics in society, the nature of power and legitimacy, and political functions and institutions. Also addresses the enduring issues of equality, justice, and freedom as discussed in classical political thought, social contract theory, and contemporary ideologies.

**POLI206 Introduction to American Government (3)**
Introduces the major principles of American government and politics. Focuses on the Presidency, Congress, and the Courts. Also examines federalism, civil rights and civil liberties, political behavior, and political parties.

**POLI207 Black Politics (3)**
Introduces the study of the participation of African Americans in the American political system. Focuses on the historical and contemporary struggle of African Americans to become equal participants in the political process. Examines political strategies developed and used by African Americans in response to their minority status.

**POLI285 Political Ideologies (3)**
Introduces the content and historical development of contemporary ideologies, such as communism, socialism, fascism, liberalism, and conservatism. Also examines the nature of nationalism and imperialism.

**POLI295 Political Research Skills (3)**
Introduces the fundamental concepts of political inquiry, with particular emphasis on empirical research methods. Special emphasis on research problem formulation, writing, reading comprehension skills and knowledge of bibliographical and other research sources. Prereq.: POLI 205 or 206

**POLI306 Political Parties and Interest Groups (3)**
Analyzes the structure, operations, and ideology of political parties and interest groups. Examines questions of conflict of interest and the influence of private groups on the electoral process. Prereq.: POLI 205 or 206

**POLI307 The Legislative Process (3)**
Analyzes the process of policy formulation by the legislative branch of American government, exploring topics such as including legislative leadership, legislative behavior, the executive impact on legislation, and the role of parties and interest groups in the legislative process. Prereq.: POLI 205 or 206

**POLI308 The Presidency (3)**
Examines the Presidency of the United States from the perspectives of historical development, constitutional powers and limits, and behavioral characteristics. Also analyzes power relationships involving the President, Congress, the Federal courts and other political subsystems. Prereq.: POLI 205 or 206

**POLI336 Seminar in Practical Politics (3**
Offers an opportunity to interact with policymakers in government and politics at the local, state, and national levels Exposes students to practical aspects of government and politics through attendance at public hearings, City Hall, the U.S. Congress, and the Executive agencies. Prereq.: POLI 206.

**POLI345 Introduction to Public Administration (3)**
Introduces the basic concepts and scope of public administration with particular emphasis on the federal level, viewed from the descriptive-structural perspective and the political and social dimensions of public administration in action. Analyzes the impact of bureaucratic institutions on contemporary society, the individual, and groups. Prereq.: POLI 205 or 206.

**POLI346 Bureaucracy and Policy-Making (3)**
Examines the role of bureaucracies in policy-making and interactions with other elements of the political system. Topics covered include the sources of bureaucratic power, the bureaucratic policy process, and the interactions of the bureaucracy with the executive, legislative, and non-governmental structures, and the public. Prereq.: POLI 205 or 206

**POLI355 Constitutional Law (3)**
Explores the constitutional and legal framework of American political institutions and the major decisions of the United States Supreme Court which
have an impact on the separation of powers, the federal system, and the role of the judicial system.Prereq.: POLI 205 or 206

**POLI356 Civil Rights and Civil Liberties (3)**
Explores the issues and problems of constitutional law, with particular emphasis on matters related to the Bill of Rights, such as freedom of speech and religion, right to privacy, and due process. Also examines desegregation, voting rights, and public accommodations. Prereq.: POLI 205 or 206

**POLI365 Introduction to Comparative Politics (3)**
Provides a comparative study of political systems from an institutional, functional, and other perspectives, emphasizing the construction of systematic theory. Examines political systems ranging from simple to differentiated structure, and illustrates theoretical and substantive issues and problems. Prereq.: POLI 205 or 206

**POLI375 Introduction to International Relations (3)**
Examines the basic concepts, issues, and institutions of international relations, such as the nature of sovereignty, balance of power, spheres of influence, the nation-state, and supranational organizations. Also focuses on the nature of diplomacy and war. Prereq.: POLI 205 or 206

**POLI376 International Law and Organizations (3)**
Focuses on international law and the basic theories of the structure and function of various international organizations, including administrative operations, with particular emphasis on the United Nations and its related agencies. Prereq.: POLI 205 or 206

**POLI377 United States Foreign Policy (3)**
Examines the decision-making processes of American foreign policy, including the role of Congress, the federal bureaucracy, the executive branch, corporations, the military, and those involved in formulating policy. Discussion of historical and contemporary issues to illustrate these processes. Prereq.: POLI 205 or 206

**POLI385 Western Political Thought (3)**
Discusses a selection of the major writers, issues, and traditions of Western political philosophy and how these are relevant to the theoretical and practical concerns of contemporary political thought. Discusses topics such as relation of man to the state, the nature of government, and the distribution of power. Prereq.: POLI 205 or 206

**POLI386 Third World Political Thought (3)**
Introduces the major political theories and systems of thought of Third World countries, including historical development and socio-economic dimensions. Focuses on selected thinkers in Latin America, Africa, and Asia and their responses to the issues and problems of the Third World. Prereq.: POLI 205 or 206

**POLI387 American Political Thought (3)**
Surveys the major intellectual influences on the political and constitutional systems of the United States. Discusses the origins of American political thought in Europe and the

basic principles of significant political philosophies in the United States. Prereq.: POLI 205 or 206

**POLI406 Selected Topics in American Politics (3)**
Examines specific aspects of American politics selected according to student interest and instructor availability. Examples may include the politics of the mass media, federal legislation relating to minority interests, and an in-depth study of influential works in contemporary American politics. Prereq.: POLI 205 or 206

**POLI465 Selected Topics in Comparative Politics (3)**
Analyzes certain areas of comparative politics selected according to student need and instructor availability. Example of topics to be explored: a comparative study of selected political subsystems, such as the legislative and executive, and problems of selected areas such as Latin America, Africa, Asia, the Middle East, and Europe. Prereq.: POLI 205 or 206

**POLI475 Selected Topics in Internat'l Relations (3)**
Examines certain aspects of international relations, international organizations, and foreign policy, selected according to student interest and instructor availability. Topics might include power, peace, war, terrorism, arms control, and cross-national analysis of the foreign policies of the major powers. Prereq.: POLI 205 or 206

**POLI485 Selected Topics in Political Theory (3)**
Analyzes certain political issues and thinkers selected from the broad range of political theories and political philosophies. Examples of topics to be explored include contemporary issues in behavioral theory and normative philosophy, utopian theory, the theory of the open society, and anthropological political thought. Prereq.: POLI 205 or 206POLI 495

**Congressional Internship Program- (4)**
An experiential learning experience that provides an opportunity to serve as an intern in a Congressional office. Students receive invaluable exposure to the inner workings of Congress, while demonstrating their professional research, analytical, and communication skills and developing professional relationships. Prereq.: POLI 20 6 or 307 POLI 4 97

**Methods of Political Science (3)**
Involves an advanced study of the nature of political inquiry, covering a brief history of the discipline of political science, the philosophical problems underlying political science research, and the major conceptual approaches of contemporary political analysis. Requires a project research design with attention given to the choice of technique. Prereq.: POLI 295

**POLI498 Senior Seminar (3)**
Serves as the Capstone course for Political Science majors. Applies research skills learned in POLI 295 and POLI 497 towards a research project. Prereq.: POLI 295 & 497

## Psychology (BS)

The Bachelor of Science Degree program in Psychology introduces students to the science of behavior, a science concerned with understanding the factors that affect the behavior of human and non-human species. The program provides students with a thorough introduction to the major theoretical perspectives in psychology and the scientific methodological approaches they utilize.

**Credit Statement**
Total credit hours of college-level courses required for graduation are 120 which includes 37 credit hours in General Education and 43 credits required in the major, Psychology.

**GPA Statement**
Students must earn a minimum grade of "C" in all required Psychology courses and an average of "C" in all required ancillary courses. Students must achieve an overall minimum average of 2.5 in their psychology courses.

**Transfer Credits**

**Probation and Suspension**
When a student's cumulative grade point average falls below 2.00, the student is placed on academic probation.

**Residency Statement** Of the 43 required psychology credits, 21 must be taken in residence at UDC. In addition, the University confers the bachelor degree upon students who complete the last 30 semester credit hours of study in residence at UDC. Students must complete all General education requirements, as well as degree requirements, and attain a minimum cumulative grade point average of 2.00.

**Application Requirements for Graduation**

**Professional Associations**
The Psychology program is affiliated with a variety of associations and professional organizations, such as the American Psychological Association and the Association of Black Psychologists.

**Student Organizations**
Psi Chi, the International Honor Society in Psychology, is open to students with the requisite academic requirements. It provides programs to help achieve academic recognition and creative development, including annual Society and regional conventions held in conjunction with the psychological associations, research award competitions,

and certificate recognition programs.

Psychology majors also participate in service oriented intervention activities through membership in the Association of Black Psychologists (ABPsi) Student Circle. The Student Circle is located on college campuses nationwide. Members of the Student Circle have access to scholarship opportunities, leadership development, professional networks, student support, scholarly writing opportunities, *The Psych Discourse News Journal, The Journal of Black Psychology*, and much more.

**Course Requirements**

| **IGED Requirements (37 Credits)** |
|---|
| **Program Core Requirements (19 Credits)** |
| PSYC 201 Principles of Psychology I (3) |
| PSYC 202 Critical Skills Development in Psychology (Writing Intensive Course) (3) |
| PSYC 311 Statistics I (3) |
| PSYC-312 Statistics II (3) |
| PSYC-314 Experimental Psychology Lecture (3) |
| PSYC 315 Experimental Psychology Lab (1) |
| PSYC 420 Senior Seminar/Thesis (3) |
| **Secondary Core Courses (at least 15 Credits)** |
| **Select at least two (2) of the three (3):** |
| PSYC 225 Social Psychology (3) |
| PSYC 235 Theories of Personality (3) |
| PSYC 245 Developmental Psychology (3) |
| **Select at least two (2) of the three (3) courses Junior standing required:** |
| PSYC 317 Sensation and Perception (3) |
| PSYC 318 Basic Conditioning and Learning (3) |
| PSYC 319 Human Learning and Cognition (3) |
| PSYC 415 Introduction to Neuroscience Lecture (3) |
| PSYC 416 Introduction to Neuroscience Lab (1) |
| **Select at least one (1) of the two (2) Junior or Senior standing in Psychology required:** |
| PSYC 351 Community Psychology (3) |
| **Elective Courses** |
| **Select nine (9) credit hours:** |
| PSYC 137 Psychology of Adjustment (3) |
| PSYC 228 Psychology of Multicultural Relations (3) |
| PSYC 316 Introduction to Clinical Psychology (3) |
| PSYC 327 Group Processes (3) |
| PSYC 335 Tests and Measurements (3) |
| PSYC 336 Psychology of Human Sexuality (3) |
| PSYC 343 Health Psychology (3) |
| PSYC 346 Adult Development and Aging Psychology (3) |
| PSYC 352 Psychology Practicum (3) |
| PSYC 353 Environmental Psychology (3) |
| PSYC 395 Independent Study VC |
| PSYC 396 Special Topics in Psychology VC |
| PSYC 405 History and Systems (3) |
| PSYC 419 Psychopharmacology (3) |
| PSYC 315 Industrial Organization in Psychology (3) |
| **Additional Psychology Program Requirements (12)** |
| BIOL 102 Biological Science II (3) |
| BIOL 104 Biological Science II Lab (1) |
| After completing Biology I and II students must select one of the following three options identified below. When completing this final science requirement the two course sequence must be completed with a satisfactory grade. |
| **The Physics Option:** |
| PHYS 101 Introduction to College Physics I (3) |
| PHYS 103 Introduction to College Physics I Lab (1) |
| PHYS 102 Introduction to College Physics II (3) |
| PHYS 104 Introduction to College Physics II Lab(1) |
| *Or* |
| **The Chemistry Option:** |
| CHEM 111 General Chemistry I (3) |
| CHEM 113 General Chemistry I Lab (1) |
| CHEM 112 General Chemistry II |
| CHEM114 General Chemistry II Lab (1) |
| *Or* |
| **The Anatomy & Physiology Option:** |
| BIOL111 Fund. Human Anatomy & Phys I (3) |
| BIOL 113 Fund. of Anatomy & Physiology I Lab (1) |
| BIOL 112 Fund. of Human Anatomy & Phys II (3) |
| BIOL 114 Fund. of Anatomy & Physiology II Lab (1) |
| **University Electives** |
| **Complete 28 credits of electives in any subject.** |
| **Total credit hours: 120** |

## COURSE DESCRIPTIONS
## PSYCHOLOGY (PSYC)

**PSYC137 Psychology of Adjustment (3)**
Emphasizes the understanding of everyday human behavior through the application of scientific principles derived from research. Examines foundations of psychological adjustment and the development of maladaptive behavior. Discusses human reactions evoked by stressful and frustrating environmental events, as well as reactions to internal sources of frustration. Examines procedures of psychological assessment, change, and newer methods of enhancing adjustment.

**PSYC201 Principles of Psychology I (3)**
Introduces the history, methods, major theoretical viewpoints, and concepts of scientific psychology. Provides non majors with an overview of the field of psychology;

majors gain a foundation for further study. Prereq: Sophomore standing.

**PSYC202 Critical Skills Dev. in Psychology (3)**
Enhances critical thinking and reasoning skills. Introduces the range of concepts needed to understand the process of empirical inquiry, scientific report writing, and utilization of the research literature and sources. Also teaches basic computer skills. Prereq: PSYC 201.

**PSYC1 225 Social Psychology (3)**
Surveys the major theories and concepts of social psychology, focusing on such topics as person perception, attitude formation and change, conformity, aggression, cooperation and conflict, and interpersonal and intergroup relations. Evaluates psychology significance for understanding contemporary social issues and conflicts. Prereq: PSYC 202.

**PSYC228 Psychology of Multicultural Relation (3)**
Surveys and examines critical environmental factors affecting the psychological experiences of men and women from ethnic minority groups. Organizes research findings and philosophical concepts into an ethnocentric framework which illuminates the strengths of minority groups. Prereq: Sophomore standing.

**PSYC235 Theories of Personality (3)**
Examines the major theories which describe personality development and change. Explores representative theories from psychoanalytic, social learning, factor analytic, behavioral, and humanistic orientations, along with representative therapeutic approaches. Prereq: PSYC 201.

**PSYC245 Developmental Psychology (3)**
Surveys basic concepts and theories of developmental psychology. Emphasizes the physical, cognitive, social, and emotional behaviors characteristic of individuals at each life stage, from birth to death. Shows how biological, cultural, and environmental factors interact to influence behavior at every life stage. Prereq: PSYC 201.

**PSYC311 Statistics I (3)**
Introduces basic concepts of statistics and elementary probability. Includes measurement, sampling, distributions and graphs, measures of central tendency and variability, standardized scores, the normal curve, correlation, and regression. Prereq: PSYC 202.

**PSYC312 Statistics II (3)**
Introduces inferential statistics and experimental design. Includes probability theory, parametric and non-parametric hypothesis testing, power analysis, "t" tests for independent and repeated sample designs, one-way analysis of variance, and factorial or two way analysis of variance and basic experimental design. Prereq: PSYC 311.

**PSYC313 Experimental Psychology Lecture (3)**
Examines fundamentals of the experimental method in psychology. Topics include scientific methodology, survey and correlational research designs, experimental design and control, ethics of research, and writing of research reports in APA format. Prereq: PSYC 311.

**PSYC314 Experimental Psychology Lab (1)**
Provides first-hand laboratory experience for students enrolled in PSYC 313 Experimental Psychology (3). Students participate in the design of experiments and the collection, analysis, and interpretation of data. Explores topics related to learning, memory, perception, and social/personality psychology. Prereq: Must be taken concurrently with PSYC 313.

**PSYC315 Industrial/Organizational Psychology (3)**
Examines factors involved in designing effective organizations. Reviews theories of organizational design and applies psychological theories and concepts in industrial settings. Prereq: PSYC 202.

**PSYC316 Introduction to Clinical Psychology (3)**
Examines the issues of assessment, intervention, and professional issues in clinical psychology. Addresses training and educational issues, including elements of preparation for graduate work. Explores the array of professional activities of practicing psychologists and the interactive roles with other mental health professionals. Prereq: PSYC 235 and PSYC 436 or permission of the instructor.

**PSYC317 Sensation and Perception (3)**
Introduces current research into sensory and perceptual phenomena. Includes topics such as sensory coding, adaptation, attention, perception of objects and space, perceptual development, and illusions. Prereq: PSYC 202 and junior standing.

**PSYC318 Basic Conditioning and Learning (3)**
Examines principles of learning through systematic analysis of classical and operant conditioning. Explores both traditional and current approaches to learning and memory. Prereq: PSYC 202 and junior standing.

**PSYC319 Human Learning and Cognition (3)**
Introduces the study of human cognition. Includes topics such as memory processes, language, thought, problem solving, concept learning, attention, short-term memory, and pattern recognition. Prereq: PSYC 202 and junior standing.

**PSYC327 Group Processes (3)**
Approaches the study of group dynamics through exposure to theories, research, and first-hand laboratory experiences. Emphasizes integrating theoretical learning with experiential learning in an attempt to understand the social and psychological "forces" operating in groups. Fosters greater awareness of self and others, and develops the ability to observe and diagnose group behavior. Prereq: PSYC 201.

**PSYC335 Tests and Measurements (3)**
Examines measurement theory used in test construction and use. Introduces representative tests of all types. Examines the social, educational, and economic implications of using standardized tests and other psychological measures with minority groups. Explores alternative assessment approaches. Prereq: PSYC 311, or permission of the instructor.

**PSYC336 Psychology of Human Sexuality (3)**
Surveys major aspects of human sexuality, including attitudes, myths, and premarital, marital, and non-marital behavior. Views optimum sexual functioning, heterosexuality, homosexuality, and sexual variance from a psychological vantage point. Examines problem/dysfunctional sexual behaviors and therapeutic strategies used to treat these. Prereq: PSYC 201.

**PSYC343 Health Psychology (3)**
Explores the mind-body relationship as it relates to health and illness. Examines biological, psychological, and social factors. Emphasizes a systems-theory view of health psychology. Teaches practical skills for stress management and general wellness. Prereq.: Junior standing or consent of instructor.

**PSYC346 Adult Development and Aging (3)**
Provides an overview of the major theories of adult development. Explores myths about the physical, intellectual, social, and emotional changes associated with aging. Explores psychosocial aspects of death and dying. Prereq: PSYC 245 or permission of instructor.

**PSYC351 Community Psychology (3)**
Surveys basic concepts and methods used by community psychologists to promote psychological well-being and prevent the development of problems of individuals, groups, and communities. Topics include values and roots of community psychology, historical trends and issues in mental health service delivery, assessment of person-environment interactions, principles and models of prevention, and strategies of social change. Prereq: Junior or senior standing in psychology.

**PSYC352 Psychology Practicum (3)**
Provides an opportunity for students to gain experience, through supervised on-site training in the field, in how to apply psychological theories and methods to solve problems of individuals, groups, organizations, or communities. Includes didactic seminars to integrate classroom theory with the field experience. Field and seminar hours required. Prereq: Junior standing in psychology, including successful completion of at least two 200-level psychology courses beyond PSYC202.

**PSYC353 Environmental Psychology (3)**
Explores the various aspects of the person-environment relationship including artificial environments such as homes, schools, and offices, as well as the natural environment such as national parks and hazard areas. Prereq.: Junior standing (majors) or consent of instructor.

**PSYC395 Independent Study (VC)**
Allows advanced psychology students to do independent research in a problem area of choice under the direction of a faculty member. Prereq: Junior or senior standing in psychology and a cumulative grade point average of 2.8.

**PSYC396 Special Topics in Psychology (VC)**
Allows for research of and writing on contemporary topics in psychology which are of special interest to students. Prereq: Junior standing in psychology/ permission of the Division Chair.

**PSYC405 History and Systems (3)**
Examines the origins of psychology in philosophy and biology, and the development of psychology as a science in the nineteenth and twentieth centuries. Considers current theoretical perspectives and research in relation to the enduring issues of the role of culture, science, and technology in developing psychological constructs. Prereq: PSYC 202 and junior standing or consent of instructor.

**PSYC415 Introduction to Neuroscience Lecture (3)**
Introduces the biological bases of behavior. Explores psychopharmacology, neurophysiology, and neuroanatomy. Knowledge of these areas is seminal to the understanding of both normal and abnormal behavior. Prereq: PSYC201.

**PSYC416 Introduction to Neuroscience Laboratory (1)**
Introduces a variety of techniques employed to understand the neural underpinnings of behavior. Laboratory exercises include neurophysiological, neuropharmacological, and neuroanatomical computer exercises. Also explores principles of stereotaxic surgery and neurohistology. Must be taken concurrently with PSYC415.

**PSYC419 Psychopharmacology (3)**
Provides basic information on therapeutic and recreational use and misuse of psychoactive drugs. Examines the mechanisms of action, known or unknown sites of action, types of neurons acted upon, the disorders that the drugs are used to treat, and structure-function relationships. Prereq: Senior standing or permission of instructor.

**PSYC420 Senior Seminar (3)**
Provides a capstone experience for the psychology major. Integrates knowledge from previous courses covering major research issues in psychology, experimental design and methodology, and statistical procedures. Students are required to conceptualize a research problem, collect and analyze the data using SPSS, write up, and present the research project at a designated public forum.

**PSYC436 Abnormal Psychology (3)**
Exposes students to the traditional classification system used to describe abnormal behavior, and examines theories of causation and therapy. Addresses questions related to the ethicality and validity of diagnostic classification, and the value of the disease model. Discusses the efficacy of traditional psychotherapies, the future of the community mental health concept, and the relevance of traditional approaches for treating minority groups. Prereq: PSYC 235.

**PSYC440 Senior Seminar/Thesis (3)**
Provides a capstone experience for the psychology major. Integrates knowledge from previous courses concerning major research issues in psychology, experimental design and methodology, and statistical procedures. Students are required to conceptualize a research problem, collect and analyze the data using SPSS, and write up the research project. Also students are required to present the research project at a designated public forum.

# College of Arts and Sciences Additional Course Descriptions

## ANTHROPOLOGY (ANTH)

**ANTH113 Introduction to Anthropology (3)**
Introduces basic concepts approaches, and findings that highlight the study of how human cultures develop, with an emphasis on cultural anthropology.

**ANTH234 Black Societies in the New World (3)**
Examines Black societies in North, Central, and South America, and the Caribbean from historical and comparative perspectives. Examines the institutions and culture of the colonial and post-colonial periods.

**ANTH235 People and Cultures of Africa (3)**
Explores the economic, social, political, and religious features, examining the relationship between traditional and contemporary social forms.

**ANTH246 Ethnicity (3)**
Explores the interaction, cultural differences, and adaptive features of selected ethnic groups. Highlights interaction between dominant and minority groups in the United States and other societies.

**ANTH313 Physical Anthropology (3)**
Examines biological and cultural evolution and the interaction of the two. Demonstrates how human biology makes culture possible, and how culture makes human beings, considering human behavior as both genetic and learned. Traces the development of differences among human populations and examines the concept of race.

**ANTH474 Anthropology Theories In Perspective (3)**
Explores major, contemporary social theories, emphasizing the critical analysis of original sources and the comparison of different approaches to the study of human groups in society. Prereq.: Junior standing or permission of the instructor.

## DANCE (DANC)

**DANC101 Modern Dance I (1)**
Introduces the basic principles of modern dance, which include gravity, posture, balance, gesture, centering, rhythm, spatial relationships, movement dynamics, and breathing. Exposes students to the historical background of modern dance and to dance performances by local and professional companies. Requires studio work and studio performance.

**DANC102 Modern Dance II (1)**
Continues Modern Dance I. Emphasizes the development of body placement, movement dynamics, strength, flexibility, and endurance. Requires studio work and studio performance. Prereq.: Modern Dance I or permission of the instructor.

**DANC110 Ballet I (1)**
Explores ballet as it relates to the human anatomy and dance history. Introduces basic ballet techniques.

**DANC201 Modern Dance III (1)**
Emphasizes advanced dance principles and techniques. Prereq.: DANC102.

**DANC202 Modern Dance IV (1)**
Continues techniques learned in Advanced Modern Dance I. Prereq.: DANC201 or permission of instructor.

**DANC224 Jazz I (1)**
Explores jazz dance as it relates to the human anatomy, jazz music, and dance history. Introduces dance techniques necessary to perform jazz idioms.

## FILM (FILM)

**FILM201 Fundamentals of Television Production (3)**
Introduces television and video production. Surveys technical requirements and characteristics of video input, output, and control systems. Students learn how to operate cameras, videotape recorders, and audio input and control. Uses technical and creative lighting techniques. Prereq.: MMED116

**FILM211 Introduction to Studio TV Production (3)**
Examines studio production, including the care and operation of video hardware, duties of studio personnel, and technical direction. Introduces students to studio production concepts, techniques, and disciplines. Prereq.: FILM 201

**FILM212 Advanced Studio TV Production(3)**
Advanced study of the application of video hardware, software, and techniques to the problems of studio TV production including scripting, producing, and directing video programs. This course continues the study of studio production, covering video hardware and duties of studio personnel and technical direction. Designed specifically for students to hone their skills in studio production concepts, techniques, and disciplines. Prereq.: FILM211

**FILM234 Fundamentals of Film Production (3)**
Focuses on 'picture' as a communication medium-synthesis of time and space. Covers the image, the shot, and sequence as ideograms, and the development of personal statements in video/film. Prereq.: MMED116 Audio Visual Foundations

**FILM311 Introduction to Remote TV Production (3)**
Involves the study of video equipment used in electronic field production and production techniques. Also examines video editing techniques and all aspects of producing and directing video remotes. Prereq.: FILM201

**FILM312 Advanced Remote TV Production (3)**
Addresses the basic elements of creating of a video documentary. Emphasis will be placed upon operation and techniques of EFP equipment, location producing and directing, and post-production video. Prereq.: FILM311

**FILM338 Video Editing Digital (3)**
Focuses specifically on video postproduction from nonlinear digital editing to still and motion graphics compositing. Introduces students to different software and hardware packages used for editing video footage, and 2-D animation. Students complete editing/composting exercises which culminate in editing student projects. This course continues the aesthetic principles from field production into postproduction with an eye on real-world projects. Prereq.: FILM201

## GEOGRAPHY (GEOG)

**GEOG103 World Regional Geography (3)**
Introduces students to global regions by integrating the environment, cultural, and economic spatial frame-works. Examines the geography of individual regions, along with the interactions between the regions and the resulting systems of interdependence.

**GEOG104 World Physical Geography (3)**
Presents a spatial systematic view of the earth and relates certain selected physical phenomena to the human-nature complex of the earth. These relationships emphasize the roles of the physical elements in man's environment. Topics include geographic tools, earth-sun relationships, atmosphere, lithosphere, hydro-sphere, and biosphere.

**GEOG105 World Cultural Geography (3)**
Investigates the spatial organization of human beings and their societies. Explores world distributions and patterns of population, cultural elements, settlements, livelihoods, and political orders as these are spatially related to the physical environment and to one another. This perspective examines where and why people occupy and utilize some portions of the earth's surface in preference to others.

**GEOG258 Geography of the District of Columbia (3)**
Emphasizes the physical, cultural, and economic geographical framework of the Washington metropolitan area, with consideration given to its development in a historical context. Particular stress is placed upon the spatial factors which are significant in Washington's functioning urban area.

**GEOG347 Urban Geography (3)**
Examines the principles governing the origin, structure, and growth of urban agglomerations. Emphasizes the phenomena of the institution and establishment and renewal of physical and cultural areas within and without metropolises.

**GEOG370 Introduction to Computer Mapping & Cartography (3)**
Introduces computer mapping hardware and software and cartography (the making and understanding of maps). Pertinent to anyone planning to utilize current mapping

software and hardware in other university courses or disciplines, or considering a career in city and regional planning or urban policy agencies, research centers, and public and private sector employment positions.

**GEOG375 Introduction to Desktop GIS (3)**
Introduces students to advanced software and hardware in the GIS technology. May be used for scientific investigations, resource management, and development planning. Instructs in how to assemble, store, manipulate, and display geographically referenced information which is data identified according to their location.

**GEOG470 Advanced Desktop GIS (3)**
Applies computer mapping skills to real research or projects when working with the university administration or research centers, outside research centers or groups, local and federal government agencies, and private sector activities.

**GEOG475 Urban and Environmental Information Systems (GIS) (3)**
Utilizes extensive databases to conduct research or work on projects and uses work stations to analyze data and display the data in geographic form.

## JOURNALISM (JOUR)

**JOUR211 Fundamentals of Journalism (3)**
Surveys the journalism profession and practice of journalism with emphasis on news gathering, writing, and editing according to format and stylebook rules. Daily assignments emphasize accuracy and deadlines with skill development drills in note-taking and interviewing. Prereq.: Foundation-Level Writing Course

**JOUR212 News Reporting (3)**
Introduces students to specialized news gathering, writing, and editing by way of beat reporting and rewrite assignments. Introduces techniques of developing news contacts and writing stories by research and intensive interview. Provides off-campus assignments; deadlines-oriented stories that must be composed and edited in the News and Journalism Lab. Prereq.: JOUR211

**JOUR213 News Production (3)**
Emphasizes practical aspects of print media production, including copy editing, photo cropping, headline writing, copy fitting, electronic composition, design, and layout. Emphasizes measuring columns and gallery proofing as well as exposure to electronic page design and layout methods using the computers in the News and Journalism Lab. Prereq.: JOUR211

**JOUR311 News and Journalism Lab I (3)**
Provides practical experiences for students as news reporters, researchers, copy editors, make-up editors, layout editors, editorial writers, reviewers, columnists, critics, and photographers for the News and Journalism Laboratory's print and online newspaper, the FREE VOICE. Prereq.: JOUR213

**JOUR312 News and Journalism Lab II (3)**
Continues Lab I, with participants being rotated in several editorial positions during the semester. Focuses on developing theme-centered issues of FREE VOICE. Allows the entire class to work collaboratively as newsroom staff of a small weekly print and online newspaper. Prereq.: JOUR311 or permission of the Instructor

**JOUR314 Feature Article Writing (3)**
Provides advanced writing course in feature length non-fiction for magazines, newspapers, and websites. Emphasizes generating article ideas, focusing research on the topic, stylistic writing, and close editing. Studies magazine analysis and market research. Students will be required to write several assignments for publication. Also, students will practice writing query letters to editors. Prereq.: JOUR 211, Discovery Level Writing Course

**JOUR315 Web Journalism (3)**
The Internet gives journalists a dynamic way to tell stories. This course introduces students to the tools required to report, write, and shoot for online media. The course focuses on producing original, community-based stories in addition to streaking news items, allowing students to hone their research, planning, reporting skills, and production skills which are necessary to create web content which is innovative, ethically sound, and technically competent..

**JOUR316 History of the Black Press (3)**
Survey of the recorded history of the Black Press, also known as the Crusade Press and the Protest Press of America. Course will focus on the minority press in America with special emphasis on the historical Negro press evolving into the triumphant press of the Harlem Renaissance and the militant media of the Civil Rights era and beyond. Course uses a seminar format, consisting of lectures, presentations, and discussions on prominent Black journals and journalists from past to present

## HISTORY (HIST)

**HIST101 United States History I (To 1865) (3)**
Examines the interaction and conflict between Native Americans, Africans, and Europeans; social and economic structure of the English colonies; the war for independence and nation building; slavery and the emergence of the

cotton kingdom; the development of political parties in the Age of Andrew Jackson; sectional conflict in the West; and the coming of the Civil War.

**HIST102 United States History II (Since 1865) (3)**
Examines Reconstruction and the emergence of the urban industrial order, immigration, populism, and the rise of segregation, disenfranchisement, and progressivism. Also examines the new imperialism and the coming of World War I, social and cultural change in the 1920's in addition to the Depression, the New Deal and the origins of World War II, the Cold War, the Civil Rights Movement, Vietnam, and the Cold War and its aftermath.

**HIST111 African History (3)**
Focuses on the broad history of continental Africa up to 1875, with an introductory view of African cultural traditions, state building in various regions of Africa, the coming of Europeans, and the slave trade in East and West Africa.

**HIST121 Pre-Columbian and Colonial Latin American History (3)**
Surveys the indigenous civilizations of the Americas and Africa, the slave trade and the Iberian civilizations that became the third ingredient in the formation of modern Latin America and the Caribbean. Discusses the economic, political, and social overview of four centuries of existence as Iberian colonies.

**HIST122 Modern Latin American History (3)**
Surveys the 19th century independence movement and the development of national identity, twentieth century revolutions, especially Mexico and Cuba, and the contemporary history of the area.

**HIST144 History of the Islamic Peoples (3)**
Discusses life in pre-Islamic society, Mohammed and the rise of Islam, Islamic culture and institutions, and the spread of Islam in Asia, Africa, Europe, and the United States.

**HIST154 Asian Civilization (3)**
Surveys the cultural, political, economic, social, and intellectual developments in China, Japan, Korea, and Southeast Asia; communications among the Asian countries in ancient and medieval periods; Western domination in Asia from the 15th to 20th century, and contemporary issues.

**HIST164 History of Black Americans I (3)**
Discusses the impact of the European slave trade on African civilization, the establishment of slavery in Latin America, the Caribbean, and North America, the economic and political nature of slavery, the position of free Black people in a slave society up to, and including, Reconstruction. Emphasizes the importance of early Black community and organizational development.

**HIST165 History of Black Americans II (3)**
Discusses the disenfranchisement of Black America and the beginning of urban migratory experience. Also explores group protests, including the nationalist movement. Course concludes with the "New Negro" movement and an examination of the Civil Rights and liberation movements, highlighting Black intellectual leaders and the current status of Affirmative Action.

**HIST171 World Civilization I (3)**
Presents the broad characteristics of traditional, classical, and feudal civilizations, examined in chronological and comparative order. Introduces basic concepts of the humanities and social sciences.

**HIST172 World Civilization II (3)**
Analyzes the changes produced in the West by science, technology, industrialism, and political ideologies contributing to the formation of modern culture. Examines the transformation of the non-Western world, both from within and without, by such forces as colonialism, nationalism, revolutionary ideologies, independence, and development.

**HIST224 History of the Caribbean (3)**
Surveys the culture of the indigenous people of the area, including the sugar-slavery-based socio-economic system of the colonial era, abolition, and emancipation. Also examines the Caribbean as a sphere of United States influence, and the development of the modern nations of the area, including Guyana.

**HIST233 Emergence of Western Europe (3)**
Analyzes dynamic changes produced in the West by the Middle Ages, Renaissance exploration, and Reformation. Considers the major forces of change contributing to the formation of modern Western culture.

**HIST235 Age of Revolution (3)**
Examines revolutions, with special emphasis on socio-economic developments in the world since the 18th century. Emphasizes the impact of revolutionary ideas on other societies and the relevance of these ideas today.

**HIST245 The Middle East Since 1800 (3)**
Discusses early Islam, the Byzantine Empire, the Ottoman Turks, and the rise of the Ottoman Empire to world power.

**HIST265 Black Women in America (3)**

Discusses the history of African-American women in the United States and the Third World, from the African experience to the present. Emphasizes diverse roles and activities in the African-American community and in the development of the U.S. Also examines certain themes, such as the myth of the Black matriarch, the economic roles of Black women, and the participation of Black women in the liberation movement.

**HIST274 History of Socialism and Communism (3)**
Discusses the socialist movement from the French Revolution to Perestroika and the demise of communism in Eastern Europe. Focuses on the writings of Fourier, Saint-Simon, Owen, Marx, Engels, Lenin, Stalin, Mao Zedong, Ho Chi Minh, Ernesto, Che Guevara, Nkrumah, Nyerere, and others.

**HIST276 Colonialism and Imperialism (3)**
Examines the ideology and practices of imperialism and colonialism including patterns of colonial government and administration, impact of colonial rule, analyses of successes, and the failures of these systems.

**HIST278 History of Women in the World (3)**
Introduces women's studies and the role of women in society over time. Explores women's involvement with the political and educational processes in selected countries in the Americas, Europe, and the Third World. Examines the ideals and issues of women of different classes, occupations, races, and ethnic groups.

**HIST279 History of the District of Columbia (3)**
Discusses the District of Columbia from its founding to the present. Emphasizes the development of social structures, forms of government, and urban patterns as these reflect changes in the local community.

**HIST305 United States Social History (3)**
Explores the rapidly changing nature of society in the United States. Concentrates on ethnic, regional, religious, and economic shifts, with special attention to immigration, migration, and urbanization.

**HIST333 Expansion of the West (3)**
Discusses the dynamics of the nation-state- and, the Industrial Revolution. Also examines the origins and results of the great wars, the rise of totalitarian systems, and the development and decline of Western imperialism.

**HIST344 Contemp. History of the Middle East (3)**
Examines the political, cultural, and social developments in the Middle East since the end of World War II.

**HIST354 History of Modern China (3)**
Examines the Confucian heritage and the Qing Empire (1644-1911). Also explores China's response to Western and imperialist challenges and the Chinese Revolution, as well as cultural changes, in the light of current Chinese scholarship and Western interpretations.

**HIST355 History of Modern Japan (3)**
Explores the political, cultural, and social development of modern Japan since the Meiji Restoration (1867). Examines the rise and fall of the Japanese Empire, and foreign and trade relations since World War II.

**HIST394 Philosophy and Methods of History (3)**
Examines theories of history and historical explanations with emphasis on the ways which historians explain the past. Covers selected topics in speculative and analytical philosophy of history interpretation. Prerequisite: Junior standing.

**HIST404 United States Intellectual History (3)**
Examines philosophical, scientific, social, and religious thought in the United States, with a selective emphasis on the its European origins and American development.

**HIST490 Selected Topics in History (3)**
Addresses selected topics in one of the following fields of history: Latin America, United States, Afro-Americans, Africa, Europe, Middle East, and Asia. Selected topics to be determined by faculty availability and student interest.

**HIST491 Research Seminar History (3)**
Required of history majors. Provides opportunities for research and writing in a field of concentration supervised by a faculty member. Pre-req.: HIST 394

## PHILOSOPHY (PHIL)

**PHIL105 Introduction to Logic (3)**
Examines the principles of correct reasoning, emphasizing ways to acquire and strengthen basic skills, including how to recognize and analyze arguments, how to distinguish between inductive and deductive arguments, and valid and invalid arguments, and how to recognize informal fallacies.

**PHIL106 Introduction to Problems in Philosophy (3)**
Introduces critical and dialectical methods in philosophy as applied to societal and cultural issues, such as knowledge, freedom, morality, happiness, rights, and beauty. Emphasizes the range of positions on any given issue and develops the ability to examine these positions in a reasoned and systematic manner.

**PHIL107 Introduction to Philosophy of Religion (3)**
Clarifies major philosophic positions regarding religion, centering on the concept of God, life after death, and

mysteries. Focuses on the unique features of religious language as compared to ordinary language, how religious concepts and claims can be evaluated, and the possibility of the rational defense of traditional religious views.

**PHIL108 Introduction to Social Ethics (3)**
Examines common theories about the nature of morality and the ways these theories can be justified. Applies theories to social problems such as abortion, sexual and racial discrimination, war, and poverty.

**PHIL109 Philosophy of Human Nature (3)**
Explores the conflicting beliefs about the nature and the purpose of human life. Examines the theories of Plato, Jesus, Marx, Freud, Sartre, Skinner, and Wilson.

**PHIL110 Critical Reasoning (3)**
Discusses the basic concepts of critical thinking, with emphasis on how to acquire and strengthen the ability to identify the components of a complex argument, how to distinguish between valid and invalid arguments, how to recognize informal fallacies, evaluate the strength of non- deductive arguments, and write critical essays.

**PHIL206 Introduction to Modern Logic (3)**
Examines the basic elements of modern deductive and inductive logic. Explores the use of "not," "and," and "if and then" operators, truth tables, proof construction, Mill's Methods of Agreement and Difference, and probabilistic reasoning.

**PHIL206 Social and Political Philosophy (3)**
Examines the origin and nature of the state, the basis of natural rights, and the tension between the individual and the state. Explores individualism versus collectivism.

**PHIL207 World Religions (3)**
Examines the basic tenets of major world religions, including similarities and differences. Designed to increase understanding and appreciation for different religions in today's global society.

# School of Engineering and Applied Sciences (SEAS)

www.udc.edu/seas, **seas_dean@udc.edu**

**Undergraduate Degrees**
Bachelor of Science
- Biomedical Engineering
- Civil Engineering
- Computer Engineering
- Computer Science
- Cybersecurity
- Information Technology
- Electrical Engineering
- Mechanical Engineering

**Graduate Degrees:**
Master of Science
- Civil Engineering
- Computer Science
- Cybersecurity
- Electrical Engineering
- Mechanical Engineering

Doctor of Philosophy in Computer Science and Engineering
- Specialization in Biomedical Engineering
- Specialization in Civil Engineering
- Specialization in Computer Science
- Specialization in Electrical Engineering
- Specialization in Mechanical Engineering

The School of Engineering and Applied Sciences prepares students for professional careers in engineering, computer science, and applied sciences. Various options are available within certain programs to allow students to meet their individual interests. The programs are designed to cultivate intellectual ability, to develop knowledge and skills, and to prepare students to think critically, analytically, and creatively. Students will graduate well prepared for further study, for entering the licensing pathway to professional engineer status, and for thriving in complex, globally interconnected careers that serve and improve society.

The School of Engineering and Applied Sciences embraces the historic and continuing missions embodied in the 1862 Morrill Act, which established the American land-grant university system. The three tenets are research, instruction, and service through the extension of public knowledge acquired through research.

We are one of only four Universities in the nation's capital providing ABET-accredited Engineering and Computer Science degrees. Moreover, SEAS' diverse and talented professors are dedicated to providing you with educational experiences and career connections that are second to none.

*Student Organizations*
There is a wide array of Student Organizations to choose from:
- National Society of Black Engineers (NBSE)
- American Society of Civil Engineers (ASCE)
- American Society of Mechanical Engineering (ASME)
- Society of Women Engineering (SWE)
- National Society of Professional Engineers (NSPE)
- Institute of Electrical & Electronics Engineering (IEEE)
- Computer Science and Robotics Club
- Association of Computing Machinery (ACM) Student Club

## Department of Computer Science & Information Technology

**http://www.udc.edu/seas/computer-science/**
**Bachelor of Science Degrees:**
- Computer Science
- Cybersecurity
- Information Technology

**Master of Science Degree:**
- Computer Science

The computer science program is accredited by the Computing Accreditation Commission (CAC) of ABET: http://www.abet.org

## Bachelor of Science in Computer Science

**Credit Statement:**
The Computer Science program requires completing a total of 120 credit hours of college-level courses in order to graduate.

**Program Educational Objectives**
Program educational objectives are broad statements that describe what graduates are expected to attain within a few years of graduation. Our graduates will:
- be proficient in the field of computer science by demonstrating success in professional careers and/or graduate studies.
- grow professionally by acquiring new skills in computing and adapting to new technologies, tools,

and methodologies to provide innovative solutions to computing problems.

- practice as responsible professionals who are mindful of ethical issues and societal needs that are inherent in the computing field.

**Student Outcomes**

The Computer Science program enables students, by the time of graduation, to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

## Requirements

**IGED Requirements (34 credits)**

**CS Program Credit Hours: 120**

**Model Plan of Study - Computer Science (BS)**

**Program Core Requirements:**

APCT 110 Intro to Programming Lecture (2)
APCT 111 Intro to Programming Lab (1)
APCT 115 Foundations of Computing[1] (3)
APCT 231 Computer Science I Lecture (3)
APCT 232 Computer Science II Lecture (3)
APCT 233 Computer Science I Lab (1)
APCT 234 Computer Science II Lab (1)
CMOP 235 Intro to Web Page Development and HTML Lecture (2)
CMOP 236 Intro to Web Page Development and HTML Lab (1)
CSCI 241 Data Structure (3)
CSCI 306 Computer Ethics and Law (3)
CSCI 308 Advanced Object-Oriented Programming (3)
CSCI 325 Organization of Programming Languages (3)
CSCI 341 Software Engineering (3)
CSCI 351 Computer Networks (3)
CSCI 410 Theory of Computing (3)
CSCI 412 Operating Systems (3)
CSCI 415 Computer Organization and Architecture (3)
CSCI 434 Analysis of Algorithms (3)
CSCI 436 Parallel and Distributed Computing (3)
CSCI 452 Database Systems Design (3)
CSCI 498 Capstone Senior Project I*[2] (3)
CSCI 499 Capstone Senior Project II*[2] (3)
CSCI XXX CS Elective Courses (15)
MATH 213 Discrete Math (3)
MATH 225 Linear Algebra (3)
MATH 381 Probability and Statistics (3)

**Approved Computer Science Electives:**

APCT 341 Advanced Web Development (3)
CSCI 251 Assemblers & Systems Lecture (3)
CSCI 253 Assemblers & Systems Lab (1)
CSCI 315 Unix and System Programming (3)
CSCI 345 Human Computer Interaction (3)
CSCI 352 Network Security*[1] (3)
CSCI 353 Information Security *[1] (3)
CSCI 398 Advanced Applied Programming (3)
CSCI 414 Introduction to Artificial Intelligence (3)
CSCI 417 Functional Programming (3)
CSCI 421 Machine Learning (3)
CSCI 422 Introduction to Deep Learning (3)
CSCI 424 Introduction to Compiler Design (3)
CSCI 435 Digital Image Processing (3)
CSCI 441 Digital Forensics*[1] (3)
CSCI 453 Secure Software Engineering*1 (3)
CSCI 454 Computer Graphics (3)
CSCI 455 Cryptography*[1] (3)
CSCI 456 Visualization (3)
CSCI 478 Big Data Analysis (3)
CSCI 490 Special Topics (3)
CSCI 497 Independent Study (3)

[1] This course satisfies IGED250
[2]These capstone courses satisfy the requirements of IGED "Frontier Capstone" Courses.

**Electives**

Courses listed in this section can be used by students in designing a program which meets their specific needs and interests.

Students may concentrate on one of five areas - theoretical computer science, computer design and system software, specialized applications, security, and intelligent systems. Students are required to take at least one security related course among the following electives.

| **Approved Computer Science Electives:** | | |
|---|---|---|
| APCT 341 | Advanced Web Development | 3 |
| CSCI 251 | Assemblers & Systems Lecture | 3 |
| CSCI 253 | Assemblers & Systems Lab | 1 |
| CSCI 315 | Unix and System Programming | 3 |
| CSCI 345 | Human Computer Interaction | 3 |
| CSCI 352 | Network Security*1 | 3 |
| CSCI 353 | Information Security *1 | 3 |
| CSCI 398 | Advanced Applied Programming | 3 |
| CSCI 414 | Introduction to Artificial Intelligence | 3 |
| CSCI 417 | Functional Programming | 3 |
| CSCI 421 | Machine Learning | 3 |
| CSCI 422 | Introduction to Deep Learning | 3 |
| CSCI 424 | Introduction to Compiler Design | 3 |
| CSCI 435 | Digital Image Processing | 3 |
| CSCI 441 | Digital Forensics*1 | 3 |
| CSCI 453 | Secure Software Engineering*1 | 3 |
| CSCI 454 | Computer Graphics | 3 |
| CSCI 455 | Cryptography*1 | 3 |
| CSCI 456 | Visualization | 3 |
| CSCI 478 | Big Data Analysis | 3 |
| CSCI 490 | Special Topics | 3 |
| CSCI 497 | Independent Study | 3 |

[1]Students are required to take at least one security course among the security related electives.

## Bachelor of Science in Cybersecurity

**Credit Statement:**
The Cybersecurity program requires completing a total of 120 credit hours of college-level courses in order to graduate.

**Student Outcomes**
The Cybersecurity program enables students, by the time of graduation, to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.
- Apply security principles and practices to maintain operations in the presence of risks and threats.

### Requirements

**IGED Requirements (34 credits)**

**Cybersecurity Program Credit Hours: 120**
**Model Plan of Study - Cybersecurity (BS)**

**Program Core Requirements:**
APCT 110 Intro to Programming Lecture (2)
APCT 111 Intro to Programming Lab (1)
APCT 231 Computer Science I Lecture (3)
APCT 232 Computer Science II Lecture (3)
APCT 233 Computer Science I Lab (1)
APCT 234 Computer Science II Lab (1)
CYSE 100 Introduction to Information Security *1 (3)
CYSE 130 IT Systems Component Security (3)
CYSE 110 Ethics in Cybersecurity and Cyber Law (3)
CYSE 210 Computer Data Communication, Networking Protocols and Management (3)
CYSE 220 Introduction to Cryptography (3)
CYSE 230 Introduction to Computer and Mobile Forensics (3)
CYSE 275 Principles of Cybersecurity and Security Management (3)
CYSE 310 Cybersecurity Planning, Operations, and Incident Response Management (3)
CYSE 320 Reverse Engineering and Malware Analysis (3)
CYSE 410 Threat Intelligence and Cyber Defense (3)
CYSE 420 Cloud Computing Security and Challenges (4)
CYSE 430 Secure Software Engineering (3)
CYSE 440 Principle and Practices of Network Defense and Applied Network Security Monitoring (4)
CYSE 465 Advanced Cryptography (3)
CSCI 241 Data Structure (3)
CSCI 352 Network Security (3)
CSCI 414 Introduction to Artificial Intelligence (3)
CSCI 412 Operating Systems (3)
MATH 185 Elementary Statistics (3)
MATH 213 Discrete Math (3)

CYSE 498 Cybersecurity Capstone I*[2] (3)
CYSE 499 Cybersecurity Capstone II*[2] (3)
CSCI XXX CS Elective Courses (6)
CYSE XXX CYSE Elective Courses (6)

**Electives**
Courses listed in this section can be used by students in designing a program which meets their specific needs and interests.

**Approved Computer Science Electives:**
CSCI 308 Advanced Object-Oriented Programming (3)
CSCI 315 Unix and System Programming (3)
CSCI 342 System and Network Administration (3)
CSCI 341 Software Engineering (3)
CSCI 343 Database Administration (3)
CSCI 345 Human Computer Interaction (3)
CSCI 410 Theory of Computing (3)
CSCI 412 Introduction to Operating Systems (3)
CSCI 434 Analysis of Algorithms (3)
CSCI 452 Database Systems Design (3)

**Approved Cybersecurity Electives:**
CYSE 355 Cybersecurity Tools and Risk Management (3)
CYSE 435 Securing Cyber Physical System (4)
CYSE 455 Cybersecurity and Artificial Intelligence (3)
CYSE 470 Mobile Device and Wireless Security (3)
CYSE 480 Advanced Information Security Assurance and Risk Control (3)
CYSE 460 Special Topic in Cybersecurity (Independent Research Study) (3)

[1] This course satisfies IGED250
[2]These capstone courses satisfy the requirements of IGED "Frontier Capstone" Courses.

# Information Technology (IT)

**Credit Statement**
The BS program in Information Technology requires completing a total of 120 credit hours of college-level courses in order to graduate.

**Student Outcomes**
The Information Technology program enables students, by the time of graduation, to:

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline.
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing-based systems.

**Model Plan of Study - Information Technology (IT)**

**Course Requirements for the Major**

**IGED Requirements (34 credits)**

**Program Core Requirements**

APCT 110 Introduction to Programming Lecture (2)
APCT 111 Introduction to Programming Lab (1)
APCT 115 Foundations of Computing[1] (3)
APCT 231 Computer Science I Lecture (3)
APCT 232 Computer Science II Lecture (3)
APCT 233 Computer Science I Lab (1)
APCT 234 Computer Science II Lab (1)
CMOP 131 Computer Networking Fundamentals Lecture (3)
CMOP 132 Computer Networking Fundamentals Lab (1)
CMOP 231 Wireless Local Area Networks Lecture (2)
CMOP 232 Wireless Local Area Networks Lab (1)
CMOP 235 Intro to Web Page Development and HTML Lecture (2)
CMOP 236 Intro to Web Page Development and HTML Lab (1)
CSCI 306 Computer Ethics and Law (3)
CSCI 308 Advanced Object-Oriented Programming (3)
CSCI 315 Unix and System Programming (3)
CSCI 342 System & Network Administration (3)
CSCI 343 Database Administration (3)
CSCI 345 Human Computer Interaction (3)
CSCI 353 Information Security (3)
CSCI 441 Digital Forensics (3)
CSCI 452 Database Systems Design (3)
CSCI 498 Capstone Senior Project I*[2] (3)
CSCI 499 Capstone Senior Project II*[2] (3)
MATH 185 Elementary Statistics I (3)
IT Electives (24)

*[1]This course satisfies IGED250*
*[2]This capstone course is expected to satisfy the requirements of the general education "Frontier Capstone" courses.*

| Approved Information Technology Electives | | |
|---|---|---|
| APCT 341 | Advanced Web Development | 3 |
| CSCI 311 | Computer Organization Lecture | 3 |
| CSCI 313 | Computer Organization Lab | 1 |
| CSCI 317 | Multimedia Programming & Design | 3 |
| CSCI 341 | Software Engineering | 3 |
| CSCI 351 | Computer Networks | 3 |
| CSCI 352 | Network Security | 3 |
| CSCI 412 | Operating Systems | 3 |
| CSCI 415 | Computer Organization and Architecture | 3 |
| CSCI 451 | Advanced Network Management | 3 |
| CSCI 453 | Secure Software Engineering | 3 |
| CSCI 455 | Cryptography | 3 |
| CSCI 490 | Special Topics | 3 |
| CSCI 497 | Independent Study | 3 |

All IT students are allowed to take all CS courses as the part of IT electives if they satisfy the pre-requisite requirements of the courses. The IT students are also allowed to take 3 courses (9 credits) from a chosen area (Business Management, Multimedia, and Criminal Justice) in consultation with the student's Advisor and Chair.

## COURSE DESCRIPTIONS: APPLIED COMPUTING (APCT), COMPUTER SCIENCE & INFORMATION TECHNOLOGY (CMOP) (CSCI) CYBERSECURITY (CYSE)

**APCT 110/111 Introduction to Programming**
Introduction to program development using a programming environment. Topics covers a basic understanding of programming concepts and constructing numbers, strings, assignments, sequential vs. selective execution, nesting, loops, functions, arrays, reference parameters, file streams, etc.

**APCT 115 Foundations of Computing (3)**
Survey of computer science topics. Features applied concepts of iteration, induction, and recursion; functions and relations; propositional logic and predicate logic; graph and tree data structures; Boolean and computer logic; finite state machines; and algorithmic problem solving.

**APCT 231/233 Computer Science I Lec/Lab (3/1)**
Covers algorithm and program development using a higher-level programming language (i.e., Java). Use of control structures, functions, and arrays. Objects are introduced.

**APCT 232/234 Computer Science II Lec/Lab (3/1)**
Continuation of APCT 231/233. Emphasis on the object oriented programming (i.e., Java) Topics include multi-dimensional arrays, searching and sorting algorithms, data abstraction, file operations including random access files, classes, and introduction to linked lists, stacks and queues. Prerequisite: APCT 231/233.

**APCT 341 Advanced Web Development (3)**
This course will focus on introducing advanced web programming language such as PHP, JavaScript, ASP .Net, or CodFusion. It mainly focuses on understanding advanced web-development techniques that use databases to create web contents. Prerequisite: CMOP 235/236.

**CMOP 235/236 Introduction to WebPage Development and HTML Lec/Lab (2/1)**
This course in computer science develops basic skills in webpage development using the HTML programming language. It introduces the process of developing a webpage by explaining two broadly known programming languages such as HTML, XHTML, CSS, and JavaScript. Prerequisite: APCT 231/233.

**CMOP 131/132 Computer Networking Fundamentals Lec/Lab (3/1)**
Examines local area networking concepts through discussions on connectivity, communications and other networking fundamentals. Prepares students to complete industry network fundamental certification exams.

**CMOP 231/232 Wireless Local Area Networks Lec/Lab (2/1)**
Fundamental concepts of Local Area Network architecture and protocols. Topics include (1) basic concepts needed to design, configure, and implement Local Area Networks and (2) the evolution of Ethernet, Fast Ethernet, Gigabit Ethernet, ATM and wireless LANs (WiFi). Pre-req: CMOP 131/132.

**CSCI 135 Scientific Programming (3)**
Through this course, students will learn how to solve their computation problems in C/C++-language using numerical methods. Students in the IT or CS programs are not allowed to take this course.

**CSCI 241 Data Structures (3)**
This course covers the design and implementation of data structures including arrays, stacks, queues, linked lists, binary trees, heaps, balanced trees and graphs. Other topics include sorting, hashing, memory allocation, and garbage collection. Prerequisite: APCT 231/233.

**CSCI 251/253 Assemblers & Systems Lec/Lab(3/1)**
Introduces assembly and machine level software concepts and applications. It will include the understanding of instruction sets, addressing techniques, input/ output programs, data representations, and logic. Prerequisite: APCT 231/233.

**CSCI 306 Computer Ethics and Law (3)**
A survey course that reviews implications and impacts of computing technology throughout the world.
The course examines the policies that relate to the use of computer technology, such as privacy and national security, shared data and information, copyright and intellectual property, legislative and constitutional issues, changing labor force composition, and professional ethics. Prerequisite: APCT 231/233.

**CSCI 308 Adv. Object-Oriented Programming (3)**
This is an advanced programming that focuses on introducing object-oriented programming language (i.e., C++). Specially, it covers object-oriented principles such as classes, interfaces, inheritance, and polymorphism. Also, various programming concepts such as program structure, block, storage types, console and file I/O, functions, arrays, strings, pointers, call-by-reference, call-by-value, and dynamic memory allocation will be discussed. Prerequisite: APCT 232/234.

**CSCI 315 Unix and System Programming (3)**
This course focuses on introducing tolls for program development and efficient use of a workstation environment. Topics include UNIX commands, emacs environment, X-windows, separate compilation of large projects, user defined libraries, make files, intelligent debugging, perl, HTML, rcs/sccs, tcl/tk and assorted additional topics. Prerequisite: APCT 232/234.

**CSCI 317 Multimedia Programming & Design (3)**
This course will address the topics of multimedia programming and design such as scripting language, image editing software, the development of games, and dynamic applications. Prerequisite: APCT 232/234.

**CSCI 325 Organization of Programming Lang. (3)**
The study of the organization of programming languages, especially the run-time behavior of programs; formal study of programming languages specification and analysis; continuation of the development of problem analysis and solution, and of programming skills. Prereq: CSCI 241.

**CSCI 341 Software Engineering (3)**
Explores issues in design, development, documentation, coding and implementation of large software projects. The tools and techniques required for all stages are addressed. The functional requirements and decomposition of model problems are discussed. Validation, test and maintenance of large software systems are also covered. Prerequisite: APCT 232/234.

**CSCI 342 System & Network Administration (3)**
This course covers system administration, network planning, routine system maintenance, firewalls and security, Internet connectivity, system optimization, troubleshooting and scripting languages. Prerequisite: CMOP 131/132.

**CSCI 343 Database Administration (3)**
This course introduces database management systems design philosophy and design considerations for satisfying both availability and integrity requirements.
Prerequisite: APCT 232/234.

**CSCI 345 Human Computer Interaction (3)**
This course provides an introduction to the field of human-computer interaction (HCI) that concentrates on the study of interaction between human (users) and computers. Prerequisite: Junior standing or above.

**CSCI 351Computer Networks (3)**
This course aims to provide data communication fundamentals and the principles governing computer communication networks. It provides an understanding of the components of networks, how they are connected and the basics in the design and implementation of network protocols.
A number of techniques and protocols with respect to addressing, subnetting, routing, multicasting, and the interconnection of heterogeneous networks are discussed. Prereq: CMOP 131/132 or CSCI 241.

**CSCI 352 Network Security (3)**
This course provide a comprehensive overview of fundamental network security concepts, techniques, and issues such as types of attacks computers/networks are vulnerable to, attacker profiles, and hardware/software defense solutions available. Prerequisite: CMOP 131/132.

**CSCI 353 Information Security (3)**
This course provides an in-depth understanding of general information security fundamentals, organization and operation security procedures and policies, handling of security incidents, security audit principles and practices, security ethics, and computer forensics. Prerequisite: Junior standing or above.

**CSCI 398 Advanced Applied Programming (3)**
The course explores developing applied applications for various computing environments. This course will cover programming language(s) not covered in CS I and CS II.

**CSCI 410 Theory of Computing (3)**
Introduction to the theory of computing including: Regular languages, finite automata, transition graphs, Kleene's theorem. Finite automata with output. Context-free languages, derivation trees, normal form grammars, pumping lemma, Turing machines, and more. Prereq: CSCI 241, MATH 152/156, or equivalent, MATH 213.

**CSCI 412 Operating Systems (3)**
This course introduces concepts of operating systems (including process, storage, and processor management techniques) and performance and security topics.
Specifically, it concentrates on the kernel aspects of multi-tasking operating systems with the emphasis being on practical implementations. Prerequisite: CSCI 241.

**CSCI 414 Introduction to Artificial Intelligence(3)**
This course will introduce the basic principles, techniques, and applications of Artificial Intelligence. The course also touches on more recent developments in natural language processing, visual processing, machine learning, robotics, and philosophical foundations. Prerequisite: CSCI 241.

**CSCI 415 Computer Org. and Architecture (3)**
This course provides a comprehensive coverage of the entire field of computer design updated with the most recent research and innovations in computer structure and function. Prerequisite: CSCI 241.

**CSCI 417 Functional Programming (3)**
Covers functional programming language. It approaches programming as the construction of definitions for pure functions that act upon immutable data structures. The course focuses on problem solving techniques, algorithms, data structures, and programming notations appropriate for the functional approach. Prerequisite: APCT 232/234.

**CSCI 421 Machine Learning (3)**
The veracity, velocity, volume and variety of data available since the early 90's has posed a major challenge to the traditional data analytical methodologies. Machine learning has the capability of making a computer to 'sniff' through these large piles of data, learns its pattern and discovers hidden knowledge. Thus, ML enhances accurate prediction, pattern recognition and knowledge discovery. This class will a combination of the theoretical and empirical approach to machine learning paradigms. Prereq: APCT 232/234.

**CSCI 422 Introduction to Deep Learning (3)**
Deep Learning is an emerging field of computer science that is built on the success of machine learning. It uses a high-level abstraction to improve the predictive capability of machine learning. This class will a combination of the theoretical and empirical approach to deep learning paradigms. Prerequisite: APCT 232/234, MATH 225, and MATH 152/156

**CSCI 424 Introduction to Compiler Design (3)**
Studies programming language design, error detection, and recovery techniques. Examines lexical analysis, syntactical analysis, symbol table handling, semantic analysis, code generation, and code optimization, compiler-compilers Prereq: CSCI 325.

**CSCI 434 Analysis of Algorithms (3)**
Introduction to theoretical algorithm analysis, including study of growth rates of functions, worst-case and average behavior, and divide and conquer. Topics will include graphs, strings and dynamic programming. Prerequisite: CSCI 241 and MATH 152/156 or equivalent.

**CSCI 435 Digital Image Processing (3)**
This course will address a theoretical and practical introduction to the area of digital image processing including image representation, formats, segmentation, edge detection, convolution, compression, etc. Prereq: Junior standing or above.

**CSCI 436 Parallel and Distributed Computing (3)**
This course covers the fundamental concepts of multithreaded, parallel and distributed computing by emphasizing the practice and application of parallel systems, using real-world examples. Prerequisite: CSCI 308.

**CSCI 441 Digital Forensics (3)**
This course will teach the concepts in digital/computer forensic analysis and Internet Investigations. Specifically, this course focuses on understanding various mechanisms to detect cyber-crime, preservation of evidence, government regulations, etc. In addition, legal and technical aspects of study to achieve a balance similar to that encountered during common cases in which computer forensics are employed. Prerequisite: APCT 232/234.

**CSCI 451 Advanced Network Management (3)**
This course will address the principles of network architecture and layering, multiplexing, network addressing, routing and routing protocols. Prerequisite: CSCI 342.

**CSCI 452 Database Systems Design (3)**
This course covers database design, entity-relationship and relational model, relational algebra, query language SQL, storage and file structures, query processing, database system architectures. Prerequisite: CSCI 241 or CSCI 343.

**CSCI 453 Secure Software Engineering (3)**
This course provides a detailed explanation of common programming errors and describes how these errors can lead to software systems that are vulnerable to exploitation. The course concentrates on security issues intrinsic to software systems. Prerequisite: CSCI 341.

**CSCI 454 Computer Graphics (3)**
This course provides an introduction to the theory and practice of computer graphics. Students are required to know programming in C or C++. Basic mathematics (geometry and transformation) and basic linear algebra (such as matrix multiplication) are also required skill sets.
In this course, the standard OpenGL library is going to be used to illustrate graphics theories and to show practices of computer graphics applications. Prerequisite: CSCI 241 and MATH 225.

**CSCI 455 Cryptography (3)**
This class will provide the student a basic understanding of cryptography through algorithms. In addition, this class will cover the necessary materials including: data structures, basic algorithms, computational complexity, elementary number theory, and basic cryptography including private key cryptosystems and public key cryptosystems. Prerequisite: Senior standing or above.

**CSCI 456 Visualization (3)**
This course provides understanding of general visualization techniques, the differences between scientific visualization, information visualization, and visual analytics, visual perception and cognitive issues when creating visual elements, and evaluation methods. Prerequisite: CSCI 454.

**CSCI 478 Big Data Analytics (3)**
This course provides understanding of big data analytics approaches including hadoop, mapreduce and data mining on big data. Prerequisite: CSCI 308.

**CSCI 495 Senior Seminar (1)**
This course is designed as a capstone experience to identify the cutting edge technologies and a broader context for knowledge in the field of Computer Science & Information Technology. Students are required to do in-class presentations by reading current research or survey papers. Prerequisite: 90 credit hours or more.

**CSCI 497 Independent Study (3)**
This course provides an opportunity for students get research experience on the analysis of selected problems or topics in computer science and information technology. Topic must be arranged with instructor and approved by department chair before registering. Notes: Can be repeated if topics substantially different with a maximum 6 credits. Prerequisite: CSCI 308 and 90 credit hours or more.

**CSCI 498 Senior Project I (3)**
Students learn emerging topics and vocabularies in the discipline and problem-solving skills through capstone projects. This course teaches students how to continuously explore new ideas through their post-graduation life. Prerequisite: 90 credit hours or more.

**CSCI 499 Senior Project II (3)**
Students learn project management skills, intensive writing skills, and professionally present the project results of Senior Project I. Prerequisite: 90 credit hours or more.

**CYSE 100 Introduction to Cybersecurity and Information Assurance (3)**
This course helps students take a proactive, realistic, and holistic approach to assess cyber threats and implementing countermeasures. It provides students with basic knowledge and skills in the fundamental theories and practices of cybersecurity. This course also provides a basic introduction to all aspects of cybersecurity, including core concepts, technology and skills, latest attacks and countermeasures, policy and procedures, communications security, network security, security management, legal issues, political issues, and technical issues.

**CYSE 110 Ethics in Cybersecurity and Cyberlaw (3)**
This course offers an accessible introduction to the topic of cybersecurity ethics consisting of three parts. Part I introduces the field of ethics, philosophy, and philosophy of science, ethical frameworks, and the notion of ethical hacking. Part II applies these frameworks to issues within the field of cybersecurity, including privacy rights, intellectual property and piracy, surveillance, and cyber-ethics in relation to military affairs. Part III concludes by exploring current codes of ethics used in cybersecurity.

**CYSE 130 IT Systems Components Security (3)**
This course provides students with a basic understanding of an information technology system's core components and their roles in system operation. It also covers high-level introduction of endpoint protection, storage devices, system architectures, alternative environments, network security components, intrusion detection and prevention systems, incident response, software security, configuration management. It also focuses on vulnerability scanning,

vulnerability windows, physical and environmental security concerns, Internet of Things, and cyber defense.

**CYSE 200: Network Security (3)**
This course provides a comprehensive overview of fundamental network security concepts, techniques, and issues such as types of cyber-attacks, attacker profiles, and hardware/software defense solutions. It includes fundamental principles and basic concepts of data communications and networking, the various network components. It also enables students to build a comprehensive security strategy and differentiate between intrusion prevention and intrusion detection systems. Prerequisite: CYSE 100 and CYSE 130

**CYSE 210: Computer Data Communication, Networking Protocols and Management (3)**
This course covers topics closely related to the Computer Network Fundamentals and more importantly it will prepare the students for the COMPTIA Network+ Certification. This course will enable the students to understand the TCP/IP protocols and their functions in addition to the lab sessions where they will have a hands-on experience on how to create, review, update, and troubleshoot different network topologies, and secure the network infrastructure. The lab sessions will also learn the command line network administration tools, configuring and setting different network security tools. Moreover, they will be able to learn and apply the best network security policies and practices to support the business continuity plans. Prerequisite: CYSE 100

**CYSE 220: Introduction to Cryptography (3)**
This course is an introduction to modern cryptography describing basic principles of cryptography and general cryptanalysis. It covers the concepts of symmetric encryption and authentication, as well as public key encryption, digital signatures, and key establishment. It also includes common examples and uses of cryptographic schemes, including the AES, RSA-OAEP, the Digital Signature Algorithm, and the basic Diffie-Hellman key establishment protocol.

**CYSE 230 Computer and Mobile Forensic Investigation (3)**
This course presents methods to properly conduct a computer forensics investigation beginning with a discussion of ethics, while mapping to the objectives of the International Association of Computer Investigative Specialists (IACIS) certification. The provides an overview of digital investigations and data recovery with emphasis on data presentation techniques and chain-of-evidence procedures. Current computer forensics tools are presented along with controls required for digital evidence acquisition. Prerequisite: CYSE 100

**CYSE 275: Principles of Cybersecurity and Security Management (3)**
This course covers the policies and practices adopted to prevent and monitor unauthorized access, misuse, modification, or denial of a computer network and network-accessible resources. It includes the topics related to Administering a Secure Network, understanding the basic and core concepts of information security, identifying different types of cyber-attacks including, Malware and Social Engineering Attacks, Networking and Server Attacks. Prerequisite: CYSE 100 and CYSE 210

**CYSE 310 Cybersecurity Planning, Operation, and Incident response Management (3)**
This course addresses the basic cybersecurity planning techniques, the different components of cybersecurity operations, the purpose of incident response management systems. Moreover, it enables the students to learn the application of cybersecurity planning, the main properties of cybersecurity Operation, and how Incident management helps in resolving issues related to different cyber threats in the daily operation and administration of enterprise computer systems. It also describes ethical considerations, as per the (ISC)2 code of ethics guidelines and provides a clear understanding of the information security principles and how an SSCP candidate must be able to apply them in all situations. Additional topics to be covered include privacy, least privilege, non-repudiation, and the separation of duties. Prerequisite: CYSE 100 and CYSE 210

**CYSE 320: Reverse Engineering and Malware Analysis (3)**
This course offers a systematic approach to reverse engineering with plenty of hands-on exercises and real-world examples. Students will use the reverse engineering tools to thwart potential threats to stop hackers in their tracks. This course also covers the static and dynamic analysis of malware, Malware functionalities and Persistence, Code injections and hooking, Malware Obfuscation Techniques. Students will learn how to hunt and detect Malwares using Memory forensics. This course also covers the static and dynamic analysis of malware, Malware functionalities and Persistence, Code injections and hooking, Malware Obfuscation Techniques. Students will learn how to hunt and detect Malwares using Memory forensics. Prerequisite: CYSE 100 and CYSE 210

**CYSE 355 Cybersecurity Tools and Risk Management (3)**
This course provides basic introduction to cybersecurity tools. It covers the properties of cybersecurity tools, types,

and motives of cyber-attacks. This course also describes the security life cycle, framework, and different security models. It also includes research cybersecurity issues in the modern era. Prerequisite: CYSE 100

**CYSE 410: Threat Intelligence and Cyber Defense (3)**
This course prepares students to be aware of network attack strategies and common countermeasures and prepare students to use various penetration testing tools to analyze networks for vulnerabilities. It also enables the students to exploit vulnerabilities and weaknesses in various systems and Knowledge of these vulnerabilities also helps students to understand how to counter these vulnerabilities and improve network security. This Course prepares the students to be a certified ethical hacker (CEH) and penetration tester. Prerequisite: CYSE 320

**CYSE 420 Cloud Computing Security (3)**
This course provides an overview of cloud computing essentials such as cloud computing models, services, the establishment of cybersecurity fundamentals, and data segregation security. It also covers and discusses cloud security and privacy, trust baselines, and the major components of cloud infrastructure. Moreover, it focuses on risk analysis by describing how to manage risk on the cloud, the role of risk management on cloud security, and securing cloud risk management processes. It finally discusses the best practices to secure critical infrastructure, including cloud-based access control policies, key management, and security architectures. Prerequisite: CYSE 100

**CYSE 430 Secure Software Engineering (3)**
This course will enable students to identify and understand common software vulnerabilities and threats by exposing them to secure programming concepts, techniques, and preventative measures. Students will get some hands-on experience in the effective use of design patterns for secure code. This course is also designed to enable a student to take a proactive approach to software security. This course also provides expert perspectives and techniques to build security-compliant software by considering threats and vulnerabilities early in the development cycle. Additional topics to be covered include risk management and security testing.

**CYSE 435 Securing Cyber Physical System**
This course which covers different security mechanisms related to Cyber-Physical Systems, and their security. The course discusses whether a CPS's structure changes the security requirements of those present in the areas of Power Systems, Transportation, Embedded Systems, and the Internet of Things (IoT). The course is intended to serve students with a background in electrical and computer engineering. Basic programming skills are expected. Moreover, this course covers specific areas related to Design for Cyber Physical Systems Security (CPSS), breaches and enforcement, standardization, best practices, policies, security threat and protection-in-depth modeling, vulnerability and risk assessment for CPSS,privacy and legal issues, CPSS and cyberwarfare, practical experimentation with industrial control systems, Internet-of-Things (IoT) for home, and IoT for healthcare.

**CYSE 440 Practices of Network Defense and Applied Network Security Monitoring (3)**
This course equips students with the right tools for data collection, detecting malicious activity, and performing the intrusion detection analysis. This course follows the three stages of the network security monitoring cycle: collection, detection, and analysis. This course will describe how to define multiple analysis frameworks that can be used for performing network security monitoring investigations in a structured and systematic manner.

**CYSE 455 Cybersecurity and Artificial Intelligence**
Artificial intelligence (AI)—when leveraged with preparation and guardrails—is a game-changing approach to solving complex problems in cybersecurity. In this course, we learn what is artificial intelligence (AI)? What does AI mean for Cyber Security? And How can we harden traditional cybersecurity methodologies using artificial intelligence? and finally we learn how can politics benefit from the integration of AI and Cyber Security? This is a course designed to answer the above three questions. In this course, a mix of key AI technologies will be introduced to support the understanding of the decision-making process when cyber security is concerned in relation to politics. The course will address key AI technologies including machine learning and natural language processing in an attempt to help in understanding their role in cyber security and the implications of these new technologies to the world of politics. AI deficiently will complement and strengthen the cyber security practices and will improve their applications in enhancing our security.

**CYSE 460 Special Topic in Cybersecurity (Independent Research Study)**
An independent research course "should be designed as original research and practice in presenting the results of an investigation". This pursuit must culminate in the student's own contribution to a discipline, whether in the form of fully supported conclusions or in the form of a creative effort. In other words, the goal of independent research is to answer a question, not simply to gather information. This course will allow students to work with their research advisers by selecting an emerging cybersecurity related topic

and write a research paper that could be ready for conference presentation.

**CYSE 465 Advanced Cryptography**
This course introduces students to the compelling and evolving field of cryptography and network security. In an age of viruses and hackers, electronic eavesdropping, and electronic fraud on a global scale, security is paramount. The purpose of this course is to provide a practical survey of both the principles and practice of cryptography and network security. This course will address both network security capability, network security technology, and the practice of network security: practical applications that have been implemented and are in use to provide network security using different encryption and decryption techniques.

**CYSE 470 Mobile Device and Wireless Security**
This course appraises vulnerabilities and threat vectors associated with Mobile Computing Devices. This course contains a specific emphasis on mitigation techniques including security configurations as well as security software. Topics will include the following: mobile computing overview, wireless communications infrastructure vulnerabilities, wireless communications infrastructure vulnerabilities mitigation techniques, mobile platform vulnerabilities, mobile platform vulnerabilities mitigation techniques, mobile app vulnerabilities, mobile app vulnerabilities mitigation techniques, mobile device vulnerabilities, mobile device vulnerabilities mitigation techniques and organizational mobile device security policy requirements.

**CYSE 480 Advanced Information Security Assurance and Risk Control (3)**
This course provides the fundamental broad concepts reviews of the entire field of information security and assurance. The purpose of the course is to provide students with a comprehensive overview of the field of information security assurance and risk control. This course covers different security models and frameworks, risk management, access control mechanisms, understanding and implementation of intrusion detection and protection tools. This course also discusses and describe the underlying foundations of modern cryptosystems, examining both security personnel and security of personnel, and describing the ongoing technical and administrative evaluation and maintenance of the information security system.

**CYSE 498 Cybersecurity Capstone I (3)**
This course covers the first part of the Cybersecurity Capstone course work. Students are expected to work with their project advisor (instructor) to come up with a cybersecurity project topic, prepare a white paper of their project review, project plan, design, and the presentation of prototype, and the direction and expectation of the remaining project work.

**CYSE 499 Cybersecurity Capstone II (3)**
This course covers the second and major part of the Cybersecurity Capstone course work and it is the continuation of CYSE 498. Students are expected to work with their project advisor (instructor) to complete the cybersecurity project by discussing their research result, achievement, challenges, limitations, any other future work. They are expected to submit the final research paper.

## Master of Science in Computer Science (CS)

The CSIT Department has a graduate program in computer science which leads to the Master of Science in Computer Science (CS) degree. The program is offered at the University of the District of Columbia's Van Ness (main) campus. The CS program is tailored to meet the needs of traditional domestic and international students as well as working professionals in the greater Washington, DC, area. The program emphasizes a practitioner-oriented curriculum which includes advanced algorithms, network security, artificial intelligence, computer graphics, image processing, software systems, and database. The program offers a thesis option and a non-thesis option.

**All students (U.S. and international) must submit the following documents if they wish to be considered for admission into the CS Program:**

- Completed/signed application form
- Non-refundable application fee given in the application form
- Official transcripts from each college or university attended
- A 500-word statement about the applicant's academic and professional goals, research interests, relevant prior experience, motivation for graduate study in CS
- Graduate Record Examination (GRE) Basic test scores
- Two professional references

Please check the university website for detail at
http://www.udc.edu/admissions/graduate_students

**International students** must also submit TOEFL [Test of English as a Foreign Language] scores and test scores on the advanced portion of the GRE [Graduate Record Examination] as part of their application. It is the policy of the graduate admissions committee in the CSIT department to carefully consider every applicant's previous academic and professional qualifications, test scores and achievements before an admission decision is made.

Students admitted into the graduate program may start either in the fall semester or the spring semester. Applicants accepted for graduate study will be informed in writing, at the time of admission, whether they need to enroll in background courses and/or prerequisites requiring completion before commencing their graduate studies. Each student admitted into the program will be assigned a graduate advisor and the student is responsible for discussing any special needs they may have with their advisor. Please note that, unless otherwise stipulated, every course in the CS program carries 3 credits.

**CS Graduation Requirements:**
In order to obtain the CS degree, students must successfully complete a minimum of 30 graduate credit hours (10 courses) in computer science with a grade of B or better in each of the courses. Students receiving grades lower than a B in any course will have to retake the course and obtain a grade of at least a B. Students must complete all program requirements within six years of their initial enrollment in the program.

All students must take at least four graduate computer science (CS) core courses (12-cr hours). Students who choose the thesis option take four graduate CS electives (12-cr hours) and 6 thesis credit hours (counts as two graduate electives of CSCI 600). Students in the non-thesis option take five graduate (15-cr hours) CS electives and one master's project course (CSCI 599 Master's Project).

Students in the thesis option must find a thesis advisor in the department based on their interests in order to comply with the thesis submission requirements of the UDC Graduate School. Students in the non-thesis option wishing to do a special project as part of their program (CSCI-599) will need a project supervisor (faculty member).

Qualified students with little education in Computer Science at the undergraduate level can be accepted into the program based on the graduate faculty's decision; however, such students must successfully complete a sequence of background or migration courses with a grade of B or better before they can enroll in the regular graduate CS courses. No credit will be given for these background courses toward the CS degree.

**Minimum Credit Hour Requirement: 30 in CS (10 courses)**
Grade Requirement: B or better in each of the courses
Time Period Requirement: within 5 years from the first enrolment.
Course Requirements:
4 core courses (12 credit hours) plus
4 elective courses (12 credit hours) and 6 thesis credits (Thesis option) or
6 elective courses (18 credit hours) (Non-Thesis option)

**Model Plan of Study - Computer Science (CS)**

**List of Core Courses**

CSCI 504 Algorithm Design and Analysis
CSCI 505 Foundations of Computer Architecture
CSCI 506 Principles of Operating Systems
CSCI 507 Principles of Database Systems
CSCI 508 Principles of Data Communication Networks
CSCI 509 Foundations of Software Engineering
CSCI 510 Principles of Artificial Intelligence

**Graduate Writing Proficiency Requirement**

## GRADUATE COURSE DESCRIPTIONS: COMPUTER SCIENCE (CSCI)

**CSCI 504 Design and Analysis of Algorithms (3)**
Focuses on the design and analysis of algorithms to solve various classes of computational problems.
Algorithmic techniques to be studied include divide-and-conquer, dynamic programming, greedy methods, amortized analysis, branch-and-bound, randomizing, and backtracking.

**CSCI 505 Foundations of Computer Architecture (3)**
The internal structure and operation of modern computer systems is examined in this course.
Topics to be discussed include the design and operation of the ALU, FPU, and CPU; micro programmed control vs. hardwired control, pipelining, RISC vs. CISC machines, and various memory systems including caches and virtual memory; An introduction to parallel and vector processing, multiprocessor systems and interconnection networks will also be presented. System performance will also be addressed.

**CSCI 506 Principles of Operating Systems (3)**
In this course theoretical and implementation aspects of operating system design are presented from both developer and user perspectives. Parallelism or concurrency aspects are explained using the concepts of process management, synchronization, deadlocks, job and process scheduling. Techniques of real and virtual storage management are covered for a variety of processing environments. Students design simulated operating system components and implement using a high-level language.

**CSCI 507 Principles of Database Systems (3)**
Focuses on theoretical and design aspects of database management system software.

Topics include the entity-relationship model, database system architectures, data models, and file organization and access methods. A variety of database models including the relational, object-oriented and network models will be discussed. Other topics include normal forms, concurrency management, query languages and query optimization.

**CSCI 508 Principles of Data Communications Networks (3)**
Provides a unified treatment of data communications networks from the perspective of data communication principle, components and services, line control techniques and network requirements and design.
Topics include transmission principles and media, data encoding and channel capacity, modems and modulation techniques, error and line control techniques, protocols, data compression techniques, switching technologies, common carriers' services and facilities and regulatory requirements. Prerequisites: graduate student standing with no deficiencies.

**CSCI 509 Foundations of Software Engineering (3)**
Fundamental software engineering techniques and methodologies commonly used during software development are studied. Topics include various life cycle models, project planning and estimation, requirements analysis, program design, construction, testing, maintenance and implementation, software measurement, and software quality.

**CSCI 510 Principles of Artificial Intelligence (3)**
In this course, the highly diverse field of artificial intelligence is explored from a theoretical and practical perspective. A variety of schemes for representation and reasoning will be discussed. Topics focusing on representation include symbolic, rule-based, frame-based, object, and semantic net systems. Topics focusing on reasoning include inductive, abductive and deductive systems, non-monotonic reasoning, temporal reasoning, model-based reasoning, and planning.
Common LISP and Prolog will also be briefly discussed.

**CSCI 511 Automata Theory and Formal Langs. (3)**
Covers finite state machines and their limitations, tape automata and their limitations, Turing machines and basics of recursive functions, Post and Thue systems word problems, phrase-structure grammars, and the different versions of the halting problem.

**CSCI 512 Computational Complexity (3)**
Computational complexity and its applications in computer science and cryptography are explored. Basic concepts of polynomial, NP, and NP-Complete problems are developed in both intuitive and rigorous forms.
Methods for determining the tractability of problems, the polynomial hierarchy, techniques and complexity of approximation algorithms, and current topics in complexity are also covered. The course also covers complexity topics in cryptography.

**CSCI 513 Parallel Algorithms (3)**
Introduces students to parallel computation and algorithm design for parallel machines. Topics include adapting conventional algorithms to fit parallel execution models and stochastic methods suitable for massively parallel machines. Selected readings from the literature will be required.

**CSCI 518 Special Topics in Theoretical Computer Science (3)**

**CSCI 521 Advanced Computer Architectures (3)**
In this course novel computer architectures are explored. Topics include parallel machines, multiprocessor and multi computer machines, dataflow machines, biologically inspired architectures, quantum computers and various interconnection structures.
Performance evaluation aspects will also be considered. Selected readings from the literature will be required.

**CSCI 522 Advanced Operating Systems (3)**
Presents the design principles and applications of advanced operating systems.
Topics include communications in distributed systems based on layered protocols, asynchronous transfer mode networks, the client-server model, remote procedure call, synchronization and deadlock in distributed systems; Various concurrency algorithms will also be presented.

**CSCI 523 Advanced Database Systems (3)**
Investigates the principles of object-oriented and distributed database systems, with an emphasis on algorithms and protocols for handling the complexity of managing data in a distributed environment.
Topics include object-oriented and extended relational data models, object identity and persistence, replication, distributed concurrency control, distributed query processing and optimization, data security, semantic integrity control, optimal resource allocation, reliability, and failure recovery.

**CSCI 524 Human-Computer Interfaces (3)**
Covers the principles, concepts, and objectives of human engineering for interactive systems. Topics include definition of human factors, syntactic and semantic models of user behavior, design principles for user interfaces, interface presentation techniques, and evaluation methods. Selected readings from current research literature will be assigned.

**CSCI 525 Compiler Design (3)**
Explores the principles, algorithms, and data structures involved in the design and construction of compilers.
Topics include context-free grammars, lexical analysis, parsing techniques, symbol tables, error recovery, code generation, and code optimization. Each student will implement a compiler for a small programming language.

**CSCI 531 Principles of Computer Graphics (3)**
Techniques and algorithms for creating and displaying a variety of 2-d and 3-d objects on raster-scan devices are discussed. The mathematics underlying 2-d and 3-d rotations, reflections, scaling and perspective transformations will be presented. Algorithms for clipping lines and polygons, curve fitting, surface rendering, etc. will also be presented.

**CSCI 532 Image Processing (3)**
Fundamentals of image processing are covered, with an emphasis on digital techniques. Topics include digitization, enhancement, segmentation, the Fourier transform, filtering, restoration, reconstruction from projections, and image analysis including computer vision. Concepts are illustrated by laboratory sessions in which these techniques are applied to practical situations, including examples from biomedical image processing.

**CSCI 533 Computational Geometry (3)** Computational Geometry is used to developing algorithms for solving geometric problems in continuous spaces. It has deep connections to classical mathematics, theoretical computer science, and practical applications such as computer vision, graphics, and engineering such as CAD. The problems dealt with are typically posed as spatial decompositions such as polygon partitioning and triangulation, convex hulls, Voronoi diagrams and Delaunay triangulations, geometric search, and curves and surfaces.

**CSCI 534 Bioinformatics (3)**
A variety of algorithms for the representation and visualization of genetic data will be presented in this course. Appropriate material drawn from the fields of biology, physics and chemistry will also be presented so that the nature of genetic data can be understood. Extensive readings will be required.

**CSCI 538 Special Topics in Applications (3)**

**CSCI 551 Computer Network Architectures & Protocols (3)**
Covers the architecture and principles of operation of integrated broadband networks particularly those capable of supporting different types of traffic (voice, video, data, graphics) over local and wide area networks. The focus in this course is on high-speed networks (LANs, WANs), switching designs and architectures, router designs and routing protocols, MPLS, IPv6, optical networking, satellite communications, and network performance evaluation. Hands-on practical projects are an integral part of the course.

**CSCI 552 Network Programming (3)**
Provides programming skills useful for network designers and network application developers. It first covers a brief introduction to networking concepts and protocols.
The course then covers topics including: the UNIX model, socket programming (TCP/UDP/raw sockets) for client-server systems, Internet addressing, application protocols (SMTP, DNS, Telnet, ftp), Remote Procedure Calls (RPCs), multicasting, secure protocols (e.g. IPSec). The course places emphasis on the completion of hands-on projects.

**CSCI 553 Network Security (3)**
Provides students with a comprehensive overview of fundamental network security concepts, techniques, and issues. The course covers topics including: security basics and fundamentals, attackers and their attacks, secure data transmission protocols, cryptography, key management, security management, intruders and intrusion detection, operational security policies and procedures.
This course also covers security approaches deployed in local and wide area networks. Hands-on practical projects are an integral part of the course.

**CSCI 554 Wireless and Mobile Computing (3)**
Ubiquitous access of information anywhere, anytime, from any device is being made possible to a large extent by wireless and mobile computing technologies. This course discusses key concepts of wireless communications, wireless networks including WiFi, Bluetooth, WiMax, ad hoc networks, cellular technologies (CDMA, UMTS, etc), mobility protocols (including mobile IP, SIP, SCTP), internetworking design architectures for heterogeneous wireless networks, mobility management techniques (handoff and location management), wireless Web (WAP), energy management algorithms, and sensor networks. The course places a strong emphasis on the completion of hands-on projects.

**CSCI 558 Special Topics in Network Security (3)**

**CSCI 571 Logic Programming (3)**
Provides an introduction to Prolog, the theoretical foundations of logic programming, and current research on applications of logic within artificial intelligence. Topics include a review of first-order logic, the resolution principle, semantics of logic programs and alternative proof procedures.

Alternatives to first-order logic such as modal logics for representing and reasoning about knowledge and belief, and non-monotonic and default logics will also be discussed. Assignments include problem sets and a number of Prolog programs

**CSCI 572 Evolutionary Computing (3)**
Focuses on concepts and techniques from genetic algorithms, genetic programming, and artificial life for modeling and developing software agents capable of solving problems as individuals and as members of a larger "community" of agents. Algorithms for solving optimization and learning problems will be stressed.

**CSCI 573 Neural Networks (3)**
Provides an introduction to concepts in neural networks and connectionist models. Topics include parallel distributed processing, learning algorithms and applications. Specific networks discussed include Hopfield networks, bidirectional associative memories, perceptrons, feed forward networks with back propagation, and competitive learning networks, including Kohonen and Grossberg networks.

**CSCI 574 Natural Language Processing (3)**
Covers the concepts and methods for the automated processing of natural language.
Topics include pattern matching, parsing, dictionary and lexical acquisition, semantic interpretation, anaphoric reference, discourse analysis, and text generation and understanding.

**CSCI 575 Speech-based Computing (3)**
Topics addressed in detail in this course include the anatomy, physiology and physics of speech generation and reception, speech signal analysis/synthesis and computer representations of spoken data. Systems to be discussed include text-to-speech, speech to text, multilingual speech software and speaker identification/verification.

**CSCI 578 Special Topics in Intelligent Systems (3)**

**CSCI 598 Master's Project (3)**

**CSCI 600 Master's Thesis** [3/term; 6 credits maximum]

**CSCI 601 Advanced Algorithm Analysis (3)**
This course is an advanced course in algorithms design and analysis. This is the advanced version of the 500-level counterpart. It covers many new topics and also revisit some the topics covered in 500-level counterpart in more detail. It will begin by reviewing sorting and graph algorithms as well as studying approximation algorithms, NP-completeness, heuristic algorithms, randomized algorithms, linear programming, pseudorandom generators, cryptography, etc.

**CSCI 602 Theory of Computational Complexity (3)**
This is a theoretical computer science course to identify the limitations of the computers through formalizing computation (by introducing several models including Turing Machines) and applying mathematical techniques to the formal models obtained.

**CSCI 603 Pattern Recognition (3)**
Pattern recognition systems, statistical methods, clustering analysis, unsupervised learning, feature extraction and feature processing.

**CSCI 671 Autonomous Mobile Robots (3)**
Fundamental constraints, technologies, and algorithms related to autonomous mobile robots. Topics include motion, kinematics, simulation testing, sensor incorporation and unmodeled factors. Develop an autonomous robot in simulation or on a physical robot.

**CSCI 672 Visual Analytics (3)**
Science of analytical reasoning facilitated by interactive visual interfaces. Topics include visual analytics tools and techniques to synthesize information and derive insight from massive, dynamic, ambiguous, and often conflicting data, provide timely, defensible, and understandable assessments.

**CSCI 673 Virtual Reality (3)**
Concepts and techniques including a systematic introduction to the underpinnings of Virtual Environments (VE), Virtual Worlds, advanced displays, and immersive technologies.

**CSCI 674 Advanced Topics in Networking (3)**
Cloud computing, Mobile Ad Hoc networks, Future Internet, Internet of Things (IoT), Energy- Efficient Networks and Protocols, Mobile Multimedia, Broadband Wireless Networks (WiMAX, LTE, LTE-Advanced), Cognitive radio, Vehicular Ad Hoc Networks (VANETs) and Sensor Networking.

**CSCI 675 Spatio-Temporal Databases (3)**
Spatial and Temporal Databases: history, applications, practices, theory, design, implementation, indexing, and querying.

**CSCI 676 Big Data Science (3)**
Definition and applications of Big Data, Big Data in Cloud Computing, data- intensive parallel processing and column-oriented distributed data management.

**CSCI 689 Special Topics in Computer Science (3)**
Special Topics in Computer Science.

## Department of Civil Engineering

http://www.udc.edu/seas/civil-engineering/

**Degree Offerings**
Bachelor of Science in Civil Engineering
Master of Science in Civil Engineering

The Department of Civil Engineering at the University of the District of Columbia offers bachelor's and graduate degrees which prepare students for promising careers addressing the challenges of restoring, rehabilitating, and improving the existing infrastructures, building new sustainable green infrastructures, protecting and improving the environment, and helping to create sustainable communities.

## Civil Engineering (BS)

The program for the Bachelor of Science in Civil Engineering offers major courses of various sub-discipline of civil engineering major including water resources engineering; environmental engineering; geotechnical engineering; transportation engineering, and structural engineering. The Civil Engineering Program is accredited by the Engineering Accrediting Commission (EAC) of ABET.

The objective of the Civil Engineering Program is to prepare students for engineering careers and/or advanced study in civil engineering and to offer research and service programs for the general public. Civil engineers have responsibility for designing various structures, including bridges, highways, and infrastructure facilities. The program places special emphasis on solving problems in urban areas, particularly in the Washington, D.C. metropolitan area.
Civil engineers are employed in both industry and governmental agencies. The demand is significantly higher than the number of graduates.

**Credit Statement**
The BS program in Civil Engineering requires completing a total of 128 credit hours of college-level courses in order to graduate.

**GPA Statement:**
All technical electives must have prior departmental approval. A minimum grade of "C" is required for each major course. Students are strongly encouraged to take the Fundamental of Engineering (FE) examination prior to graduation.

**Program Educational Objectives**
In accordance with ABET accreditation criteria and pursuant to the University's mission statement, the following program educational objectives (PEOs) have been established. During the initial years of their careers, graduates will:

**PEO 1:** Be successfully employed in civil engineering within the general areas of civil engineering or closely related field with companies and organizations in industry, government, non-governmental organizations, and entrepreneurial ventures.

**PEO 2:** Advance their knowledge of civil engineering or closely related fields to pursue graduate studies and/or professional studies.

**PEO 3:** Pursue professional development opportunities and career advancement through successfully earning their professional licensure [by passing Fundamentals of Engineering (FE) examination and subsequent licensure as a Professional Engineer (PE)] within six years of graduation, and/or certifications, continuing education credits, or leadership training, research opportunities, or post-graduate study.

**PEO 4:** Be active in service to the profession and serve as effective professional role models based on commitment to lifelong learning to meet evolving engineering challenges facing society.

**Student Outcomes**
Students graduating from the civil engineering program are expected to acquire the following:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. An ability to apply the engineering design to produce solutions that meet specified needs with consideration for public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

3. An ability to communicate effectively with a range of audiences.

4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The Civil Engineering Program is accredited by the Engineering Accrediting Commission (EAC) of ABET, http://www.abet.org.

**Course Requirements for the Major**
**Model Plan of Study - Civil Engineering**
**IGED Requirements (34 credits)**
**Program Required Courses:**

CCEN 101 Introduction to Engineering (2)
CHEM 111 General Chemistry I Lecture (3)
CHEM 113 General Chemistry I Lab (1)
CSCI 135 Scientific Programming (3)
CVEN 105 Computer Aided Graphics (3)
CVEN 201 Engineering Mechanics I (3)
CVEN 202 Engineering Mechanics II (3)
CVEN 206 Mechanics of Solids Lecture (3)
CVEN 207 Mechanics of Solids Lab (1)
CVEN 241 GIS Fund & Eng Appls (3)
CVEN 244 C.E. Materials (Lec & Lab) (3)
CVEN 308 Applied Numeral Analysis (3)
CVEN 311 Theory of Structure (3)
CVEN 312 Design of Steel Structure (3)
CVEN 325 Hydrology & Hydraulics Lecture (3)
CVEN 327 Hydrology & Hydraulics Lab (1)
CVEN 331 Geotechnical Engineering Lecture (3)
CVEN 332 Geotechnical Engineering Lab (1)
CVEN 351 Transportation Engineering (3)
CVEN 435 Foundation Design (3)
CVEN 442 Water Resources Engineering (3)
CVEN 453 Traffic Engineering(3)
CVEN 464 Engineering Ethics & Prof. Practice (1-3)
CVEN 480 CE Tech Elective (Research/Prof Practice (2)
CVEN 481 FE Preparation (1)
CVEN 491 Civil Engineering Senior Project I* (3)
CVEN 492 Civil Engineering Senior Project II* (3)
CVEN XXX CE Technical Elective (3)
CVEN XXX CE Technical Elective (3)
CVEN XXX CE Technical Elective (3)
MATH 151 Calculus I Lecture(3)
MATH 152 Calculus II Lecture (3)
MATH 155 Calculus I Lab (1)
MATH 156 Calculus II Lab (1)
MATH 254 Differential Equation (3)
MATH 381 Probability and Statistics (3)
MECH 406 Engineering Economics (3)
PHYS 201 University Physics I Lecture (3)
PHYS 202 University Physics II Lecture (3)
PHYS 205 University Physics I Lab 1
PHYS 206 University Physics II Lab (1)

**Science Elective [Select One]**
BIOL 101/103 Biological Science I (Lec/Lab) (4)
CHEM 112/114 Chemistry II (Lec/Lab)(4)
CVEN 251 Urban Water Quality Management (Lec/Lab) (4)
ENSC 145/146 Intro. to Environmental Science (Lec/Lab) (4)
PHYS 203/207 Physics III (Lec/Lab) (4)

**Sub-Disciplines for Civil Engineering**
Successful completion of a two-course sequence in at least (4) four sub-disciplines of Civil Engineering are required for a degree in Civil Engineering. Selection of the course sequences must be made from the following list:

**Sub-Discipline: Structure**
Course Sequence I CVEN 311: Theory of Structures Lec
Course Sequence II CVEN 312: Design of Steel Structures (or) CVEN 419: Design of Concrete Structures

**Sub-Discipline: Geotechnical**
Course Sequence I CVEN 331/332: Principles of Geotechnical Engineering Lec./Lab
Course Sequence II CVEN 435: Foundation Design

**Sub-Discipline: Construction**
Course Sequence I CVEN 475: Project Planning and Scheduling
Course Sequence II CVEN 476: Construction Project Management

**Sub-Discipline: Water Resources**
Course Sequence I CVEN 325/327: Hydraulics & Hydrology Lec./Lab
Course Sequence II CVEN 442: Water Resource Engineering (or) CVEN 446: Environmental Engineering and Science

**Sub-Discipline: Transportation**
Course Sequence I CVEN 351: Highway Transportation Engineering
Course Sequence II CVEN 453: Traffic Engineering I

The Department Chair may approve other acceptable two-course sequences to meet an individual student's career objectives.

**Approved Civil Engineering Technical Electives**
CVEN 417 Matrix Method of Structural Analysis (3)
CVEN 419 Design of Concrete Structures (3)
CVEN 446 Env. Engineering and Science (3)
CVEN 449 Environmental Engineering (3)
CVEN 462 Reliability and Optimization Methods in Engineering (3)
CVEN 463 Sensing and Data Analytics for Infrastructure Systems (3)
CVEN 465 Introduction to Risk and resiliency in Engineering (3)
CVEN 475 Planning & Scheduling (3)
CVEN 476 Construction Project Management (3)
CVEN 490 Special Topics in Civil Engineering (1-12)

## COURSE DESCRIPTIONS: CIVIL ENGINEERING

**CCEN 101 Introduction to Engineering (2)**
Introduces freshmen interested in engineering disciplines to basic scientific principles and engineering concepts through hands-on experiments. These experiments will be designed to motivate the students to acquire the knowledge, skills and attitudes necessary to be successful in the pursuit of engineering disciplines. In addition, students in this course will learn how to analyze, interpret and present data. Emphasis on guided design and problem-solving methodologies. Students will undertake practice-oriented group design projects. Formal written reports and oral presentations will be required. Required of all freshman engineering students. Lab 6 hrs.

**CVEN 105 Computer Aided Graphics (3)**
This course provides students with hands-on, practical application of graphical modeling to create 3D parts for product design and manufacturing. The main objective is to familiarize students with the CREO software so that they may demonstrate competency in generating 3D models of both existing and new components. Finally they will produce a physical rendering of their model using 3D printing. This course will lay the foundation for the Advanced Manufacturing course. Lec. 3 hrs.

**CVEN 112 Engineering Experimentation (3)**
Introduces the fundamentals of engineering experimentation. Modern equipment and instrumentation used in engineering laboratories are presented with emphasis on measurements. State-of-the-art instruments for measurement of angle, distance, pressure and temperature are used to illustrate the importance of understanding errors and their influence on measurements. The use of electronics in measuring instruments (both analog and digital) is demonstrated through the use of civil and mechanical engineering applications. Lec. 3 hrs.

**CVEN 201 Engineering Mechanics I (3)**
Covers statics of particles and rigid bodies; equilibrium, distributed forces; centroids; center of gravity; structure-trusses, frames, machines; forces in beams and cable; friction; moments of inertia. Lec. 3 hrs.: PHYS 201.

**CVEN 202 Engineering Mechanics II (3)**
Covers kinematics and kinetics of a particle. Planar kinematics of a rigid body; planar kinetics of a rigid body including force and acceleration; work and acceleration; work and energy; impulse and momentum, and vibrations. Lec. 3 hrs., Prereq.: CVEN 201.

**CVEN 206 Mechanics of Solids (3)**
Covers axial forces, shear and moment, stress and axial loads, strain and axial deformation, torsion of shaft, stress in beams, columns, deflection of beams, energy methods, and elemental indeterminate problems. Lec. 3 hrs., Prereq.: CVEN 201, MECH 205 (for ME Students) Co-req: CVEN 207.

**CVEN 207 Mechanics of Solids and Materials Laboratory (1)**
Covers introduction-purpose, scope, equipment/ apparatus, interpreting the text results, errors, writing reports. Experiments include Hooke's Law, tensile testing of engineering materials, thermal expansion, torsion, bending moment and deflection of beams. Lab 2 hrs., Co-req: CVEN 206.

**CVEN 241 GIS Fundamentals and Engineering Applications (3)**
This course introduces the concepts and components of a geographic information system (GIS) including operational processes of spatial data acquisition, editing and QA/QC, metadata development, geodatabase design, spatial query and display, spatial analysis and modeling, preliminary GIS application development in the context of civil and environmental engineering applications.

**CVEN 244 CE Materials Lec and Lab (3)**
This course covers properties and uses of common civil engineering materials, such as cement, aggregates, concrete, asphalts, asphalt mixes, steel and wood. Design techniques of Portland cement concrete mix and hot mix asphalts. Laboratory tests to determine properties of materials used in construction such as cement, aggregates, concrete, asphalts, asphalt mixes, steel and wood.

**CVEN 251 Urban Water Quality Management (4)**

This course is designed to enhance student's competence in theoretical and practical application of urban water quality sciences and related technologies to address the urban water quality problems and management. The course content includes environmental regulation, water quality, urban runoff, data mining, information technology, dynamic interactive online course delivery, and sustainable development. Lec and Lab 4hrs, Pre-req.: CHEM 111.

**CVEN 301 Essentials of Surveying (2)**
Introduces the student to the basic principles of measurement at or near the surface of the earth. The fundamental concepts of observing and establishing the linear and angular measurements necessary to determine the horizontal and vertical position of points required for engineering works are presented. The theory of errors associated with large scale measurements and the "management" of them through survey procedures and analysis are presented. The student will develop an understanding of the "tools" (procedures and software) necessary to process field data and produce horizontal and vertical control information (e.g. adjusted traverses, bench mark elevations, contour maps, etc.). Lec. 3 hrs., Prereq.: CVEN 202.

**CVEN 302 Surveying Laboratory(1)**
Introduces and practices the use and care of the instruments necessary to determine horizontal and vertical positions on or near the surface of the earth are presented. The student will develop an understanding of the application of the surveying procedures required to establish horizontal and vertical control points. The student will perform field exercises for the control of horizontal and vertical positions associated with engineered construction. Instruments used include levels (manual & automatic), theodolites (direction & repeating), distance measuring devices (tapes & electronic). Direct and indirect methods for observing and establishing measurements are covered. Prac. 42 hrs., per semester, Co-req.: CVEN 301.

**CVEN 308 Appl. Numerical Analysis for Engineers (3)**
Covers modeling and error analysis, roots of equations; systems of linear algebraic equations, curve fitting; numerical differentiation and integration; ordinary differential equations; partial differential equations. Lec. 3 hrs., Prereq.: MATH 254 or MATH 260.

**CVEN 311 Theory of Structures (3)**
Analyzes statically determinate beams and trusses, methods of determining deflection of structures, influence lines and application for moving loads and indeterminate structures including continuous beams and frames. Covers approximate analysis of indeterminate structures computer analysis of structures and performance characteristics. Lec. 3 hrs., Prereq.: CVEN 206, MATH 254**.**

**CVEN 312 Design of Steel Structures (3)**
Covers the analysis and design of individual steel members such as tension members, compression members, beams, beam-columns, plate girders, and simple connections. Lec. 3 hrs., Prereq: CVEN 311

**CVEN 313 Theory of Structures Laboratory (1)**
Equipment/apparatus, writing reports; experiments determining internal forces, reactions and deflections of both determinate and indeterminate structures are studied. Computer-aided analysis of structures of both determinate and intermediate structures are examined. Prac. 2 hrs., Co-req: CVEN 311.

**CVEN 325 Hydrology and Hydraulics (3)**
Hydrologic Processes, Precipitation and precipitation analysis, Hydrologic losses and infiltration, Runoff processes and estimation, Fundamentals and fluid properties, flow in closed conduits, flow in open channels, and fluid measurement. Prereq.: MATH 254, CVEN 206/207

**CVEN 327 Hydraulics and Hydrology Lab (1)**
Topics covered in lecture are demonstrated through hands-on practical exercises, lab experimentation, and use of computer modeling software. Co-req: CVEN 325.

**CVEN 331 Principles of Geotechnical Engineering (3)**
Studies soil classifications, stress, and compressibility of soils, immediate and consolidation settlement, time rate of settlement, earth pressure on structures, permeability and seepage, slope stability analysis for application in engineering design. Prereq.: CVEN 206, CVEN 325.

**CVEN 332 Principles of Geotechnical Engineering (1)**
Provides laboratory tests to determine the physical properties of soils for application in engineering design. Co-req: CVEN 331.

**CVEN 335 Design of Structures (3)**
Covers design of tension members, compression members, beams and columns, and simple connections. Analysis and design of reinforced concrete beams, slabs, columns, footings, and retaining walls using the ultimate strength method.

**CVEN 336 Design of Structures Lab (1)**
Topics covered in lecture are demonstrated through hands-on practical exercises, analysis and design. Commercially available structural software will be used. Prac. 3 hrs, Co-req. CVEN 335.

**CVEN 351 Transportation Engineering (3)**
Involves planning, analysis, and design of highways systems. Students work in teams during the preparation of the required design plans (using AutoCAD or MicroStation), cost estimates and project reports. Lec. 3hrs, Prereq.: CVEN 105 and CVEN 202.

**CVEN 352 Civil Engineering Materials (3)**
Studies properties and uses of common civil engineering materials, such as, cement, aggregates, concrete, asphalts, asphalt mixes, steel, and wood. Design techniques of Portland cement concrete mix and hot mix asphalts. Lec. 3 hrs., Co-req: CVEN 354. Prereq.: CVEN 206

**CVEN 354 Civil Engineering Materials Lab (1)**
Laboratory tests to determine properties of materials used in construction, such as cements aggregates, concrete, asphalts, asphalt mixes, wood, and steel. Lab. 3 hrs., Co-req: CVEN 352

**CVEN 416 Advanced Structural Design (3)**
Covers forced-deformation responses of structures under complex loading, interaction of the structural components and their behavior for both the elastic and inelastic ranges, analysis of frames with nonprismatic members by moment distribution, slope deflection, and column analogy. Lec 3 hrs., Prereq.: CVEN 325.

**CVEN 417 Matrix Method of Structural Analysis (3)**
Covers analysis of highly indeterminate structures by the transfer matrix method, displacement matrix method, and the matrix forced method. Lec 3 hrs., Prereq.: CVEN 311, MATH 260.

**CVEN 418 Dynamics of Structure (3)**
Studies responses of free-vibration, harmonic, periodic, and dynamic loading; analysis of nonlinear structural responses for single and multi-degree systems, and effect of damping and inelastic action. Lec. 3 hrs., Prereq.: CVEN 202, CVEN 313

**CVEN 419 Design of Concrete Structures (3)**
Covers analysis and design of reinforced concrete slabs, beams, columns, footings, and frames using the ultimate strength method. Lec. 3 hrs., Prereq.: CVEN 312.

**CVEN 435 Foundation Design (3)**
Studies shallow foundation analysis and factors to consider for design, bearing capacity and settlement, mat foundations, piles, caissons, lateral earth pressures and retaining walls, site improvement techniques, design of support systems, sheet piles, and special foundation system. Prereq.: CVEN 331.

**CVEN 441 Wastewater Engineering (3)**
Covers analysis and design of wastewater systems; unit operations and treatment kinetics; physical, chemical, and biological unit processes; principles of design of facilities for physical, chemical and biological treatment of wastewater; disposal of waste solids. Lec. 3 hrs., Prereq.: CVEN 325 and CVEN 327.

**CVEN 442 Water Resources Engineering (3)**
This course covers water resources engineering, a particular emphasis on urban water resources systems. The topics include introduction to urban water systems, Drinking water systems and their design and analysis, urban waste water systems and design of sanitary sewer systems, Urban storm water management, Urban storm sewer systems and their design and analysis, Erosion and sediment control. Lec. 3 hrs., Prereq.: CVEN 325 and CVEN 327.

**CVEN 446 Env. Engineering and Science (3)**
This course covers sources, characteristics, transport, and effects of air and water contaminants; biological, chemical, and physical processes in water; atmospheric structure and composition; unit operations for air and water quality control; solid waste management; and environmental quality standards. Discusses risk assessment, toxicology, and regulations governing environmental contaminants as well as environmental restoration.

**CVEN 447 The Theory of Shells (3)**
Studies theory and design of shell place by membrane and bending stress theories, application to the analysis and design of cylindrical shell, domes, paraboloids. Lec. 3hrs., Prereq.: CVEN 419.

**CVEN 448 Construction Techniques (3)**
Covers fundamental operations in construction, construction methods, selection of equipment, cost estimates, planning and scheduling construction projects. Lec. 3 hrs., Prereq.: Senior standing.

**CVEN 449 Environmental Engineering (3)**
Covers hydrology; ground water; physical, chemical, and biological properties of water; introduction to water and wastewater treatment processes; physical and chemical fundamentals of air pollution; solid waste management. Introductory course for environmental engineering. Lec. 3 hrs., Prereq.: CVEN 325.

**CVEN 452 Urban Transportation Systems Design (3)**
Continues Urban Transportation Planning. The focus is on the geometric and physical design of urban transportation systems. The fundamentals of traffic engineering are presented and applied to the solution of urban road congestion. Team design projects address local

contemporary transportation issues. Lec. 3 hrs., Prereq.: CVEN 351

**CVEN 453 Traffic Engineering (3)**
Involves the collection, analysis and use of traffic engineering data and introduces students to traffic operations and safety. Students use software for level of service analysis of un-signalized and simple signalized intersections. Students are required to prepare reports. Prereq.: CVEN 351

**CVEN 454 Adv Traffic Engineering (3)**
Involves advance traffic engineering, traffic operational and studies, and introduction to applications software for signal network optimization. Students are involved in several real-world projects and the preparation of technical reports. Lec. 3 hrs., Prereq.: CVEN 351.

**CVEN 462 Reliability and Optimization Methods in Engineering (3)**
This course will provide a general survey of the complete field of Reliability and Optimization in various engineering applications. The course is designed to give a thorough philosophical base for Reliability and Optimization in engineering and mathematical techniques used along with common examples of application for engineering structures, components and systems. Senior standing.

**CVEN 463 Sensing and Data Analytics for Infrastructure Systems (3)**
This course will introduce the sensing and data analytics techniques across a broad range of engineering disciplines with a focus on infrastructure systems. This course will empower students with a basic skill set on sensing and data analytics and an ability to directly apply these tools for practical engineering problems. Senior standing.

**CVEN 464 Engineering Ethics & Prof. Practice (1)**
Provides an introduction to the engineering profession, professional practice, engineering law and ethics. The course also offers opportunities to explore the social implications and environmental impacts of technologies and to consider engineers' responsibility to society.

**CVEN 465 Introduction to Risk and Resiliency in Engineering (3)**
This course will introduce natural and man-made hazards faced by engineering infrastructure and provide a comprehensive overview about the basic definition and engineering principles for risk and resilience assessment of various engineering systems.

**CVEN 475 Project Planning and Scheduling (3)**
Covers principles of planning, scheduling, and allocation of resources for construction projects. Study and application of critical path method (CPM) of network diagramming and calculation. Studies Program Evaluation and Review Techniques (PERT) and allocation of constrained resources and variation of schedules to optimize costs. Lec. 3 hrs., Prereq.: Senior Standing

**CVEN 476 Construction Project Management (3)**
Covers elements of management as related to construction project; responsibilities of construction managers, on-site representatives, engineers, and inspectors; concept of developing the project team approach. Lec. 3 hrs., Prereq.: Senior Standing.

**CVEN 480 CE Technical Elect. Research-Professional Practice (3)**
This course provides opportunity students to pursue research innovation in any sub-disciplines of civil engineering, or advanced topics in professional practice in any sub-disciplines of civil engineering.

**CVEN 481 Fundamental of Eng. Preparation (1)**
This course discusses examination preparation materials for the Fundamentals of Engineering (FE) exams—commonly called the EIT exams. Provides a brief overview of common engineering courses.

**CVEN 486 Construction Estimating (3)**
Interprets specifications as they affect project costs, quantity take-offs, including items necessary for construction but not called out on drawing and specifications; estimate of labor and costs. Lec. 3 hrs., Prereq.: Senior Standing.

**CVEN 487 Contracts and Specifications (3)**
Examines elements of contract as related to engineered construction project. Provides an introduction to the technical concepts of preparing and reviewing specifications necessary for bidding and contracting engineering projects. Lec. 3 hrs., Senior Standing

**CVEN 490 Special Topics in Civil Engineering (1-12)**
Deals with a specific area related to civil engineering that is not normally covered in regular courses and for which there is sufficient student interest; may be used as a technical elective. Prereq.: Senior standing in Civil Engineering.

**CVEN 491 CE Senior Project I (3)**
The objective of this course is to develop ability to formulate, analyze and solve civil engineering problems through creative thinking, engineering education and using the principles of technical and professional practices. The students will apply the foundational knowledge and skills

from the science and mathematics courses, engineering principles from the technical and professional courses to solve the civil engineering planning, analysis and design problems. This course provides group projects for senior students to design civil engineering systems. Oral presentations and written report are required. Prereq.: Senior standing in Civil Engineering.

**CVEN 492 CE Senior Project II (3)**
Continues of Senior Project I in Civil Engineering. Final project report and presentation are required., Prac. 20 hrs. effort. Prereq.: CVEN 491.

## Civil Engineering (MS)

The Master of Science in Civil Engineering is designed to meet the needs of working professionals in the greater Washington, D.C., metropolitan area and full-time graduate students. The mission of the graduate program is to meet the advanced civil engineering educational needs of recent graduates of undergraduate civil engineering, practicing engineers and those non-engineering professionals wishing to redirect their career paths. Graduates of the program possess the following attributes or educational outcomes:

- Knowledge and skills in civil engineering and related fields significantly beyond the baccalaureate level;
- Ability to independently conduct research or a significant practice-oriented project in civil engineering;
- Ability to communicate their ideas and results in written, oral, and graphical forms and develop an attitude for lifelong learning.

The goal of the Master's program is to develop technical depth of expertise for a professional career in the planning, design, construction, and operation of urban infrastructure systems, built facilities, and water resources management.
The civil engineering graduate students have the opportunity to work with faculty in grant-funded research and also have the opportunity to serve as teaching assistants for School of Engineering and Applied Sciences as well as other schools at UDC.

**CE Degree requirements**
The CE program at UDC requires successful completion of minimum 30 credit hours of graduate-level course work. The program offers both thesis and non-thesis options.

**Thesis option and Non-thesis option**
A thesis option is offered for students who want the opportunity to obtain research experience in one of the sub-disciplines of civil engineering and who may be interested in pursuing a doctoral degree in civil engineering or closely related field. A written thesis must be approved by the faculty advisor and the thesis committee. It is noted that students who are supported as graduate research assistants are recommended to pursue the thesis option.
A non-thesis option is offered for those seeking to enhance their depth and breadth of engineering knowledge beyond the bachelor's level, and who will subsequently be involved in day-to-day planning and design activities in the civil engineering industry and are interested in developing the marketable skills needed to succeed in today's job market. Credit for the degree option come entirely from combination of courses plus a design project.

**Concentrations**
Currently CE offers the following Concentrations:

- Master of Science in Civil Engineering with a concentration in Geotechnical and Transportation Engineering
- Master of Science in Civil Engineering with a concentration in Water and Environmental Engineering

In addition, students can earn a general master degree in Civil Engineering by taking graduate courses in various sub-disciplines of civil engineering.

**General Requirements**
**Admission Requirements**
To be considered for admission to graduate study in civil engineering, the applicant must meet the following requirements:

1. Hold a baccalaureate degree from an accredited college or university, preferably a major in civil/environmental engineering or closely related field.
2. Submit two official transcripts from all prior undergraduate and graduate work. Applicants must have an undergraduate grade point average of 2.5 or higher.
3. Submit official scores from a recent administration (within the last two years) of the Graduate Record Exam Verbal, Quantitative, Analytical Reasoning and Essay tests.
4. Submit at least two letters of recommendation. One letter should be from an individual familiar with the applicant's capacity for relating to clients, professionalism, and personal attributes.
5. A 500-word essay articulating reasons for pursuing graduate studies in civil engineering, familiarity with the profession, and related work experience.

**Transfer Credit**
**GPA Statement**
Students must maintain a grade point average of 3.0 or better to remain in good standing and a 3.0 in all major

courses. A student may repeat a required course no more than one time. If the student is unable to achieve a "B" or better in the required course, the student may petition the faculty for a review of his/her status to continue in the program.

**Degree Requirements for the Thesis Option**
Plan of Study: The student must meet with the Graduate Program Director or his/her advisor to formulate a Plan of Study. The Plan of Study must be submitted to the student's advisory committee after completing at least 9 but no more than 18 semester credits.

Satisfactory completion of 30 hours of approved graduate credits, including 6 hours of thesis.

At least 18 credits of course work, excluding thesis, must be at or above the 500 level. Courses below the 500 level must be approved by the student's advisory committee.

Admission to Candidacy: The admission to candidacy form must be completed prior to the thesis defense. The student should consult the schedule of classes for deadlines on submitting this form for spring graduation.

Thesis Defense: A copy of the written thesis should be distributed to each member of the advisory committee and to the graduate school at least two weeks prior to the defense. The student should make a public announcement of the defense within the department to allow attendance by interested faculty, students, and the University Community. Upon application for the thesis defense, students are required to submit a technical paper or abstract, based on some aspect of the thesis research, in a form suitable for submission to a regional technical conference.

**Degree Requirements for the Non-Thesis Option**
Plan of Study: The student must meet with the Graduate Program Director or his/her advisor to formulate a Plan of Study. The plan of study must be submitted after completing at least 9 but no more than 18 semester credits. Satisfactory completion of 30 hours of approved graduate credits.

At least 24 credits of course work must be at or above the 500 level. Courses below the 500 level must be approved by the student's advisory committee.

A 3-credit project report based on a current practical industry-type problem and/or one semester research project must be advised by the program faculty advisor.

**Model Plan of Study - Civil Engineering (MS)**
**Curriculum of Program**

**Thesis Option**
Core Courses (6)
Technical Elective Courses (18)
Master's Thesis (6)
Total (30)

**Non-Thesis Option**
**Core Courses (6)**
Technical Elective Courses (21)
Master's Project (3)
Total (30)

**Water and Environmental Engineering Concentration**

**Core Courses**
**Select 2/3 Courses from the following:**
CVEN 501 Advanced Engineering Mathematics (3)
CVEN 502 Risk and Reliability Methods in Engineering (3)
CVEN 503 Optimization Methods and Advanced Statistics (3)
CVEN 505 GIS Applications in Civil and Environmental Engineering (3)
ELEC 507 Probability and Random Processes (3)
WTRM 505 GIS for Water Resources Management (3)

**Technical Elective Courses**
**Select 5/7 Courses from the following:**
BGMT 506 Management Theory and Practice (3)
BGMT 509 System Approach and Project Management (3)
CVEN 521 Modeling Methods in Water Resources Engineering (3)
CVEN 522 (3Cr) Advanced Engineering Hydrology (3)
CVEN 523 Advanced Urban Stormwater Management (3)
CVEN 524 Open Channel Hydraulics (3)
CVEN 525 Water and Wastewater Engineering (3)
CVEN 526 Water and Environmental Policy Development (3)
CVEN 527 Principles of Environmental Engineering and Science (3)
CVEN 528 Water and Wastewater Treatment Processes (3)
CVEN 529 Advanced Topics in Water and Env. Engineering (3)
CVEN 542 Advanced Water resources Engineering (3)
CVEN 546 Environmental Engineering and Science (3)
CVEN 562 Reliability and Optimization Methods in Engineering (3)
CVEN 563 Sensing and Data Analytics for Infrastructure Systems (3)
CVEN 590 Special Studies in Civil Engineering (3)

CVEN 625 Water Resources System Analysis (3)
WTRM 601 Water Quality Modeling (3)
WTRM-500 Water Quality Assessment Monitoring & Treatment (3)

**Thesis or Non-Thesis**
CVEN 599 Master's Project (3)
CVEN 699 Master's Thesis (6)

**Geotechnical and Transportation Concentration**
**Core Courses**
**Select 2/3 Courses from the following:**
CVEN 501 Advanced Engineering Mathematics (3)
CVEN 502 Risk and Reliability Methods in Engineering (3)
CVEN 503 Optimization Methods and Advanced Statistics (3)
CVEN 505 GIS Applications in Civil and Environmental Engineering (3)
CVEN 535 Advanced Foundation Engineering (3)
ELEC 507 Probability and Random Processes (3)
WTRM GIS for Water Resources Management (3)

**Technical Elective Courses**
**Select 5/7 Courses from the following:**
BGMT 506 Management Theory and Practice (3)
BGMT 509 System Approach and Project Management (3)
CVEN 531 Advanced Geotechnical Engineering (3)
CVEN 532 Soil Dynamics and Geotechnical Earthquake Engineering (3)
CVEN 534 Advanced Materials and Pavement Engineering (3)
CVEN 539 Advanced Topics in Geotechnical Engineering (3)
CVEN 551 Travel Demand Modeling (3)
CVEN 552 Traffic Flow Theory (3)
CVEN 553 Traffic Engineering (3)
CVEN 554 Traffic Psychology (3)
CVEN 555 OR Models for Transportation Systems Analysis (3)
CVEN 559 Advanced Topics in Transportation Engineering (3)
CVEN 590 Special Studies in Civil Engineering (3)

**Thesis or Non-Thesis**
CVEN 599 Master's Project (3)
CVEN 699 Master's Thesis (6)

**General Master's Degree**
**Core Courses**
**Select 2/3 Courses from the following:**
CVEN 501 Advanced Engineering Mathematics (3)
CVEN 502 Risk and Reliability Methods in Engineering (3)
CVEN 503 Optimization Methods and Advanced Statistics (3)
CVEN 505 GIS Applications in Civil and Environmental Engineering (3)
CVEN 535 Advanced Foundation Engineering (3)
ELEC 507 Probability and Random Processes (3)
WTRM 505 GIS for Water Resources Management (3)

**Technical Elective Courses**
**Select 5/7 Courses from the following:**
BGMT 506 Management Theory and Practice (3)
BGMT 509 System Approach and Project Management (3)
CVEN 521 Modeling Methods in Water Resources Engineering (3)
CVEN 522 Advanced Engineering Hydrology (3)
CVEN 523 Advanced Urban Stormwater Management (3)
CVEN 524 Open Channel Hydraulics (3)
CVEN 525 Water and Wastewater Engineering (3)
CVEN 526 Water and Environmental Policy Development (3)
CVEN 527 Principles of Environmental Engineering and Science (3)
CVEN 528 Water and Wastewater Treatment Processes (3)
CVEN 529 Advanced Topics in Water and Env. Engineering (3)
CVEN 531 Advanced Geotechnical Engineering (3)
CVEN 532 Soil Dynamics and Geotechnical Earthquake Engineering (3)
CVEN 534 Advanced Materials and Pavement Engineering (3)
CVEN 539 Advanced Topics in Geotechnical Engineering (3)
CVEN 542 Advanced Water resources Engineering (3)
CVEN 546 Environmental Engineering and Science (3)
CVEN 551 Travel Demand Modeling (3)
CVEN 552 Traffic Flow Theory (3)
CVEN 553 Traffic Engineering (3)
CVEN 554 Traffic Psychology (3)
CVEN 555 OR Models for Transportation Systems Analysis (3)
CVEN 559 Advanced Topics in Transportation Engineering (3)

CVEN 562 Reliability and Optimization Methods in Engineering (3)
CVEN 563 Sensing and Data Analytics for Infrastructure Systems (3)
CVEN 590 Special Studies in Civil Engineering (3)
CVEN 625 Water Resources System Analysis (3)
WTRM-500 Water Quality Assessment Monitoring & Treatment (3)
WTRM 601 Water Quality Modeling (3)

**Non- Thesis**
CVEN 599 Master's Project (3)

## GRADUATE COURSE DESCRIPTIONS: CIVIL ENGINEERING (CVEN)

**CVEN 501 Advanced Mathematics (3)**
Advanced mathematical concepts needed in the study of graduate engineering. Topics include linear Algebra, partial differential equations, complex analysis, transform calculus and numerical analysis.

**CVEN 502 Risk and Reliability Methods in Engineering (3)**
The focus of this course is on practical applications of risk and reliability methods for civil engineering design and analysis. This course covers concepts of uncertainty, random variables, probability and risk, fundamentals of sampling, Bayesian methods, Maximum likelihood principle, and uncertainty propagation and their applications in civil and geotechnical engineering. Techniques covered will include various reliability-based design and probabilistic methods such as first-order second-moment method, first-order reliability method, point estimate method, Monte Carlo simulation and moments methods. Term project is required on reliability based design in a relevant field of engineering.

**CVEN 503 Optimization Methods and Advanced Statistics (3)**
This course introduce concepts, modeling and solution methods for optimization problems. Topics include: convex analysis and polyhedral sets, unconstrained optimization methods (line search, trust region), the simplex method, duality theory, decomposition principles, linear and integer programming. The advanced statistical concepts will be covered.

**CVEN 505 GIS Applications in Civil and Environmental Engineering (3)**
This course covers examination of data structures used in geographic information systems. Map projections and coordinate systems used in mapping. Database creation, maintenance, and integrity. Applications of GIS methods for solving civil engineering problems in land management and related areas.

**CVEN 521 Modeling Methods in Water Resources Engineering (3)**
This course covers a comprehensive view of stormwater modeling and management with an emphasis on current modeling techniques and design practices. Provides an in-depth review of fundamentals of hydraulics and hydrology along with spatial analysis tools required for effective stormwater modeling and management.

**CVEN 522 Advanced Engineering Hydrology (3)**
This course covers dynamics and statistics of principal hydrometeorological processes; Hydrologic cycle; Precipitation, Infiltration; Evapotranspiration; Surface runoff; Percolation; Groundwater motion; Storm water management; Hydrologic modeling; Water budget; Hydrologic time series, Stochastic analysis.

**CVEN 523 Adv. Urban Stormwater Management (3)**
The course presents a comprehensive view of urban stormwater modeling and management with an emphasis on current modeling techniques and design practices. The course provides an in-depth review of fundamentals of hydrology along with analytical tools required for effective stormwater modeling and management.

**CVEN 524 Open Channel Hydraulics (3)**
The course covers review of basic hydraulics: Continuity, momentum and energy balance; Uniform and steady flow; Non-uniform flow; Critical flow; Gradually-varied flow; Surface profiles; Chezy's and Manning's formulas; Laminar and turbulent flow; Velocity distribution; Unsteady flow; Rapidly varying flow; Flood routing; Design of open-channels.

**CVEN 525 Water and Wastewater Engineering (3)**
This course covers design of water treatment facilities for the production of potable waters from surface and groundwater systems. Design of wastewater treatment facilities for the reduction and elimination of organic and inorganic pollutants.

**CVEN 526 Water and Environmental Policy Development (3)**

**CVEN 527 Environmental Engineering (3)**
This course covers physical, chemical, and microbiological components of environmental systems in science and engineering. Introduction to water quality management, air pollution control, solid waste management, pollution prevention techniques, and risk analysis.

**CVEN 528 Water and Wastewater Treatment Processes (3)**
This course introduces students to the principles and design of physical, chemical and biological treatment systems for potable and wastewater applications.

**CVEN 529 Advanced Topics in Water and Env. Engineering (3)**
This course covers study relating to specialized topics associated with water and environmental engineering.

**CVEN 531 Advanced Geotechnical Engineering (3)**
This course is designed to integrate all aspects of geotechnical engineering principles at an advanced level. It covers the advanced soil mechanics principles such as stress-strain characteristics of coarse- and fine- grained soils, shear strength properties of soils under drained and undrained conditions, plastic equilibrium of soil masses, failure conditions, Rankine and Coulomb lateral earth pressure, slope stability, geotechnical numerical modeling, advanced methods for geotechnical subsurface investigation, groundwater and seepage.

**CVEN 532 Soil Dynamics and Geotechnical Earthquake Engineering (3)**
The purpose of this course is to familiarize students with the field of geotechnical earthquake engineering and the methods used for seismic analysis and design in geotechnical engineering. This course covers fundamentals of soil dynamics, plate tectonics and earthquakes, seismic ground responses, design ground motions during earthquake, determination of soil properties for ground response analysis, dynamic properties of soils, dynamic lateral earth pressure, seismic performance of slopes and earth structures, soil liquefaction, field test procedures for evaluating liquefaction potential , liquefaction remediation techniques.

**CVEN 534 Advanced Material and Pavement Engineering (3)**
This course covers advanced civil engineering materials related to transportation and coastal infrastructures. The topics include fundamental principles underlying the design, construction, maintenance and repair, and management of highway and airfield pavement systems. Pavement performance (functional/structural; evaluation); pavement mechanics (multi-layered elastic theory; slab theory); pavement materials (properties and characterization); environmental effects; current rigid and flexible design methods (new/rehabilitation); construction (new construction; maintenance/repair; rehabilitation); economic evaluation; pavement management.

**CVEN 535 Advanced Foundation Engineering (3)**
This course covers studies shallow foundation analysis and factors to consider for design, bearing capacity and settlement, mat foundations, piles, caissons, lateral earth pressures and retaining walls, site improvement techniques, design of support systems, sheet piles, and special foundation system. Students enrolled in the 500-level course will be required to complete additional work as stated in the syllabus.

**CVEN 539 Advanced Topics in Geotechnical Engineering (3)**
This course covers study relating to specialized topics associated with geotechnical engineering

**CVEN 546 Env. Engineering and Science (3)**
This course covers advanced topics on sources, characteristics, transport, and effects of air and water contaminants; biological, chemical, and physical processes in water; atmospheric structure and composition; unit operations for air and water quality control; solid waste management; and environmental quality standards. Discusses risk assessment, toxicology, and regulations governing environmental contaminants as well as environmental restoration.

**CVEN 551 Travel Demand Modeling (3)**
This course examines the estimation of current and future travel demand, how that demand will be distributed onto the network, and the analysis of the impact of increased future demand on current management decisions.

**CVEN 552 Traffic Flow Theory (3)**
This course examines the behavior of drivers as they travel in groups called traffic streams as well as their individual behavior in car-following. The course will utilize models currently used in practice in the analysis of driver behavior and roadway capacity.

**CVEN 554 Traffic Psychology (3)**
This course explores the human factors aspect of transportation focusing on the application of various disciplines of psychology in order to create a deeper understanding of the way humans interact in transportation networks.

**CVEN 555 OR Models for Transportation (3)**
This course examines different techniques used to solve complex transportation management decisions in the form of linear and non-linear programs. This course covers the fundamentals of optimization and the mathematical proofs behind the Simplex method.

**CVEN 559 Advanced Topics in Transportation Engineering (3)**
The course covers study relating to specialized topics associated with transportation engineering

**CVEN 562 Reliability and Optimization Methods in Engineering (3)**
This course will provide an advanced general survey of the complete field of Reliability and Optimization in various engineering applications. The course is designed to give a thorough philosophical base for Reliability and Optimization in engineering and mathematical techniques used along with common examples of application for engineering structures, components and systems.

**CVEN 563 Sensing and Data Analytics for Infrastructure Systems (3)**
This course will introduce the sensing and data analytics techniques across a broad range of engineering disciplines with a focus on urban infrastructure systems. This course will empower students with a basic and advanced skill set on sensing and data analytics and an ability to directly apply these tools for practical engineering problems.

**CVEN 590 Special Topics in Civil Engineering (3)**
This course covers study of topics in civil engineering relating to the special needs and interests of individual students.

**CVEN 599 Master's Project (3)**
A supervised project for graduate civil engineering student's equivalent to 3 credit-credit course in Civil Engineering. Topics to be determined by student and supervisor.

**CVEN 625 Water Resources System Analysis (3)**
This course covers planning, design and management of multi-component water resources systems. After a review of the use and nature of water resources systems, topics studied in detail are: water resource economics; methodology of design; systems analysis; systems design and decision making; applied mathematical programming; probabilistic models and water quantity and quality modeling.

**CVEN 651 Computational Engineering and Scientific Modeling (3)**
Use cloud, supercomputer, and even normal desktop computer (GPU or CPU based). An engineer or scientist with little to no expertise to understand the limits and capabilities of different computational systems. This may be a unique course. I can assist/co-teach such course at opportune time.

**CVEN 652 Systems Engineering Approach (3)**
Engineering of complex hardware, software systems encompasses quantitative methods to understand vague problem statements, determine what a proposed product/system must do (functionality), generate measurable requirements, decide how to select the most appropriate solution design, integrate the hardware and software subsystems and test the finished product to verify it satisfies the documented requirements.
Additional topics that span the entire product life cycle include interface management and control, risk management, tailing of process to meet organizational and project environments, configuration management, test strategies and trade-off studies.

**CVEN 653 Engineering Systems: Modeling & Simulation (3)**
This course will present principles of computational modeling and simulation of systems. General topics covered include parametric and non-parametric modeling; system simulation; parameter estimation, linear regression and least squares; model structure and model validation through simulation; and, numerical issues in systems theory. Techniques covered include methods from numerical linear algebra, nonlinear programming and Monte Carlo simulation, with applications to general engineering systems. Modeling and simulation software is utilized in this course.

**CVEN 654 Water Resources System Analysis (3)**
This course covers planning, design and management of multi-component water resources systems. After a review of the use and nature of water resources systems, topics studied in detail are: water resource economics; methodology of design; systems analysis; systems design and decision making; applied mathematical programming; probabilistic models and water quality modeling.

**CVEN 655 Water Resources System Modeling (3)**
Water resources systems are physically complex and the solution of appropriate mathematical models is computationally demanding. This course considers physical processes in water resource systems, their mathematical representation and numerical solutions. This course covers meteorologic data analysis, deterministic and stochastic modeling techniques; Flood control: structural and nonstructural alternatives and Urban drainage and runoff control, risk analysis, economics and decision making.

**CVEN 669 Special Topics in Civil Engineering (3)**
Covers a specific area related to civil engineering that is not normally covered in regular Ph.D. classes.

**CVEN 699 Master's Thesis (3)**
A supervised research thesis course. Topics to be determined by student and supervisor.

## Department of Electrical and Computer Engineering

http://www.udc.edu/seas/electrical-and-computer-engineering/

**Bachelor of Science Degrees:**
Electrical Engineering
Computer Engineering

**Master of Science Degree**:
Electrical Engineering

The Electrical Engineering and Computer Engineering programs prepare graduates for successful professional careers and advanced studies in engineering by providing a strong and robust education in the electrical and computer engineering course offerings.

The Department of Electrical and Computer Engineering (ECE) strives for continuous improvement, and we continue to update the Department's undergraduate curriculum. ECE offers an ABET-accredited Bachelor of Science degree in Electrical Engineering. The ECE Department also offers a Master of Science degree program in Electrical Engineering to meet the needs of today's students and tomorrow's practicing engineers, as well as for students who want a strong technical background as preparation for a career in engineering. The School of Engineering and Applied Sciences offers a PhD program in Computer Science and Engineering.

## Computer Engineering (CmpE)

The Bachelor of Science in Computer Engineering program is a blend of hardware and software co-design. The CmpE major emphasizes the areas of hardware/software co-design. digital system design, Integrated Circuit design, embedded processing systems, Machine Learning and cyber physical systems.

**Credit Statement:**
The BS program in Computer Engineering requires completing a total of 128 credit hours of college-level course in order to graduate.

**GPA Statement:**
A grade of "C" or better is required in all ELEC (Electrical Engineering) courses. All technical elective courses must have prior departmental approval.

**Program Educational Objectives**

The Program Educational Objectives of the Bachelor of Science in Computer Engineering are that within three to five years of graduation:

• **PEO #1:** Our graduates will apply technical knowledge and skills as practicing engineers to provide effective solutions to real world engineering challenges in industries and governmental organizations.

• **PEO #2:** Our graduates will have furthered their technical competence through advanced professional training and/or graduate studies, or attained career positions in electrical and computer engineering related jobs representing leadership and expertise beyond the entry level; and

• **PEO #3:** Our graduates will have demonstrated leadership in multidisciplinary and multi-cultural teams, synergizing effective communication, organizational skills, and highest ethical standards to contribute to the greater benefit of the society.

The first two objectives are reflective of the University's mission, which reads in part, "These programs will prepare students for immediate entry into the workforce, for the next level of education, for specialized employment opportunities, and for lifelong learning." The third objective is consistent with the University's Goals, as stated in its current catalog, which include "Student Achievement: To set high standards for student achievement and to provide quality instruction and support services to enable students to meet those standards."

**Student Program Outcomes**
Students graduating from the BS in Electrical Engineering are expected to acquire the following:
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply the engineering design to produce solutions that meet specified needs with consideration for public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

**Model Plan of Study – Computer Engineering**
**Course Requirements for the Major**
**IGED Requirements (34 credits)**
**Program Core Required Courses**
CCEN 101 Introduction to Engineering (2)
IGED 110 Found. Writing I (3)
IGED 130 Found. Oral Comm. (3)
IGED 140 Foundation Ethics (3)
IGED 210 Diversity writing (3)
IGED 270 Discovery Diversity (3)
IGED 280 Discovery Civics
CHEM 111 General Chemistry I Lecture (3)
CHEM 113 General Chemistry I Lab (1)
MATH 151 Calculus I Lecture (3)
MATH 152 Calculus II Lecture (3)
MATH 155 Calculus I Lab (1)
MATH 156 Calculus II Lab (1)
MATH 220 Discrete Mathematics (3)
MATH 260 Differential Equations with Linear Algebra (4)
PHYS 201 University Physics I Lecture (3)
PHYS 202 University Physics II Lecture (3)
PHYS 205 University Physics I Lab (1)
PHYS 206 University Physics II Lab (1)
APCT 231 Computer Science I Lecture (3)
APCT 232 Computer Science II Lecture (3)
APCT 233 Computer Science I Lab (1)
APCT 234 Computer Science II Lab (1)
CSCI 241 Data Structure (3)
CSCI 341 Software Engineering (3)
ELEC 225 Electrical Circuits (3)
ELEC 226 Electrical Circuit Laboratory (1)
ELEC 301 Engineering Mathematics (3)
EEC 307 Probability and Statistics for Engineers (3)
EEC 315 Comp. Organization (3)
EEC 316 Comp. Organization Laboratory (1)
ELEC 360 Embedded Processing Systems Design (3)
ELEC 358 Analog and Digital Electronics (3)
ELEC 359 Analog and Digital Electronics (1)
ELEC 371 Signals and Systems Lecture (3)
ELEC 374 Signals and Systems Lab (1)
ELEC 431 Cyber Physical Sys. (3)
ELEC 432 Cyber Physical Sys. Laboratory (1).
ELEC 480 Dig. Design & Synth (3)
EEC 83 Dig. Design & Synth Laboratory (1)
ELEC 491 Senior Design I (3)
ELEC 492 Senior Project II* (3)
MECH 406 Engineering Economics (3)

**Computer Science Core courses:**
APCT 231/233 Computer Science I (Lecture + Lab)
APCT 232/234 Computer Science II (Lecture + Lab)
CSCI 241 Data Structure
CSCI 341 Software Engineering
CSCI 412 Operating Systems

**Approved Computer Science Elective Courses:**
CSCI 315 Unix and System Programming
CSCI 412 Operating Systems
CSCI 414 Introduction to Artificial Intelligence
CSCI 435 Digital Image Processing
CSCI 421 Machine Learning
CSCI Secure Software Engineering

**Approved Computer Engineering Elective courses:**
ELEC 410 Communications and Security for Smart Grid (3)
ELEC 458 Digital Signal Processing (3)
ELEC 468 Wireless Communications (3)
ELEC 469 Digital Communications I (3)
ELEC 473 Digital Communications I Lab (1)
ELEC 474 Advanced Topics in Electrical Engineering (3)

## Electrical Engineering (EE)

The Bachelor of Science in Electrical Engineering program emphasizes the areas of communications, signal processing, and control and power systems. The Department has contacts with various private and public employers for part-time employment and summer internships

**Credit Statement:**
The BS program in Electrical Engineering requires completing a total of 128 credit hours of college-level course in order to graduate.

**GPA Statement:** A grade of "C" or better is required in all ELEC (Electrical Engineering) courses.

**Program's Educational Objectives**
The Program Educational Objectives of the Bachelor of Science in Electrical Engineering are that within three to five years of graduation:

- **PEO #1**: Our graduates will apply technical knowledge and skills as practicing engineers to provide effective solutions to real world engineering challenges in industries and governmental organizations.
- **PEO #2**: Our graduates will have furthered their technical competence through advanced professional training and/or graduate studies, or attained career positions in electrical and computer

engineering related jobs representing leadership and expertise beyond the entry level; and

- **PEO #3**: Our graduates will have demonstrated leadership in multidisciplinary and multi-cultural teams, synergizing effective communication, organizational skills, and highest ethical standards to contribute to the greater benefit of the society.

The first two objectives are reflective of the University's mission, which reads in part, "These programs will prepare students for immediate entry into the workforce, for the next level of education, for specialized employment opportunities, and for lifelong learning." The third objective is consistent with the University's Goals, as stated in its current catalog, which include "Student Achievement: To set high standards for student achievement and to provide quality instruction and support services to enable students to meet those standards."

**Student Program Outcomes**

Students graduating from the BS in Electrical Engineering are expected to acquire the following:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply the engineering design to produce solutions that meet specified needs with consideration for public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The Bachelor of Science degree program in Electrical Engineering is accredited by the Engineering Accreditation Commission of ABET, Inc. (http://www.abet.org)

**Model Plan of Study - Electrical Engineering**
**Model Plan of Study - EE with Computer Engineering option**

**Course Requirements for the Major**

**IGED Requirements (34 credits)**

**Program Core Required Courses**

APCT 231 Computer Science I Lecture (3)
APCT 233 Computer Science I Lab (1)
CCEN 101 Introduction to Engineering (2)
CHEM 111General Chemistry I Lecture (3)
CHEM 113 General Chemistry I Lab (1)
ELEC 301 Engineering Mathematics (3)
ELEC 307 Probability and Statistics for Engineers (3)
ELEC 351 Electronics I Lecture (3)
ELEC 352 Electronics II Lecture (3)
ELEC 353 Electronics I Lab (1)
ELEC 354 Electronics II Lab (1)
ELEC 371 Signals and Systems Lecture (3)
ELEC 374 Signals and Systems Lab (1)
ELEC 467 Fundamentals of Communications Lecture (3)
ELEC 476 Fundamentals of Communications Lab (1)
ELEC 495 Capstone Senior Project I* (3)
ELEC 496 Capstone Senior Project II* (3)
MATH 151Calculus I Lecture (3)
MATH 152 Calculus II Lecture (3)
MATH 155 Calculus I Lab (1)
MATH 156 Calculus II Lab (1)
MATH 260 Differential Equations with Linear Algebra (4)
MECH 406 Engineering Economics (3)
PHYS 201 University Physics I Lecture (3)
PHYS 202 University Physics II Lecture (3)
PHYS 205 University Physics I Lab (1)
PHYS 206 University Physics II Lab (1)

**Writing Intensive Course**

(Consult with your Faculty Advisor)
*This capstone course sequence satisfies the requirements of the general education "Frontier Capstone" courses.

**Electrical Engineering**

**Required courses in addition to the core courses for the non-computer engineering option track:**

CVEN 201 Engineering Mechanics I (3)
ELEC 356 Physical Electronics (3)
ELEC 361 Electromagnetic Theory (3)
ELEC 470 Control Systems & Applications Lecture (3)
ELEC 477 Control Systems & Applications Lab (1)
ELEC XXX* Electrical Engineering Electives (14)
PHYS 203 University Physics III Lecture (3)
PHYS 207 University Physics III Lab (1)

***Approved Electrical Engineering Electives**

ELEC 410 Communications and Security For Smart Grid (3)
ELEC 420 Power Electronics (3)
ELEC 458 Digital Signal Processing (3)
ELEC 461 Electrical Energy Conversion Lecture (3)
ELEC 462 Electrical Energy Conversion Lab (1)
ELEC 463 Energy Systems (3)
ELEC 468 Wireless Communications (3)
ELEC 469 Digital Communications Systems Lecture (3)
ELEC 471 Digital Control Systems (3)
ELEC 473 Digital Communications Systems Lab (1)
ELEC 474 Advanced Topics in Electrical Engineering I (3)
MECH 478 Mechatronics (3)
ELEC 478 Digital Int. Cir. Des. Lec. (3)
ELEC 479 Digital Int. Cir. Des Lab (1)
ELEC 480 Digital System Design and Synthesis Lecture (3)
ELEC 483 Digital Design and Synthesis lab (1)
MECH 487 Photovoltaic Cells and Solar Thermal Energy Systems (3)

## COURSE DESCRIPTIONS: ELECTRICAL ENGINEERING (ELEC)

**CCEN 101 Introduction to Engineering (2)**
Introduces students interested in engineering disciplines to basic scientific principles and engineering concepts through hands-on experiments. These experiments will be designed to motivate the students to acquire the knowledge, skills and attitudes necessary to be successful in the pursuit of engineering disciplines. In addition, students in this course will learn how to analyze, interpret and present data. Emphasis on guided design and problem-solving methodologies. Students undertake practice-oriented group design projects. Written reports and oral presentations will be required. Required of all freshman engineering students. Lab 6 hrs.

**ELEC 225 Electrical Circuits (3)**
Description, analysis, simulation, and Design, of electric circuits. Basic concepts and laws of electrical circuits such as Ohm's and Kirchoff's laws, Thevenin and Norton theorems and equivalents, DC and AC steady-state analysis of simple circuits, transient analysis of first and second-order circuits, frequency response and transfer functions of first and second-order circuits, and ideal op-amp circuits and diode circuits. Lec. 3 hrs. Prerequisite: PHYS 201, PHYS 205. Co-req: ELEC 226..

**ELEC 226 Electrical Circuits Laboratory (1)**
A laboratory course to accompany Electrical Circuits. This course is the first in a sequence of laboratory courses intended to develop a strong foundation in designing, assembling, and testing electrical circuits. Lab 1 hrs. Prerequisite: PHYS 201, PHYS 205, Coreq: ELEC 225.

**ELEC 241 Assembly Language and Microprocessors (3)**
Concepts of assembly language and the machine representation of instructions and data of a modern digital computer are presented. Students will have the opportunity to study machine addressing, stack operations, subroutines, and programmed and interrupt driven I/O. Also, basic concepts of machine organization are studied. This will include computer architecture at the register level, micro-operation components of instructions and hardware interfaces. Lec. 3 hrs. Prerequisite: APCT 231, APCT 233. Co-req.: ELEC 242

**ELEC 242 Assembly Language and Microprocessors Laboratory (1)**
A laboratory course to accompany the Assembly and Microprocessors lecture course. Students will have the opportunity to develop assembly language programs utilizing machine addressing, stack operations, subroutines, and programmed and interrupt driven I/O. Lab:1 hrs. Prerequisite: APCT 231, APCT 233. Co-req.: ELEC 241.

**ELEC 301 Engineering Mathematics (3)**
Covers Fourier series and integral, Laplace transform, periodic functions, partial differential equations, Bessel functions and Legendre polynomials, complex analytic functions, and Taylor and Laurent series. Lec. 3 hrs., Prerequisite: MATH 260.

**ELEC 307 Probability and Statistics for Engineers (3)**
Covers purpose of statistics, methods of representation, sample mean, sample variance, random experiments, probability, random variable, discrete and continuous distributions, binomial, Poisson and normal distribution sampling. Lec. 3 hrs., Prerequisite: MATH 152, MATH 156.

**ELEC 308 Applied Numerical Analysis For Engineers (3)**
Covers systems of linear equations: elimination, iteration, relaxation methods, eigenvalue problems, nonlinear equations, numerical differentiation and integration, interpolation methods of finite differences. Lec. 3 hrs., Prerequisite: MATH 260.

**ELEC 315 Computer Organization (3)**
Covers foundations of digital design and digital computer systems, representation of information using the binary number system, introduction to Boolean algebra, design of combinational logic circuits, design of sequential logic circuits, design of registers, counters and memory units, synchronous sequential circuit analysis and design, finite state-machine, and introduction to the use of hardware description languages and programmable logic devices. Lec. 3 hrs., Prerequisite: ELEC 225, ELEC 226. Co-req.: ELEC 316.

**ELEC 316 Computer Organization Laboratory (1)**
A Lab course to accompany the Computer Organization course. Covers the design of combinational logic circuits, sequential logic circuits, registers, counters and memory units, synchronous sequential circuit, finite state-machine. Extensive use of hardware description languages and programmable logic devices. Lab. 1 hrs., Prerequisite: ELEC 225, ELEC 226. Co-req.: ELEC 315.

**ELEC 351 Electronics I Lecture (3)**
Covers semiconductor diodes, bipolar junction transistors (BJT), and junction field effect transistors (JFET); design of BJT and JFET amplifiers, and computer-aided design and circuit simulation. Lec. 3 hrs., Prerequisite: ELEC 225, ELEC 226. Co-req.: ELEC 353.

**ELEC 352 Electronics II Lecture (3)**
Covers operational amplifiers, frequency response characteristics of transistor amplifiers, feedback amplifiers, oscillators, filters, and pulsed wave-forms. Computer-aided design and circuit simulation. Lec. 3 hrs., Prerequisite: ELEC 351, ELEC 353. Co-req.: ELEC 354.

**ELEC 353 Electronics I Laboratory (1)**
A laboratory course to accompany Electronics I. Includes experiments on discrete transistor characteristics and circuits. Lab 3 hrs., Co-req.: ELEC 351.

**ELEC 354 Electronics II Laboratory (1)**
Continues Electronics Lab I. Includes experiments on design of amplifiers and op-amp circuits. Lab 3 hrs., Prerequisite: ELEC 351, ELEC 353. Co-req.: ELEC 352.

**ELEC 356 Physical Electronics (3)**
Covers the growth and properties of physical and optical semiconductor materials; kinetics of charge carriers in electronic devices; design, fabrication, and operation of integrated circuits and devices, and optoelectronic devices including LEDs, lasers and, solar cells. Lec. 3 hrs., Prerequisite: PHYS 203, PHYS 207.

**ELEC 358 - Analog and Digital Electronics (3)**
This course covers the fundamental concepts of microelectronic circuit design at the transistor level with emphasis on circuit theory and simulation via computer aided design. Students are expected to gain good working knowledge of the important phases of microelectronic circuit design as well as how to present their designs to wide variety of audience. Pre-requisite: ELEC 225 and ELEC 226 with grade C or better. Co-requisite: ELEC 359.

**ELEC 359 - Analog and Digital Electronics Laboratory (1)**
This Lab course covers the fundamental concepts of analog and digital microelectronic circuit design at the transistor level with emphasis on circuit theory and simulation via computer aided design. Students are expected to gain good working knowledge of the important phases of microelectronic circuit design as well as how to present their designs to wide variety of audience. Pre-requisite: ELEC 225 and ELEC 226 with grade C or better. Co-requisite: ELEC 358.

**ELEC 360 - Embedded Processing Systems Design (3)**
Introduces the specification, design, development, and test of real time embedded system software. Use of a modern embedded microcomputer or microcontroller and reconfigurable logic systems as a target environment. Embedded applications and technologies. Introduction to software and hardware co-design. The course will also consist of a series of laboratory projects and a comprehensive final project. Lecture 3 credits, Prerequisites: APCT 232 and APCT 234, Co-Requisites: None

**ELEC 361 Electromagnetic Theory (3)**
Covers vector calculus, orthogonal coordinates, Coulomb and Gauss laws, scalar potentials, dielectrics, capacitance, and static electric and magnetic fields and their interaction with matter, as well as Laplace and Poisson equations. Lec. 3 hrs., Prerequisite: PHYS 201, PHYS 205, ELEC 225, ELEC 226

**ELEC 362 Electromagnetic Theory II (3)**
Continues of ELEC 361 with emphasis on Ampere's law, Biot-Savart Law, vector potential, magnetic circuits, Faraday's Law, the application of Maxwell's equations, plane waves, and the Poynting vector. Lec. 3 hrs., Prerequisite: ELEC 361.

**ELEC 371 Signals and Systems I (3)**
Introduces principles and techniques of continuous and discrete time linear systems analysis. Topics include signal representation, properties of systems, convolution, Fourier series and transform, FFT, sampling theorem, filtering, Laplace and Z-transform techniques. Lec. 3 hrs., Prerequisite: ELEC 351, ELEC 353, ELEC 301. Co-req.: ELEC 374.

**ELEC 374 Signals and Systems I Lab (1)**
A lab accompanying ELEC 371 to introduce students to Signals and Systems through MATLAB. Lab. 3 hrs., Prerequisite: ELEC 351, ELEC 353, ELEC 301. Co-req.:ELEC 371

**ELEC 410 Comms. and Security For Smart Grid (3)**
This course informs the students of the various communication technologies that are essential in the evolution of a Smart Grid and will train the students about the types of cyber-attacks on the Smart Grid, privacy and security issues and their possible solutions. Through this course the students are expected to gain an in-depth knowledge about the communication and security aspects of a Smart Grid. Students are expected to finish a course project and made presentations in class. Lecture 3, Credit 3. Prerequisite: ELEC 467.

**ELEC 420 Power Electronics (3)**
This power electronics course Introduces basic topologies of power switching circuits, switching characteristics of semiconductor devices including IGBT transistors, modeling, design, analysis, and control of DC/DC converters, AC/DC rectifiers, DC/AC inverters, AC/AC cycle converter, and switch- mode power supplies and power electronics applications in motor drives, uninterrupted power supplies, power systems, high frequency energy conversion, and renewable energy systems. Software and hardware are used in the lab to design and analyze power electronics circuits in real time. Lecture 3, Credit 3. Prerequisite: ELEC 352, ELEC 354.

**ELEC 430 - Introduction to Machine Learning (3)**
Machine learning is the science of getting computers to act without being explicitly programmed. This course provides a broad introduction to machine learning, datamining, and statistical pattern recognition. It will expose students to the most effective machine learning techniques, and gain practice implementing them and getting them to work. It will also expose the students to not only the theoretical underpinnings of learning, but also gain the practical know-how needed to quickly and powerfully apply these techniques to new problems. Through this course, the students will gain in-depth knowledge on machine learning techniques used to harvest the wealth of information contained "Big Data". Pre-requisite: Junior standing, or by permission of instructor. Co-requisite: None.

**ELEC 431- Cyber Physical Systems Design (3)**
This course introduces students to the research, design, modeling, simulation and analysis of reliable cyber-physical systems. Model-based design methods and tools. Theoretical and practical issues related to simulation methods for cyber-physical systems. Case studies in energy and automotive cyber-physical systems application domains. The course will also consist of a series of laboratory projects and a comprehensive final project. Lecture 3 credits, Prerequisites: ELEC 360, Co-Requisite: ELEC 432.

**ELEC 432- Cyber Physical Systems Design Laboratory (1)**
This lab course will provide students with a series of laboratory exercises and a semester long project. System-level design methodologies and tools will be illustrated on several applications including building automation and electrical power systems control. During the Lab sessions, methodologies and tools will be demonstrated on industrial strength platforms together with specific design cases. Low-cost heterogenous FPGA boards and high-level synthesis and development tools will be utilized in the laboratory exercises and the course project. Pre-requisite: ELEC 360, Co-Requisite: ELEC 431.

**ELEC 455 Adaptive Filters (3)**
The theory and design techniques of finite-impulse response filters. Stationary discrete-time stochastic processes, Wiener filter theory, the method of steepest descent, adaptive transverse filters using gradient-vector estimation, analysis of the LMS and RLS algorithm. Adaptive filters design and software/hardware implementations. Application examples in noise canceling, channel equalization, and array processing. Lec. 3 hrs., Prerequisite: ELEC 458.

**ELEC 457 Digital Electronics (3)**
Introduces integrated circuit (IC) technology. Digital logic families (TTL, TTL (LS), NMOS, CMOS, ECL, IC's) and digital IC's, examples of digital and analog IC design, memory circuits are also examined. Lec. 3 hrs., Prerequisite: ELEC 352, ELEC 354.

**ELEC 458 Digital Signal Processing I (3)**
Time and frequency analysis of discrete- time signals and systems, sampling theorem, Z-transform, FFT techniques. Fast implementations of the DFT and its relatives. IIR and FIR digital filter design, implementation, and quantization error analysis. Decimation, interpolation and introduction to multirate digital signal processing. Lec. 3 hrs., Prerequisite: ELEC 371, ELEC 374.

**ELEC 459 Introduction to Digital Computer Architecture and Design (3)**
Provides an understanding of the structure and operation of contemporary computer systems from the instruction set architecture level through the register transfer implementation level. Also explores theory and application of computation, levels of abstraction, instruction set design, assembly language programming, processor data paths, data path control, pipeline design, design of memory hierarchies, memory management, and input/output. Lec. 3 hrs., Prerequisite: ELEC 241, ELEC 242, ELEC 315, ELEC 316, ELEC 480, ELEC 483.

**ELEC 460 Antenna Design Theory Lab (1)**
This laboratory course accompanies ELEC 466 and emphasizes the hands-on analysis/design of operational antennas with the aid of modern equipment for measurement and testing. Various software packages are applied in the Lab; 3 hrs.; Co-req.: ELEC 466.

**ELEC 461 Electrical Energy Conversion (3)**
Covers theory of electromechanical energy conversion, DC motors and generators, power electronics, AC rotating machine theory. Lec. 3 hrs., Prerequisite: ELEC 352, ELEC 354. Co-req.: ELEC 462.

**ELEC 462 Electrical Energy Conversion Laboratory (1)**
Includes experiments on DC and AC motors and generators. Lab 3 hrs., Prerequisite: ELEC 352, ELEC 354. Co-req.: ELEC 461.

**ELEC 463 Energy Systems (3)**

Examines principles of electrical power generation, transmission, and distribution with applications to present energy problems. Lec. 2 hrs., ELEC 352, ELEC 354, ELEC 362.

**ELEC 464 Digital Image Processing (3)**
Fundamental principles and algorithms for digital image processing. Two-dimensional spatial frequency transforms. Image enhancement, histogram equalization, smoothing and sharpening. Image encoding, analysis, and segmentation. Feature extraction, and object and pattern recognition. Lec. 3 hrs., Prerequisite: ELEC 458.

**ELEC 465 Introduction to Microwaves (3)**
Covers the analysis and design of transmission lines, microwave systems, and wave-guides. Smith chart characteristics, active and passive components, and measurement techniques. Lec. 3 hrs., Prerequisite: ELEC 362.

**ELEC 466 Antenna Design Theory and Applications (3)**
Covers the design and construction of operational antennas and testing of the antennas so that students get an understanding of most types of antennas in common use. Lec. 3 hrs., Prereq: ELEC 362, ELEC 465. Co-req.: ELEC 460.

**ELEC 467 Fundamentals of Communication Systems Lecture (3)**
Introduces concepts underlying analog and digital communication systems, including amplitude modulation, phase and frequency modulation, sampling and quantization theory, and pulse modulation. Covers effect of noise on the performance of these techniques. Lec. 3 hrs., Prereq: ELEC 307, ELEC 371, ELEC 374. Co-req.: ELEC 476.

**ELEC 468 Wireless Communications (3)**
Cellular radio concepts: frequency reuse and handoff strategies. Large scale path loss models; fading and multipath: flat fading versus frequency selective fading; modulation schemes for mobile communication: narrowband versus spread spectrum; equalization; RAKE receiver; multiple access techniques; FDMA, CDMA; and co-channel interference and channel capacity. Common wireless standards. Lec. 3 hrs. Prerequisite: ELEC 467 and ELEC 476.

**ELEC 469 Digital Communications I (3)**
Basis functions, orthogonalization of signals, vector representation of signals, optimal detection in noise, matched filters, pulse shaping, inter-symbol interference, maximum likelihood detection, channel cutoff rates, error probabilities, bandwidth, and power-limited signaling. Basics modulations schemes: ASK, FSK, PSK, QAM. Prereq: ELEC 467.

**ELEC 470 Introduction to Control Systems & Applications (3)**
Examines various techniques available for analysis and design of continuous time and discrete time feedback control systems. Topics include modeling, performance measures, transfer functions, generalized error coefficient, introduction to state-space methods, stability, controllability and observability, root locus and frequency domain analysis, compensation methods, state feedback and pole placements control system design Lec. 3 hrs., Prerequisite: ELEC 371, ELEC 374. Co-req.: ELEC 477

**ELEC 471 Digital Control Systems (3)**
Introduces the analysis and design of digital control systems, Z-transform, discrete linear systems, state-space and frequency domain analysis, and simulation and analysis using microprocessors. Prereq: ELEC 470, ELEC 477.

**ELEC 472 Signals and Systems II (3)**
Provides mathematical tools for analysis of time-invariant and time-varying linear systems. State-space approach to analysis of systems is covered. Nonlinear and multi-variable systems are introduced. Lec. 3 hrs., Prereq: ELEC 371, ELEC 374.

**ELEC 473 Digital Communications Laboratory (1)**
This is a laboratory course in digital communication. Experiments include sampling, frequency division, multiplexing and pulse code modulation. It also includes simulation techniques of digital communication systems. The course is intended to supplement the course ELEC 469, Prerequisite: ELEC 467, ELEC 476, ELEC 307. Co-req: ELEC 469

**ELEC 474 Adv. Topics in Electrical Engineering I (3)**
Senior elective. Topic is to be chosen from one of the many concentrations of electrical engineering. Lec. 3 hrs., Prerequisite: Permission of instructor

**ELEC 475 Adv. Topics in Electrical Engineering II (3)**
Senior elective. Continuation of ELEC 474. Lec 3 hours, Prerequisite: Permission of instructor

**ELEC 476 Fundamentals of Comms. Systems Lab (1)**
This is a laboratory course in RF and digital communication. Experiments include operation of phase-locked loop, AM and FM modulation, frequency division multiplexing, and pulse-code modulation. Lab 3 hrs., Prerequisite: ELEC 307, ELEC 371, ELEC 374., Co-req.: ELEC 467.

**ELEC 477 Introduction to Control Systems & Applications Lab (1)**
Experiments include simulation of continuous time and discrete time feedback control systems, such as modeling, performance measures, transfer functions, generalized error coefficient, introduction to state-space methods, stability, controllability and observability, root locus and frequency

domain analysis, compensation methods, state feedback and pole placements control system design. Lab 3 hrs., Prerequisite: ELEC 371, ELEC 374. Co-req.: ELEC 470.

**ELEC 478 Digital Integrated Circuit Design Lecture (3)**
Studies the design process of VLSI CMOS circuits. Also covers all the major steps of the design process, including logic, circuit, and layout design. A variety of computer-aided tools are discussed and used to provide VLSI design experience that includes design of basic VLSI CMOS functional blocks, and verification of the design, testing, and debugging procedures. Lec. 3 hrs., : ELEC 315, ELEC 316, ELEC 352, ELEC 354, Co-requisite: ELEC 479.

**ELEC 479 Digital Integrated Circuit Design Lab (1)**
Provides VLSI design experience that includes design of basic VLSI CMOS functional blocks, verification of the design, testing, and debugging. Several complex VLSI projects will be submitted for fabrication. Prerequisite: ELEC 315, ELEC 316, ELEC 352, ELEC 354. Co-req.: ELEC 478.

**ELEC 480 Digital System Design and Synthesis (3)**
This introductory level VHDL course covers coding styles and methodology used for testing hardware component and FPGA, or system. The course emphasizes the use of computer-aided design (CAD) tools in the description, modeling, and design of digital systems. The use of Field Programmable gate arrays is integrated into the course as the target physical domain. The main characteristics of the Verilog Language will also be discussed. Prerequisite: ELEC 315, ELEC 316. Co-requisite: ELEC 483.

**ELEC 483 Digital System Design and Synthesis Laboratory (1)**
The course emphasizes the use of computer-aided design (CAD) tools in the description, modeling, simulation, verification and testing of digital systems. Alternative coding styles and methodology used for combinational and sequential digital logic designs are evaluated. The use of Field Programmable gate arrays is integrated into the course as the target physical domain. Lab 3 hrs., Prerequisite: ELEC 315, ELEC 316, Co-requisite: ELEC 480.

**ELEC 495 Senior Project I (3)**
Conceptualization, design, building, testing, and promulgation of an electrical engineering project is carried out by the student under supervision of a faculty member. Lab 6 hrs., Prerequisite: ELEC 315, ELEC 316, ELEC 352, ELEC 354, ELEC 371, ELEC 374.

**ELEC 496 Senior Project II (3)**
Continues the design project, Senior Project I. Students will consider feasibility of a design project, the effect of economic, social, ethical, sustainability, and environmental factors on the design, and make presentations in oral and written form for evaluation. Reliability, design optimization, ethical and safety issues will be emphasized. The class meets twice each week, 120 minutes each. Pre-requisite: ELEC 495, Co-Requisite: None.

## Electrical Engineering

The Master of Science in Electrical Engineering (EE) is designed to meet the needs of working professionals in the greater Washington DC metropolitan area and full-time graduate students. EE offers a high-level graduate program with strong foundations in theory to: a) equip students with interdisciplinary skills required to grasp and develop new technologies and trends in the electrical engineering field; and b) prepare electrical engineers with the knowledge and tools needed to advance into leadership roles and to shape the future of this dynamic field.
The program has the following two areas of emphasis:

- Communications and Signal Processing
- Digital Systems Engineering

The EE program requires 30 credit hours of graduate-level course work. The program offers both thesis and non-thesis options. However, students who are supported as research assistants are required to pursue the thesis option.

**Thesis option, and Non-thesis option**
A thesis option is offered for students who want the opportunity to obtain expertise in research and who may be interested in pursuing a doctoral degree in electrical engineering or computer engineering. A non-thesis option is offered for students who want a practical industrial applications-oriented degree. Thesis and project reports must be approved and signed by the graduate school.

**General Requirements**
Maximum of two graduate-level course units may be transferred from another institution to apply toward the EE degree. Transferred courses must logically fit into the student's graduate program. The student's graduate advisor decides which courses are acceptable.

The UDC approval of transfer credit may also be required. These two courses should not have been used in fulfillment of any other degree(s). At least half of the coursework credits, excluding thesis or technical report credits, must be taken with other than a single professor.

Any coursework more than six years old at the time of the final examination will not be used to fulfill any of the EE degree requirements.

All graduate credits must have letter grades of A, B, or C, or pass/fail grades of S (Satisfactory). No More than two graduate courses with letter grade C will be accepted.

A minimum grade point average (GPA) of 3.0 is required to remain in good standing and to graduate.

**Degree Requirements for the Thesis Option**
Plan of Study: The student must meet with his/her advisor to formulate a plan of study. The plan of study must be submitted to the student's advisory committee after completing at least 9 but no more than 18 semester credits. Satisfactory completion of 30 hours of approved graduate credits, including 6 hours of thesis, is required.

At least 18 credits of course work, excluding thesis, must be at or above the 500 level. Courses below the 500 level must be approved by the student's advisory committee.

Admission to Candidacy: The admission to candidacy form must be completed prior to the thesis defense.
The student should consult the schedule of classes for deadlines on submitting this form for spring graduation.
Thesis Defense: A copy of the thesis should be distributed to each member of the advisory committee and to the graduate school at least two weeks prior to the defense. The student should make a public announcement of the defense within the department to allow attendance by interested faculty, students, and the University community. Upon application for the thesis defense, students are required to submit a technical paper or abstract, based on some aspect of the thesis research, in a form suitable for submission to a regional technical conference.

**Degree Requirements for the Non-Thesis Options**
Plan of Study: The student must meet with his/her advisor to formulate a plan of study. The plan of study must be submitted after completing at least 9 but no more than 18 semester credits.

Satisfactory completion of 30 hours of approved graduate credits is required. At least 24 credits of course work must be at or above the 500 level. Courses below the 500 level must be approved by the student's advisory committee.

Satisfactory passing of a written comprehensive exam is required. Students can take the comprehensive exam after completing the core courses in their area of study.

A 3-credit project report based on a current practical industry-type problem may be substituted for the comprehensive exam.

**Curriculum of the EE program**
**Model Plan of Study - Electrical Engineering**
All students are required to take the following two core courses:

- ELEC-571 Linear systems
- ELEC-507 Probability and Random Processes

**The course requirements for students majoring in the Communications and Signal Processing area are:**

Take the following two core courses

- ELEC 558 Digital Signal Processing I
- ELEC 569 Digital Communications I

Select the rest of the courses from Groups A and C of suggested and free elective courses.

Selected courses must be approved by the student's advisory committee.

*Project option* students must take ELEC-599 Master's Project that counts for 3 credit hours.

*Thesis option* students must take ELEC-699 Master's Thesis that counts for 6 credit hours.

The course requirements for students majoring in the *Digital Systems Engineering* area are:

Take the following two core courses

- ELEC-559 Computer Architecture
- ELEC-584 Digital System-level Design

Select the rest of the courses from Groups A and C of suggested and free elective courses. Selected courses must be approved by the student's advisory committee.

*Project option* students must take ELEC-599 Master's Project that counts for 3 credit hours.

*Thesis option* students must take ELEC-699 Master's Thesis that counts for 6 credit hours.

**Group A list of Suggested Elective Courses**

| | |
|---|---|
| ELEC 510 | Communications and Security for Smart Grid |
| ELEC 520 | Power electronics |
| ELEC 555 | Adaptive Filters |
| ELEC 560 | Digital Image Processing |
| ELEC 568 | Wireless Communications |
| ELEC 569 | Digital Communications I |
| ELEC 578 | Digital Integrated Circuit Design |
| ELEC 579 | Digital Integrated Circuit Design |
| | Laboratory |
| ELEC 580 | Digital System design and Synthesis |
| ELEC 559 | Computer Architecture |
| ELEC 574 | Digital Information Theory |

| | |
|---|---|
| ELEC 575 | Wireless Networks |
| ELEC 584 | Digital System-level Design |
| ELEC 585 | Design of a System on a Chip (SoC) |
| ELEC 586 | Advanced Embedded System design |
| ELEC 658 | Digital Signal Processing II |
| ELEC 659 | Advanced Computer Architecture |
| ELEC 665 | Multimedia Communications |
| ELEC 669 | Digital Communications II |
| ELEC 673 | Coding Theory and Applications |
| ELEC 678 | Advanced Digital Integrated Circuit Design |
| ELEC 692 | Advanced Topics in Signal and Image Processing |
| ELEC 693 | Advanced Topics in Digital Communications |
| ELEC 599 | Master's Project (3 credit hours) |
| ELEC 699 | Master's Thesis (6 credit hours) |

**Group B list of Suggested Elective Courses**

| | |
|---|---|
| ELEC 510 | Communications and Security for Smart Grid |
| ELEC 520 | Power electronics |
| | |
| ELEC 555 | Adaptive Filters |
| ELEC 558 | Digital Signal Processing I |
| ELEC 564 | Digital Image Processing |
| ELEC 568 | Wireless Communications |
| ELEC 569 | Digital Communications |
| ELEC 578 | Digital Integrated Circuit Design |
| ELEC 579 | Digital Integrated Circuit Design Laboratory |
| ELEC 580 | Digital System Design and Synthesis |
| ELEC 583 | Introduction to Computer Aided Digital Design Lab |
| ELEC 574 | Digital Information Theory |
| ELEC 575 | Wireless Networks |
| ELEC 585 | Design of a System on a Chip (SoC) |
| ELEC 586 | Advanced Embedded System design |
| ELEC 592 | Advanced Topics in Signal and Image Processing |
| ELEC 658 | Digital Signal Processing II |
| ELEC 659 | Advanced Computer Architecture |
| ELEC 665 | Multimedia Communications |
| ELEC 669 | Digital Communications |
| ELEC 673 | Coding Theory and Applications |
| ELEC 678 | Advanced Digital Integrated Circuit Design |
| ELEC 693 | Advanced Topics in Digital Communications |
| ELEC 599 | Master's Project (3 credit hours) |
| ELEC 699 | Master's Thesis (6 credit hours) |

**Group C (Free Electives)**

Courses in computer science, mathematics, or any other related courses that the student's advisory committee approves. Selected courses must logically fit within the student's plan of study.

## GRADUATE COURSE DESCRIPTIONS: ELECTRICAL ENGINEERING (ELEC)

**ELEC 507 Probability and Random Processes (3)**
Foundations for the engineering analysis of random processes: Review of probability theory, Introduction to stochastic processes, Continuous time and discrete time processes, Mean functions, correlation functions, covariance functions, noise, Strict- and wide-sense stationarity, ergodicity, Gaussian processes, power spectral densities, mean square estimation, Markov processes. Prerequisite: Consent of instructor.

**ELEC 510 Comms. and Security For Smart Grid (3)**
This course informs the students of the various communication technologies that are essential in the evolution of a Smart Grid and will train the students about the types of cyber-attacks on the Smart Grid, privacy and security issues and their possible solutions. Through this course the students are expected to gain an in-depth knowledge about the communication and security aspects of a Smart Grid. Students are expected to finish a course project and made presentations in class. Lecture 3, Credit 3. Prereq: Consent of instructor.

**ELEC 520 Power Electronics (3)**
This power electronics course Introduces basic topologies of power switching circuits, switching characteristics of semiconductor devices including IGBT transistors, modeling, design, analysis, and control of DC/DC converters, AC/DC rectifiers, DC/AC inverters, AC/AC cycle converter, and switch- mode power supplies and power electronics applications in motor drives, uninterrupted power supplies, power systems, high frequency energy conversion, and renewable energy systems. Software and hardware are used in the lab to design and analyze power electronics circuits in real time. Lecture 3, Prerequisite: Consent of instructor.

**ELEC 555 Adaptive Filters (3)**
The theory and design techniques of finite-impulse response filters. Stationary discrete-time stochastic processes, Wiener filter theory, the method of steepest descent, adaptive transverse filters using gradient-vector estimation, analysis of

the LMS and RLS algorithm. Adaptive filters design and software/hardware implementations. Application examples in noise canceling, channel equalization, and array processing. Lec. 3 hrs., Prerequisite: ELEC 558.

**ELEC 558 Digital Signal Processing I (3)**
Time and frequency analysis of discrete- time signals and systems, sampling theorem, Z-transform, FFT techniques. Fast implementations of the DFT and its relatives. IIR and FIR digital filter design, implementation, and quantization error analysis. Decimation, interpolation and introduction to multirate digital signal processing. Lec. 3 hrs., Prerequisite: Consent of instructor.

**ELEC 559 Computer Architecture (3)**
Advanced computer architectures with emphasis on multiprocessor systems and the principles of their design and cost/performance factors. Instruction set design and implementation, RISC vs. CISC instruction sets; datapath and controller design, pipeline design; fixed and floating-point arithmetic; memory hierarchy designs, caches, memory systems; I/O systems and their interconnect. Interrupt and exception. Prerequisite: Consent of instructor.

**ELEC 564 Digital Image Processing (3)**
Fundamental principles and algorithms for digital image processing. Two-dimensional spatial frequency transforms. Image enhancement, histogram equalization, smoothing and sharpening. Image encoding, analysis, and segmentation. Feature extraction, and object and pattern recognition. Lec. 3 hrs., Prerequisite: ELEC 558.

**ELEC 568 Wireless Communications (3)**
Cellular radio concepts: frequency reuse and handoff strategies. Large scale path loss models; fading and multipath: flat fading versus frequency selective fading; modulation schemes for mobile communication: narrowband versus spread spectrum; equalization; RAKE receiver; multiple access techniques; FDMA, CDMA; and co-channel interference and channel capacity. Common wireless standards. Lec. 3 hrs. Prerequisite: Consent of instructor.

**ELEC 569 Digital Communications I (3)**
Basis functions, orthogonalization of signals, vector representation of signals, optimal detection in noise, matched filters, pulse shaping, inter-symbol interference, maximum likelihood detection, channel cutoff rates, error probabilities, bandwidth, and power-limited signaling. Basics modulations schemes: ASK, FSK, PSK, QAM. Lec. 3 hrs. Prerequisite: Consent of instructor.

**ELEC 571 Linear Systems (3)**
Methods of linear-system analysis, in both time and frequency domains, are studied. Techniques used in the study of continuous and discrete systems include state-variable representation, matrices, Fourier transforms, Laplace transforms, inversion theorems, sampling theory, discrete and fast Fourier transforms, and Z-transforms. Computer simulation, analysis, and design software packages are used. Prerequisite: Consent of instructor.

**ELEC 574 Digital Information Theory (3)**
Entropy and mutual information, Huffman coding, Shannon's source coding theorem, channel capacity, block coding error bounds, random coding bounds, multi-user information theory, random access channels and protocols, multi-access coding methods, network information theory. Lec. 3 hrs., Prerequisite: ELEC 507 or consent of instructor.

**ELEC 575 Wireless Networks (3)**
Fundamental concepts of wireless networks: network architecture for personal communications systems, wireless LANs, radio, tactical and other wireless networks, and design and analysis of protocols on a regular basis. Lec. 3 hrs., Prerequisite: ELEC 568.

**ELEC 578 Digital Integrated Circuit Design Lecture (3)**
Studies the design process of VLSI CMOS circuits. Also covers all the major steps of the design process, including logic, circuit, and layout design. A variety of computer-aided tools are discussed and used to provide VLSI design experience that includes design of basic VLSI CMOS functional blocks, and verification of the design, testing, and debugging procedures. Lec. 3 hrs., Prerequisite: Consent of instructor. Co-requisite: ELEC 579.

**ELEC 580 Digital System Design and Synthesis (3)**
This introductory level VHDL course covers coding styles and methodology used for testing hardware component and FPGA, or system. The course emphasizes the use of computer-aided design (CAD) tools in the description, modeling, and design of digital systems. The use of Field Programmable gate arrays is integrated into the course as the target physical domain. The main characteristics of the Verilog Language will also be discussed. Prereq: Consent of instructor.

**ELEC 584 Digital System-level Design (3)**
Digital system designs for Digital System Processors and Communications systems: Applications include matched filters, FFT, QAM Modulators, Raised Cosine Filter, Reed-Solomon and hamming code decoders, error detection and correction circuits, demodulation, and soft and hard decision decoders. Extensive use of hardware and software system-level design tools and packages. Prerequisite: ELEC 580 or consent of instructor.

**ELEC 585 Design of a System on a Chip (SoC) (3)**

System-level design and optimization of multiprocessor systems on a reconfigurable chip. System-level design methodologies. System level design representations and modeling languages. System level modeling. System specification, algorithm modeling, decomposition, IP selection. Synthesis and co-verification of system components. Extensive use of state-of-the-art of CAD tools and FPGA boards. Lab 3 hrs., Prerequisite: ELEC 580 or consent of instructor.

**ELEC 586 Advanced Embedded System Design (3)**
Advanced embedded system design principles and practices. Emphasizes formal design methodologies such as hardware-software co-design and co-verification, performance optimization, distributed embedded systems. Soft core and hard core embedded microprocessors. Prerequisite: ELEC 480 or ELEC 580 or consent of instructor.

**ELEC 599 Master's Project (3)**
Lab 3 hrs, Prereq: Graduate Standing or consent of instructor.

**ELEC 631 Advanced Computational Intelligence (3)**
Topics covered in this course include pattern classification, supervised learning, unsupervised learning, data clustering, time series prediction, feature selection and extraction, decision tree learning, neural networks, support vector machine, and others. Implement computational intelligence algorithms.

**ELEC 632 Advanced Computer Architecture (3)**
High performance computer architectures: instruction set principles, pipelining, multiprocessing systems, parallel processing, instruction level parallelism, fine-grain and coarse grain parallelism, SIMD, MIMD, multiple instruction issue, data coherency, memory hierarchy design, interconnection networks, vector processors.

**ELEC 633 Advanced Embedded System design (3)**
Advanced embedded system design principles and practices. Emphasizes formal design methodologies such as hardware-software co-design and co-verification, performance optimization, distributed embedded systems. Soft core and hard-core embedded microprocessors.

**ELEC 634 Detection and Estimation (3)**
Estimation of unknown parameters, Cramer-Rao lower bound; optimum (map) demodulation; filtering, amplitude and angle modulation, comparison with conventional systems; statistical decision theory Bayes, minimax, Neyman/Pearson, Criteria for simple and composite hypotheses; application to coherent and incoherent signal detection; M-ary hypotheses; application to uncoded and coded digital communication systems.

**ELEC 635 VLSI Architecture (3)**
MOS transistors: fabrication, layout, characterization; CMOS circuit and logic design: circuit and logic simulation, fully complementary CMOS logic, pseudo- nMOS logic, dynamic CMOS logic, pass-transistor logic, clocking strategies; sub system design: ALUs, multipliers, memories, PLAs; architecture design: datapath, floor planning, iterative cellular arrays, systolic arrays; VLSI algorithms; chip design and test: full custom design of chips, possible chip fabrication by MOSIS and subsequent chip testing.

**ELEC 636 Adv. Electronic Materials and Devices (3)**
Operating principles, fabrication, characteristics and applications of advanced electronic devices will be covered. Core topics are as follows: ideal properties of electron gas; electronic states in bulk GaAs and at the heterojunctions; doping properties in heterostructures; electron transport properties at 2D interfaces (including resonant tunneling); electronic and optical properties at 2D interfaces; device applications (HEMT, HBT, QWLaser, QDLaser), low-dimensional and nanometer-scale device physics, magnetic & ferroelectric devices, single-electron transistors, quantum devices, and RTD's.

**ELEC 637 Advanced Communication Systems (3)**
Basis functions, orthogonalization of signals, vector representation of signals, optimal detection in noise, matched filters, pulse shaping, intersymbol interference, maximum likelihood detection, channel cutoff rates, error probabilities, bandwidth, and power-limited signaling.

**ELEC 649 Special Topics in Computer Eng. (3)**
Covers a specific area related to electrical and computer engineering that is not normally covered in regular Ph.D. classes.

**ELEC 658 Digital Signal Processing II (3)**
Overview of z-transform, FFT, llR and FIR filters. Multirate digital signal processing. Optimum filtering of noisy signals. Adaptive digital filters. Power spectrum estimation. Wavelet transform. Interference canceling. Selected applications of DSP techniques in speech, communications and image processing. Lec. 3 hrs., Prerequisite ELEC 558.

**ELEC 659 Advanced Computer Architecture (3)**
High performance computer architectures: instruction set principles, pipelining, multiprocessing systems, parallel processing, instruction level parallelism, fine grain and coarse grain parallelism, SIMD, MIMD, multiple instruction issue, data coherency, memory hierarchy design, interconnection networks, vector processors. Prerequisite: ELEC 559.

**ELEC 665 Multimedia Communications (3)**
Comprehensive coverage of media compression, synthesis and recognition, media communications and networking, and standards for audiovisual communications over wired and wireless networks. Lec. 3 hrs., Prerequisite: ELEC 569.

**ELEC 669 Digital Communications II (3)**
The theory and practice of efficient digital modulations over linear dispersive channels, including adaptive equalization and synchronization, multiuser detection, Lec. 3 hrs., Prerequisite: ELEC 569.

**ELEC 673 Coding Theory and Applications (3)**
The theory and practice of error control coding with emphasis on linear, cyclic, convolutional, and parallel concatenated codes (Hamming codes, Repetition codes, polynomial codes, Reed Solomon Codes). Turbo codes, Viterbi decoding and applications. Lec. 3 hrs., Prerequisite: ELEC 569.

**ELEC 678 Advanced Digital Integrated Circuit Design Lecture (3)**
Design and implementation of very-large-scale integrated systems (VLSI) with emphasis on full-custom chip design. Topics will include device and interconnect modeling, static and dynamic logic families, latch and flop design, RAM design, ALU design, low power techniques, power supply and clock distribution, signal integrity, and I/O design. Extensive use of CAD tools for IC design, simulation, and layout verification. Lec. 3 hrs., Prerequisite: ELEC 478 or ELEC 578.

**ELEC 689 Special Topics in Electrical Eng. (3)**
This course will cover different areas as Machine Learning, Game Theory, Deep Learning, Reinforcement Learning, Advanced Electrical and Computer Engineering topics. Prerequisites will be decided by the instructor.

**ELEC 692 Advanced Topics in Signal and Image Processing (3)**
Topics of current interest in signal and image processing. Content may vary from offering to offering. Lec. 3 hrs., Prerequisite: Consent of instructor.

**ELEC 693 Adv Topics in Digital Communications (3)**
Topics of current interest in digital communications. Content may vary from offering to offering. Lec. 3 hrs., Prerequisite: Graduate Standing or consent of instructor.

**ELEC 699 Master's Thesis (3-6)**
Lab 6 hrs, Prerequisite: Graduate Standing or consent of instructor.

# Department of Mechanical Engineering

http://www.udc.edu/seas/mechanical-engineering/

**Degrees**

Bachelor of Science in Biomedical Engineering
Bachelor of Science in Mechanical Engineering
Master of Science in Mechanical Engineering

The Mechanical Engineering (ME) Department provides a program of instruction in the discipline of mechanical engineering and biomedical engineering to prepare graduates to pursue a productive career in engineering with continued professional growth.

The ME department offers students the best possible quality learning experience with the aid of modern educational and research laboratories. We offer state-of the-art labs in metal additive (3D) manufacturing, biomechanical and rehabilitation engineering, nanoscale heat transfer, microscopy and device characterization, and nano/microfabrication technology with a class-1000 cleanroom.

Funding from the National Science Foundation (NSF), National Aeronautics and Space Administration (NASA), Department of Defense (DoD), Air Force Office of Sponsored Research (AFOSR), the National Institutes of Health (NIH), the National Institute of Standards and Technology (NIST), Department on Aging and Community Living (DACL) as well as industrial companies such Boston Scientific Corporation, Lockheed Martin, and Washington Metropolitan Area Transit Authority (WMATA), offer the students hands-on, research-based learning and financial support. In addition, while pursuing their degree, there are a large number of scholarships, internships, and job opportunities from which students can receive additional support.

The ME department also houses several multi-million dollar centers including the NSF-CREST Center for Nanotechnology Research and Education (https://www.udc.edu/seas/centers/cnre/) and the NASA Center for Advanced Manufacturing in Space Technology & Research (https://www.udc.edu/seas/centers/camstar/). These centers engage SEAS students in cutting edge research with world renowned industries and government laboratories. Talented and motivated engineering students at UDC have a unique opportunity to earn a stipend and build their career by working with industries and government agencies.

## Bachelor of Science in Biomedical Engineering

Among HBCUs nationwide, the University of the District of Columbia (UDC) Bachelor of Science (BS) in Biomedical Engineering (BME) degree program is the first to be

accredited by the Engineering Accreditation Commission (EAC) of the Accreditation Board for Engineering Technology (ABET). ABET accreditation assures that our program meets the quality standards of the profession.

The overall mission of the UDC BME program is to prepare and equip our students to become competitive graduates, meeting the needs and demands of a growing technological era aimed toward solving problems tied to human health and medicine. BME is a relatively new, exciting and rapidly growing multidisciplinary field that involves the application of engineering principles and design concepts to solve medically-related problems that affect human health and quality of life. Our program graduates are equipped to enter the workforce upon graduation, to pursue advanced degree programs in BME and other related fields and have the capacity to pursue medical school. An emphasis is placed on critical thinking, innovation, ethical and professional responsibility, teamwork, and leadership. Further, we aim to serve the technological needs of society, especially within the District of Columbia and Washington Metropolitan Region.

The UDC BME program brings together research expertise in balance and postural control, biomedical imaging, assistive robotics and rehabilitation engineering offering students the opportunity to gain meaningful research experience in parallel with their coursework. Within the state-of-the-art Center for Biomechanical and Rehabilitation Engineering (CBRE), students have access to unique research and education opportunities. The CBRE is focused on balance and mobility in impaired and un-impaired populations, aids and devices and injury prevention and treatment. Further, students are trained in research focused on diagnostic ultrasound skeletal assessment, cancer and functional imaging. Additionally, UDC is establishing a National Institutes of Health (NIH) sponsored Specialized Technological Center for Assistive Rehabilitation Research comprised of new laboratories and equipment to further enhance biomedical research. The focus areas are: Gait & Balance, Assistive Robotics for Rehabilitation, Biomechanics (inclusive of biomedical imaging and additive manufacturing) and Virtual Reality Rehabilitation.

Funding from the National Aeronautics and Space Administration (NASA), Army Research Laboratory (ARL), National Science Foundation (NSF), Department of Defense (DoD), Department of Aging and Community Living (DACL), National Institutes of Health (NIH), Lockheed Martin, and Boston Scientific Corporation, as well as interactions and/or partnerships with the United States Food and Drug Administration (US FDA), Walter Reed National Military Medical Center (WRNMMC), and Medstar National Rehabilitation Hospital (NRH) support hands-on, research-based student learning. There are a number of assistantships, scholarships, internships, and opportunities from which BME students can receive additional support.

**Credit Statement**
The BME program requires completing a total of 126 credit hours of college-level courses in order to graduate.

**GPA statement**
All technical electives must have prior program director approval. A grade point of 2.00 is required in major courses, including prerequisite math and science courses.

**Program Educational Objectives**
The following program educational objectives have been established. Graduates of the biomedical engineering program are expected within a few years of graduation to:

1. Establish themselves as professionals and make contributions to health, medicine, and engineering based on sound principles and ethics;
2. Demonstrate leadership independently and as a member of a professional team in biomedical engineering or related disciplines; and
3. Engage in lifelong learning by continuing to evolve via pursuit of advanced career training, degrees, and/or professional milestones.

**Student Outcomes**
Students graduating from the Biomedical Engineering program will have acquired the following:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply the engineering design to produce solutions that meet specified needs with consideration for public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

**Course Requirements for the Major**
**Model Plan of Study - Biomedical Engineering**
**IGED Requirements (37 credits)**

**Required Core Courses**

BIOL 101 Biological Science Lecture (3)
BIOL 103 Biological Science Lab (1)
BIOL 111 Human Anatomy & Physiology Lecture (3)
BMEG 101 Survey of Biomedical Engineering (3)
BMEG 235 Engineering Software & Programming (3)
BMEG 300 Bioinstrumentation Lab (1)
BMEG 301 Bioinstrumentation Lecture (3)
BMEG 302 Professional Issues in Biomedical Engr (3)
BMEG 304 Biomechanics (3)
BMEG 371 Analysis of Physiological Systems Lecture (3)
BMEG 373 Analysis of Physiological Systems Lab (1)
BMEG 491 Capstone Senior Design Project I (3)
BMEG 492 Capstone Senior Design Project II (3)
BMEGXXX Biomedical Engineering Tech Elective* (3)
BMEGXXX Biomedical Engineering Tech Elective* (3)
BMEGXXX Biomedical Engineering Tech Elective (3)
CCEN 101 Introduction to Engineering (2)
CHEM 111 General Chemistry I Lecture (3)
CHEM 113 General Chemistry I Lab (1)
CVEN 201 Engineering Mechanics I (3)
CVEN 202 Engineering Mechanics II (3)
CVEN 308 Applied Numeral Analysis (3)
ELEC 225 Electric Circuits Lecture (3)
ELEC 226 Electric Circuits Lab (1)
MATH 151 Calculus I Lecture (3)
MATH 152 Calculus II Lecture (3)
MATH 155 Calculus I Lab (1)
MATH 156 Calculus II Lab (1)
MATH 253 Calculus III Lecture (3)
MATH 254 Differential Equations (3)
MATH 255 Calculus III Lab (1)
MATH 381 Probability and Statistics (3)
MECH 107 Mechanical Engr Computer Graphics (3)
MECH 208 Thermodynamics (3)
MECH 321 Fluid Mechanics Lecture (3)
MECH 351 Heat Transfer (3)
MECH 381 Microcontrollers in ME (3)
MECH 406 Engineering Economics (3)
PHYS 201 University Physics I Lecture (3)
PHYS 202 University Physics II Lecture (3)
PHYS 205 University Physics I Lab (1)
PHYS 206 University Physics II Lab (1)

**Technical Electives**

A minimum of nine credit hours of technical elective courses must be taken from the following courses. The electives should be planned to include courses supplementing the basic needs and interests of the student.
*BMEG 402 Biomedical Imaging Systems and Signal Processing (required) (3)
*BMEG 405 Biomedical Research & Clinical Experience (required) (3)
BMEG 495 Special Topics in Biomedical Engineering (3)
MECH 302 Research Experience & Tech Comm (3)
MECH 465 Advanced Manufacturing (3)
MECH 473 Microelectromechanical Systems (MEMS) (3)
MECH 478 Mechatronics (3)
MECH 483 Robot Mechanics and Control (3)
MECH 484 Design of Robot Mechanisms (3)

## COURSE DESCRIPTIONS: BIOMEDICAL ENGINEERING (BMEG)

**CCEN 101 Introduction to Engineering (2)**
Introduces students interested in engineering to basic scientific principles and engineering concepts through hands-on experiments. These experiments enable students to acquire the knowledge, skills and attitudes necessary to be successful in the pursuit of engineering disciplines. In addition, students in this course will learn how to analyze, interpret and present data. Emphasis on guided design and problem-solving methodologies. Students undertake practice-oriented group design projects. Formal written reports and oral presentations will be required. Required of all freshman engineering students. Lab 6 hrs.

**BMEG 101 Survey of Biomedical Engineering (3)**
The course covers basic concepts tied to biomedical engineering and their applications. Further, it serves as an introduction to the fundamental science and engineering on which biomedical engineering is based. Further, the course provides a survey of various areas tied to biomedical engineering (e.g., assistive technologies, biomechanics, additive manufacturing, and bioimaging). Hands-on projects and case studies are designed engage the students and to provide baseline knowledge. The course is designed for science and non-science majors, but is a mandatory requirement for students majoring in biomedical engineering. Lec 3 hrs.

**BMEG 235 Engineering Software & Programming (3)**
This course introduces students to an array of software packages and applications applicable to the biomedical engineering curriculum and discipline. Course content

includes mathematical programming software and applications (e.g., MATLAB, Python, COMSOL, and ANSYS), data acquisition and analysis software (e.g., LabVIEW). Lec 3 hrs.

**BMEG 301/300 Bioinstrumentation Lec/Lab (3/1)**
The course will introduce biomedical devices, their components and background of their use, as well as cover basic concepts for analog signal amplification and filters, digital acquisition, digital filtering and processing. Students may gain the opportunity to do the following: explore different types of (biomedical-related) sensors; explore hands-on implementation of instrumentation; record physiologic signals. Lec. 3 hrs and Lab 3 hrs. Prereq: ELEC 225/226 or by permission of instructor.

**BMEG 302 Professional Issues in Biomedical Engineering (3)**
The purpose of the seminar course is to expose students to an array of current research topics related to BME (e.g., via guest speaker lectures, case studies, journal and technical paper-readings, and interactive small group discussions). Topics covered include medical ethics, research conduct, written and oral technical communication, and other BME-related topics and issues. Knowledgeable faculty and professionals in the field of BME may be invited to present interactive and informative sessions to expose and engage the students. Lec 3 hrs. Prereq.: Junior standing or by permission of instructor.

**BMEG 304 Biomechanics (3)**
This course provides a foundation of mechanics formulated towards addressing biomedical engineering problems. Here, the basic concepts and methods of mechanics (statics, dynamics, and mechanics) are applied to study the forces on the human body & biological tissues. For example, biomechanics of movement, cardiovascular biomechanics, and soft tissue mechanics will be explored. Lec. 3 hrs. Prereq.: CVEN 201 and CVEN 202.

**BMEG 371/373 Analysis of Physiological Systems Lec/Lab (3/1)**
This course provides an overview of systems theory with applications and case studies from bioengineering and physiology (e.g., nerve function, muscle dynamics, cardiovascular regulation, physiologic feedback control systems, properties of muscle, cardiovascular function). Analyses within the course includes: differential equations, linear and nonlinear systems, stability, time and frequency domain methods, feedback control, and biological oscillations. Case studies readings and analysis of actual physiologic data will comprise a portion of this course. Lec. 3 hrs and Lab 3 hrs. Prereq.:MATH 151/155, MATH152/156, MATH 254 or by permission of instructor.

**BMEG 402 Biomedical Imaging Systems and Signal Processing (3)**
An overview of biomedical signals and images including imaging modalities such as Xray, computerized axial tomography (CT), positron emission tomography (PET), and magnetic resonance imaging (MRI) will be covered. Fundamentals of signal and image processing including data acquisition, filtering, 2D signals and systems, noise reduction methods and homomorphic filtering for image enhancement will be discussed. An overview of random signals and linear systems and power spectra will also be discussed. Lec 3 hrs. Prereq.: Junior standing or by permission of instructor.

**BMEG 405 Biomedical Research & Clinical Experience (3)**
This develops students' experiences in a primary care facility, in a research lab, and/or service-learning with a community agency or public health project. The purpose of the course is to expose students to settings wherein they may appreciate the human and social context of biomedical-related research, to merge concepts learned in other courses, and lastly to observe the impact medical research on patients. Lec 3 hrs. Prereq.: Senior standing.

**BMEG 495 Special Topics in Biomed. Engineering (3)**
This course covers various areas within Biomedical Engineering (e.g., Big Data, Machine learning, Data Analytics and others) that are not covered within the other BMEG course offerings. This course may be used as a technical elective. Lec/Lab 3 hrs. Prereq: Senior standing and permission of instructor.

**BMEG 491 Senior Design Project I (3)**
Covers creative design, design problem formulation, structure of open-ended solution processes in system design; familiarization with technological resources; group projects on design of complex mechanical systems, feasibility studies, group presentation of project feasibility, and developing impact and planning statement. Lec+Lab 3 hrs. Prereq.: Senior standing

**BMEG 492 Senior Design Project II (3)**
Continuation of group projects from Senior Design Project I, including consideration of economic, risk and reliability factors, and development of preliminary designs, prototypes, tests and optimization, and project report and presentation. Lec+Lab 3 hrs. Prereq.: BMEG 491.

**BMEG 681 Machine Learning for Medical Detection and Diagnoses (3)**
This course covers an overview of the fundamental Big Data challenges. Complex data structures, data cleaning, data preprocessing, and semantic integration of

heterogeneous, distributed biomedical databases will be examined. Existing machine learning, data mining, neural and other novel computing tools for biomedical data analysis will be explored. Data visualization and imaging analysis will be discussed. In addition, the nature of clinical data will be introduced, and the architecture and design of healthcare information systems will be covered. Comparisons of the state-of-the-art clustering and feature selections methods for microarray data classification will be furnished. Lastly, privacy and security issues will be discussed. For the course topics described above, case studies will aid in describing contemporary systems and current research.

**BMEG 682 Biomedical Imaging Systems and Signal Processing (3)**
This graduate level course offers in depth study of biomedical signals and images including imaging modalities such as Xray, computerized axial tomography (CT), positron emission tomography (PET), and magnetic resonance imaging (MRI) will be covered. Fundamentals of signal and image processing including data acquisition, filtering, 2D signals and systems, noise reduction methods and homomorphic filtering for image enhancement will be discussed. An overview of random signals and linear systems and power spectra will also be discussed.

**BMEG 683 Biomedical Engineering Seminar (3)**
The purpose of the seminar course is to expose students to an array of topics related to Biomedical Engineering (BME) via guest speaker lectures, case studies, journal paper-readings, and interactive small group discussions. Topics covered include medical ethics, research conduct, written and oral technical communication, and other BME-related topics and issues. Knowledgeable faculty and professionals in the field of BME may be invited to present interactive and informative sessions to expose and engage the students.

**BMEG 684 Physiological Systems Analysis (3)**
This graduate level course offers in depth study of systems theory with applications and case studies from bioengineering and physiology (e.g., nerve function, muscle dynamics, cardiovascular regulation, physiologic feedback control systems, properties of muscle, cardiovascular function). Analyses within the course includes differential equations, linear and nonlinear systems, stability, time and frequency domain methods, feedback control, and biological oscillations. Case studies readings and analysis of actual physiologic data will comprise a portion of this course.

**BMEG 689 Special topics in computer enabled biomedical engineering topics in Engr (3)**
Covers a specific area related to biomedical engineering that is not normally covered in regular Ph.D. classes.

## Mechanical Engineering (BS)

Our program in Mechanical Engineering (ME) is accredited by the Engineering Accreditation Commission (EAC) of ABET. Upon completion of the required program of study, students are awarded the Bachelor of Science degree in Mechanical Engineering. Additionally, we offer students concentrations in Advanced Manufacturing or Energy Science and Technology. Students may also apply to our Accelerated Bachelor's/Master's (ABM) program in the spring of their junior year, which enables them to take up to 9 credits at the graduate level during their senior year to be counted for both BS and MS degree programs. Seniors are encouraged to take elective courses via the Consortium, in accordance with eligibility requirements. ME students are offered a large number of scholarships, internships, and job opportunities from which they can receive additional support.

**Credit Statement:**
The BS program in Mechanical Engineering requires completing a total of 128 credit hours of college-level courses in order to graduate.

**GPA statement**
All mechanical engineering technical electives must have prior departmental approval. A minimum grade of "C" is required for each major course, including prerequisite math and science courses.

**Program Education Objectives**
In accordance with ABET accreditation criteria and pursuant to the University's mission statement, the following program educational objectives have been established. A graduate of the mechanical engineering program is expected within a few years of graduation to:

1. Establish themselves as practicing professionals (with a capacity to become policy makers and leaders in government or industry) and/or be engaged in advanced study in mechanical engineering or a related field;
2. Demonstrate the ability work independently and communicate effectively as members of a professional team to aid in the solution of complex engineering problems;
3. Demonstrate a commitment to lifelong learning through ongoing professional training and development, leadership training, and research in

order to be effective in the context of changing global conditions; and
4. Develop adaptability in order to embrace challenges and exemplify an entrepreneurial mindset.

**Student Outcomes**

Students graduating from the Mechanical Engineering program are expected to acquire the following:

1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. An ability to apply engineering designs to produce solutions that meet specified needs with consideration for public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. An ability to communicate effectively with a range of audiences.
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. An ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

The ME degree program is accredited by the Engineering Accreditation Commission (EAC) of ABET (http://www.abet.org).

**Course Requirements for the Major**

**Model Plan of Study - Mechanical Engineering**
**IGED Requirements (34 credits)**

**Required Core Courses**

CCEN 101 Introduction to Engineering (2)
CHEM 111 General Chemistry I Lecture (3)
CHEM 113 General Chemistry I Lab (1)
CVEN 201 Engineering Mechanics I (3)
CVEN 202 Engineering Mechanics II (3)
CVEN 308 Applied Numeral Analysis (3)
ELEC 225 Electric Circuits Lecture (3)
ELEC 226 Electric Circuits Lab (1)
MATH 151 Calculus I Lecture (3)
MATH 152 Calculus II Lecture (3)
MATH 155 Calculus I Lab (1)
MATH 156 Calculus II Lab (1)
MATH 253 Calculus III Lecture (3)
MATH 254 Differential Equations (3)
MATH 255 Calculus III Lab (1)
MATH 381 Probability and Statistics (3)
MECH 107 Mechanical Engr Computer Graphics (3)
MECH 108 Programming for Engineers (1)
MECH 205 Material Science (3)
MECH 206 Mechanics of Materials Lecture (3)
MECH 207 Mechanics of Materials Lab (1)
MECH 208 Thermodynamics (3)
MECH 222 Engineering Measurements Lecture (3)
MECH 224 Engineering Measurements Lab (1)
MECH 302 Research Experience & Tech Comm (3)
MECH 321 Fluid Mechanics Lecture (3)
MECH 322 Thermodynamics/Fluids Lab (1)
MECH 341 Analysis & Synthesis of Mechanisms (3)
MECH 351 Heat Transfer (3)
MECH 361 Machine Design (3)
MECH 371 Design of Control Systems Lecture (3)
MECH 373 Design of Control Systems Lab (1)
MECH 381 Microcontrollers in Mechanical Engr (3)
MECH 406 Engineering Economics (3)
MECH 462 Design of Energy Systems (3)
MECH 491 Capstone Senior Design Project I* (3)
MECH 492 Capstone Senior Design Project II* (3)
MECH XXX ME Technical Elective (3)
MECH XXX ME Technical Elective (3)
MECH XXX ME Technical Elective (3)
PHYS 201 University Physics I Lecture (3)
PHYS 202 University Physics II Lecture (3)
PHYS 205 University Physics I Lab (1)
PHYS 206 University Physics II Lab (1)

*This capstone course is expected to satisfy the requirements of the general education "Frontier Capstone" courses.

**Concentrations in Mechanical Engineering**

Students may choose to pursue a concentration in Advanced Manufacturing or Energy Science and Technology. A minimum of 12 credits is required in each concentration area.

**Advanced Manufacturing Concentration**

MECH 491 - Senior Design Project I (in Advanced manufacturing area) (3)
MECH 492 - Senior Design Project II (in Advanced Manufacturing area) (3)
Two electives from: (6)
MECH 465 Advance Manufacturing

MECH 483 Robot Mechanics and Control
MECH 478 Mechatronics
MECH 495 Special Topics: Nanotech Processes
Total (12)

**Energy Science and Technology Concentration**
MECH 491 - Senior Design Project I (in Energy area) (3)
MECH 492 - Senior Design Project II (in Energy area) (3)
Two electives from: (6)
ELEC 410 Smart Grid Communications and Security
MECH 487 PV and Solar Thermal Energy System
MECH 488 Fuel cell science and technology
MECH 495 Special Topics: Nanotech Processes
Total (12)

**Technical Electives**
A minimum of nine credit hours of technical elective courses must be taken from the following courses. The electives should be planned to include courses supplementing the basic needs and interests of the student.
MECH 356 Modern Manufacturing Process (3)
MECH 455 Mechanical Behavior of Materials (3)
MECH 456 Computational Mechanics (3)
MECH 457 Design of Noise Controls (3)
MECH 458 Finite Element Methods for Mechanical Engineering (3)
MECH 461 Applied Thermodynamics & Energy Conversion (3)
MECH 465 Advanced Manufacturing (3)
MECH 470 Thermal Environmental Engineering (3)
MECH 473 Microelectromechanical Systems (MEMS) (3)
MECH 475 Gas Turbine Design (3)
MECH 476 HVAC Design (3)
MECH 478 Mechatronics (3)
MECH 483 Robot Mechanics and Control (3)
MECH 484 Design of Robot Mechanisms (3)
MECH 487 Photovoltaic Cells and Solar Thermal Energy Systems (3)
MECH 488 Fuel Cell Fundamentals and Technologies (3)
MECH 495 Special Topics (3)

## COURSE DESCRIPTIONS: MECHANICAL ENGINEERING (MECH)

**CCEN 101 Introduction to Engineering (2)**
Introduces freshmen students interested in engineering to basic scientific principles and engineering concepts through hands-on experiments. These experiments enable students to acquire the knowledge, skills and attitudes necessary to be successful in the pursuit of engineering disciplines. In addition, students in this course will learn how to analyze, interpret and present data. Emphasis on guided design and problem-solving methodologies. Students undertake practice-oriented group design projects. Formal written reports and oral presentations will be required. Required of all freshman engineering students. Lab 6 hrs.

**MECH 107 Mechanical Engineering Computer Graphics (3)**
This course provides students with hands-on, practical application of graphical modeling to create 3D parts for product design and manufacturing. The main objective is to familiarize students with the CREO software so that they may demonstrate competency in generating 3D models of both existing and new components. Finally they will learn to produce a physical rendering of their model using 3D printing. This course will lay the foundation for the Advanced Manufacturing course. Combined Lec+Lab 3 hrs.

**MECH 108 Programming for Engineers (1)**
Introduction to programming for engineers and scientists. This course introduces the fundamental techniques for software development for solving engineering problems using high-level programming languages that are widely used within the engineering discipline. Topics include fundamental data and control structures and I/O functions with focus on engineering applications. Emphasis on modern engineering principles including object-oriented design, design decomposition, encapsulation, abstraction, modularity, testing, debugging and reuse. Lab 3 hrs.

**MECH 205 Materials Science (3)**
This course provides an introduction to engineering materials with an emphasis on how atomic and molecular bonding, crystal structure, composition and processing influence material properties. This course covers the topics of electronic structure, crystal structure, and imperfections in metals, ceramics and polymers; elastic and plastic deformation; deformation processes and mechanical failure; diffusion, phase diagrams and transformations. Lec 3 hrs. Prereq.: CHEM 111.

**MECH 206 Mechanics of Materials (3)**
This course provides students with an understanding of the relationship between the external forces applied to a structure and the resulting behavior and deformation of the parts of that structure. Topics covered include: axial forces, shear and moment, stress and axial loads, strain and axial deformation, torsion of shafts, stress in beams, columns, deflection of beams, and elemental indeterminate problems. This course lays foundation for engineering design. Lec 3 hrs. Prereq.: MECH-205, CVEN-201, Co-req: MECH 207.

**MECH 207 Mechanics of Materials Laboratory (1)**

Covers introduction, purpose, scope, equipment/apparatus, interpreting results, uncertainty and error analysis, and writing reports. Experiments include physical properties and mechanical response of engineering materials, stress and strain measurement, thermal expansion, torque, bending moment, and deflection of beams. Lab 3 hrs. Co-req: MECH 206.

**MECH 208 Thermodynamics (3)**
Covers thermodynamic concepts, zeroth law, thermodynamic properties, first law and second law analysis of closed and open systems; availability and irreversibility analysis; power and refrigeration cycles; mixture of gases and psychrometrics. Lec 3 hrs. Prereq.: PHYS 201.

**MECH 222 Engineering Measurements (3)**
Covers statistical data and error analysis; measuring systems, transducers; property measurements; signal conditioning; data output and analysis; analog and digital circuits; computer applications; Lec 3 hrs. Prereq.: ELEC 225, Co-req: MECH 224.

**MECH 224 Engineering Measurements Laboratory (1)**
Involves experimentation in the measurements of different mechanical properties using analog and digital systems; use of sensors and transducers, and modern instrumentation technology. Lab 3 hrs. Pre-req: ELEC 226, Co-req: MECH 222.

**MECH 302 Research Experience & Technical Communication (3)**
This course will provide understanding of basic elements of research in the context of science and engineering and will involve undergraduate students in hands-on, cutting edge research not possible through regular courses in the curriculum. Students will also gain valuable skills in communicating technical results. Combined Lec+Lab 3 hrs. Prereq.: CCEN 101.

**MECH 305 Electronics and Instrumentation (3)**
Examines an extension of the physics topics learned in electricity and magnetism. The student is introduced to the application of the fundamental principles of DC and AC circuits, their essential components and analysis. Three-phase energy distribution systems are described. Selected aspects of solid state electronics, especially devices with application in civil and mechanical engineering, are explored. Lec 3 hrs. Pre-req.: PHYS 202.

**MECH 321 Fluid Mechanics (3)**
Covers fluid properties and definitions, fluid statics, Archimedes principles, kinematics of fluids, control volume equations and analysis, Bernoulli equation, Euler equation, ideal flow equations, velocity potential and stream function, dimensional analysis, and viscous flows in pipes. Lec 3 hrs. Pre-req.: MATH 254 or MATH 260, MECH 208, CVEN 202, Co-req.: MECH 322.

**MECH 322 Thermodynamics and Fluid Mechanics Laboratory (1)**
Examines methods of experimental fluid mechanics and covers laboratory experiments in thermodynamics and fluid mechanics. Lab 3 hrs. Co-req.: MECH 321.

**MECH 341 Analysis and Synthesis of Mechanisms (3)**
Covers kinematics and dynamics of mechanisms; analysis of mechanisms, including linkage, cam, gear, synthesis of mechanism for prescribed performances; and computer-aided design of mechanisms. Lec 3 hrs. Prereq.: CVEN 202.

**MECH 342 Analysis of Dynamic Systems (3)**
Covers mechanical vibrations of mechanical systems of single and multiple degrees of freedom, dynamic responses of engineering systems utilizing transfer function representation, and analysis of feed- back systems. Lec 3 hrs. Prereq.: CVEN 202, MATH 254 or MATH 260.

**MECH 351 Heat Transfer (3)**
Examines heat conduction equations, steady and unsteady state heat conduction problems; principles of heat convection, forced, free and phase-change convective heat transfer; and radiative physics and heat transfer. Lec 3 hrs. Prereq.: MECH 321, MATH 254 or MATH 260.

**MECH 352 Robotics and Manufacturing Lab (1)**
Provides a workshop practice course in metal cutting, forming, joining and fabrication. It includes laboratory experiments in pneumatic, hydraulic and electromechanical controls; experiments in computer-aided manufacturing; robot motions, control and programming. Lab 3 hrs. Prereq.: MECH 205.

**MECH 356 Modern Manufacturing Processes (3)**
Covers engineering materials and manufacturing properties; production processes; mechanization and automation; CNC machining. Lec 3 hrs. Prereq.: MECH 205, CVEN 206.

**MECH 361 Machine Design (3)**
Examines engineering design process; theories of failure; fundamentals of mechanical design; and computer-aided design of machine elements, bearings, gears, shafts, brakes and couplings; design projects. Lec 3 hrs. Prereq.: MECH 205, MECH 206.

**MECH 371 Design of Control Systems (3)**
Identifies and examines models of mechanical, electrical, fluid, thermal, electro-mechanical, thermofluid systems, transducers, digital devices, types of controllers,

performance of feedback systems; simulation, root locus and frequency response methods for design of automatic control. Lec 3 hrs. Prereq.: MATH 254 or MATH 260, MECH 222, Co-req.: MECH 373.

**MECH 373 Design of Control Systems Laboratory (1)**
Experiments illustrating the basic principles of three term (PID) thermal process control, multivariable systems and the basics of multivariable dynamics and control under steady state and transient conditions. Lab 3 hrs. Pre-req: MECH 224, Co-req. MECH 371.

**MECH 381 Microcontrollers in Mechanical Engineering (3)**
Study of microcontrollers and their applications as control devices in mechanical systems. Review of electric circuits and semiconductor devices; digital logic, Boolean algebra, logic gates; microcontroller architecture - internal data handling and control, input and output; microcontroller programming languages; digital sensing and control through parallel and serial communication; microcontroller interrupt programming and servicing; actuation control via digital to analog conversion; direct digital control of stepper motor actuator. Lec 3 hrs. Prereq.: ELEC 225 and Junior Standing.

**MECH 405 Engineering Experimentation (3)**
Covers experimentation theory; instrumentation systems; applications in mechanical engineering; microprocessors and peripherals; experiments in areas of mechanical engineering. Lec 1 hr. and Prac 6 hrs. Prereq.: Senior standing in Mechanical Engineering.

**MECH 406 Engineering Economics (3)**
Studies the application of economic principles to engineering problems and their effects on engineering decision-making. Lec 3 hrs., Prereq.: Senior Standing.

**MECH 456 Computational Fluid Mechanics (3)**
Studies equations of continuum mechanics and boundary conditions; finite difference techniques for one and multi-directional Navier-Stokes equations; introduction to variational calculus; and finite element methods for fluid flow and heat transfer problems. Lec. 3 hrs., Prereq.: MECH 321, MATH 254 or MATH 260.

**MECH 457 Design for Noise Control (3)**
Covers acoustic terminology, acoustic related to noise and its control, techniques for the solution of noise problems, design of vibration isolators, energy absorbers, dissipative and reactive mufflers, enclosures, barriers and panel damping. Lec. 3 hrs., Prereq.: CVEN 202, MATH 254 or MATH 260.

**MECH 458 Finite Element Methods for Mechanical Design (3)**
Examines finite element techniques, data stringing, mesh generation, data checking, element calculation, post processing and output plots; use of finite element computer programs for solving design problems. Lec. 3 hrs., Prereq.: MECH 361, MATH 254 or MATH 260.

**MECH 461 Applied Thermodynamics and Energy Conversions (3)**
Studies the optimization of power plant, internal combustion engine, refrigeration, combustion and direct thermoelectric systems; and design of reciprocating compressors, engines, nozzles and diffusers. Lec. 3 hrs., Prereq.: MECH 351.

**MECH 462 Design of Energy Systems (3)**
Covers the design of ducting and piping systems, design of heat exchangers and fluid/rotor energy converters; characteristics of pumps, fans, compressors and turbines, computer-aided design and simulation of energy systems. Lec. 3 hrs., Prereq.: MECH 351.

**MECH 463 Mechanical Engineering Senior Laboratory I (1)**
Studies dynamic data acquisition, analysis and control, aerodynamic lift and drag, pump performance, experimental methods for measuring dynamic responses, and statistical theories of measurement. Lab. 3 hrs., Prereq.: Senior standing.

**MECH 464 Mechanical Engineering Senior Laboratory II (1)**
Examines a computer simulation of dynamic systems, electronic and digital instruments, instrumentation and tests for measurement of performance of energy and dynamic system, and individual laboratory projects. Lab. 3 hrs., Prereq.: MECH 463.

**MECH 465 Advance Manufacturing (3)**
This course will provide understanding of the basic elements of advance manufacturing such as mode-based product design, metal and plastic 3D manufacturing. Lec. 3 hrs. Pre-req.: MECH 107, MECH 205 and Junior or Senior Standing.

**MECH 470 Thermal Environmental Engineering (3)**
Examines thermodynamic properties of moist air, psychrometric chart applications, refrigerants, binary mixtures, mechanical vapor compression refrigeration systems, absorption refrigeration systems, solar radiation calculations, and analysis of cooling towers and dehumidification coils. Lec. 3 hrs. Prereq.: MECH 351.

**MECH 473 Microelectromechanical Systems (MEMS) (3)**
Study of fabrication techniques for micro-electromechanical devices fabrication. Applications of MEMS such as mechanical, optical, magnetic, chemical/biological sensors/actuators are studied. Lec. 3 hrs. Pre-req.: MECH 205, MECH 321 or ELEC 352 and ELEC 312 for EE students

**MECH 475 Gas Turbine Design (3)**
Covers gas turbine components, component characteristics and performance, gas turbine system configurations and optimization, energy transfer between fluid and rotors, aerodynamic data of turbine and compressor blades, aerodynamic design of turbine. Lec 3 hrs. Pre-req.: MECH 321

**MECH 476 HVAC Design (3)**
From a description of building functions, students research, create, plan, and design an energy efficient and cost effective building HVAC system. Lec 3 hrs. Pre-req.: MECH 461.

**MECH 478 Mechatronics (3)**
Fundamental concepts in mechatronics including instrumentation and measurements. Operating principles of electromechanical actuators, motors, sensors, drives, and analog motion control. Applications of microprocessors, and microprocessor interfacing to electromechanical systems. Lec 3 hrs. Pre-req.: MECH 381 (or ELEC 352 and ELEC 312 for EE students), Senior Standing.

**MECH 481 Fundamental of Eng. Preparation (1)**
Discusses examination preparation materials for the Fundamentals of Engineering (FE) exams—commonly called the EIT exams. Provides a brief overview of common engineering courses. Lec 3 hrs. Pre-req.: Senior Standing.

**MECH 483 Robot Mechanics and Control (3)**
Introduces types of industrial robots, sensing of robot motion and position, electro-mechanical, hydraulic and pneumatic actuators; sampled data, proportional, integral and derivative controller; robot coordinates, motion, dynamic and path control, as well as introduction to robot programming. Lec 3 hrs. Pre-req.: MECH 341, MECH 371, Senior Standing.

**MECH 484 Design of Robot Mechanism (3)**
Introduces types of manipulators, manipulator parts and linkages, kinematic equations and their solutions; synthesis of manipulator mechanisms, path generation and motion trajectories, manipulator dynamics, payload and compliance, and computer-aided design of manipulator mechanisms. Lec. 3 hrs. Pre-req.: MECH 483.

**MECH 486 Robot Interface Design (3)**
Covers microprocessor programming; control hardware characteristics; interfacing to robots, applications of electro-mechanical, hydraulic and pneumatic robots; robot programming languages; computerized numerical control, and design and optimization for manufacturing cells for specified manufacturing processes and cycles. Lec. 3 hrs. Pre-req.: MECH 483.

**MECH 487 Photovoltaic Cells and Solar Thermal Energy Systems (3)**
The course focuses on science and technology of solar energy harvesting. Major focus will be on photovoltaics cells (PV). This course will teach science and technology of PV cells. Various complimentary systems required to channel energy from PV cells to electrical appliances will be discussed. This course will also introduce key developments to make PV cells economical and more energy efficient. During this course, we will also highlight the impact of governmental policies and socio-economic conditions on the proliferation of solar energy harvesting. Lec 3 hrs. Pre-req.: MECH 205, Senior Standing.

**MECH 488 Fuel Cell Fundamentals and Technologies (3)**
Fuel cells are introduced as a renewable energy resource. This course covers the concepts and fundamentals of fuel cells. Various types of fuel cells will be discussed to give in-depth understanding of practical fuel cell device. Experiments will be conducted as necessary. Lec 3 hrs. Pre-req.: Senior Standing.

**MECH 491 Senior Design Project I (3)**
Covers creative design, design problem formulation, structure of open-ended solution processes in system design; familiarization with technological resources; group projects on design of complex mechanical systems, feasibility studies, group presentation of project feasibility, and developing impact and planning statement. Combined Lec+Lab 3 hrs. Pre-req.: Senior Standing.

**MECH 492 Senior Design Project II (3)**
Continuation of group projects from Senior Design Project I, including consideration of economic, risk and reliability factors, and development of preliminary designs, prototypes, tests and optimization, and project report and presentation. Lec+Lab 3 hrs. Pre-req.: MECH 491.

**MECH 495 Special Topics in Mechanical Engineering (1-12)**
Covers a specific area related to mechanical engineering that is not normally covered in regular courses and/or for which there is sufficient student interest. May be used as a

technical elective. Lec. 1 hr., or Lab 3 hrs. for each credit hour. Lec/Lab 1-12 hrs. Prereq.: Permission of instructor.

## Mechanical Engineering (MS)

The Master of Science in Mechanical Engineering (MSME) program develops graduates with a breadth of analytical, technical and professional skills while, in parallel, providing an outstanding and comprehensive research experience in their particular area of interest. Our faculty have expertise in energy science, advanced manufacturing, materials & nanotechnology, and biomedical engineering areas. Our focus areas keep evolving according to technological advancements and market need.

The ME department also houses several multi-million dollar centers, including two NSF Centers for Research Excellence in Science and Technology (NSF-CREST): The Center for Nanotechnology Research and Education (CNRE) and the NASA Center for Advanced Manufacturing in Space Technology & Research (CAMSTAR) (https://www.udc.edu/seas/centers/cnre/) (https://www.udc.edu/seas/centers/camstar/). These centers engage SEAS students in cutting edge research with world renowned industries and government laboratories. Talented and motivated Mechanical Engineering graduate tudents at UDC have a unique opportunity to earn a stipend and build their career by working with industries and government agencies. MSME thesis projects can be based on industry needs on the topics ranging from advanced manufacturing, biomedical, nanotechnology, thermal energy, and renewable energy technologies.

**Objectives:** Our program objectives are the following:

1. Graduates will provide value in their chosen career path through their analytical skills, critical thinking, innovation and/or creative abilities developed by their graduate engineering education.
2. Graduates will utilize their analytical, technical, and communication skills, and act in a professional and ethical manner in the area in which they apply their degree.
3. Graduates will demonstrate leadership, continuous evolution towards a competitive global work environment, and a commitment to on-going professional development and lifelong learning.

Both faculty and students engage in innovative theoretical and experimental research projects in collaboration with academic, government, and industry partners. Furthermore, program graduates will be well equipped to pursue research or industry careers in the focus areas central to mechanical engineering.

### Admission Requirements

Applicants should follow UDC graduate admission requirements available online at the time of applying in the ME program. To be considered for admission to graduate study in mechanical engineering, the applicant must meet the following requirements:

1. Hold a baccalaureate degree from an accredited college or university, preferably a major in mechanical engineering or closely related field.
2. Submit two official transcripts from all prior undergraduate and graduate work. Applicants must have an undergraduate grade point average of 3.0 or higher.
3. Submit official scores from a recent administration (within the last two years) of the Graduate Record Exam (GRE) Verbal, Quantitative, Analytical Reasoning and Essay tests. Candidate may be provisionally accepted without GRE. Such candidates must submit GRE score within the first semester of joining the graduate program.
4. Submit at least two letters of recommendation. One letter should be from an individual familiar with the applicant's capacity for relating to clients, professionalism, and personal attributes.
5. A 500-word essay articulating reasons for pursuing graduate studies in mechanical engineering, familiarity with the profession, and related work experience.

### Transfer Credit

Students may transfer no more than 6 credit hours of graduate credit earned from an accredited institution. Transfer courses will be evaluated and accepted toward the degree, however, on the basis of their applicability to the requirements of the program. Transferred courses must logically fit into the student's graduate program. The student's graduate advisor decides which courses are acceptable. The University approval of transfer credit may also be required. These two courses should not have been used in fulfillment of any other degree(s). No credits will be accepted that are more than 5 years old.

### Degree Requirements for the Thesis Option

Plan of Study: The student must meet with the Graduate Program Director or his/her advisor to formulate a Plan of Study. The Plan of Study must be submitted to the student's advisory committee after completing at least 9 but no more than 18 semester credits. A graduate student is expected to take 9 credits to be considered full-time. Additional courses not included in the program of study may not be counted toward the degree requirements. Graduate students receiving teaching assistantship (TA) and graduate assistantship (GA) should follow assistantship requirements. Satisfactory completion of 30 hours of approved graduate credits including 9 hours of graduate research (MECH 699) are required to complete the degree

with thesis option; 6 hours of graduate research (MECH 699) are required for the project option.

Candidacy for Thesis Defense: The admission to candidacy form must be completed prior to the thesis defense. The student should consult the schedule of classes for deadlines on submitting this form for spring graduation.

Thesis Defense: A copy of the written thesis should be distributed to each member of the advisory committee at least two weeks prior to the defense. The student should make a public announcement of the defense within the department to allow attendance by interested faculty, students, and the University community. Typically, students are required to submit at least one manuscript for peer-reviewed publication in a journal from a credible publisher or reputed conference of international significance. Quality of publication may be evaluated by the thesis committee to be considered towards the thesis requirement.

**Degree Requirements for the Non-Thesis Option**

Plan of Study: The student must meet with a Graduate Program Director or his/her advisor to formulate a Plan of Study. The plan of study must be submitted after completing at least 9 but no more than 18 semester credits. Satisfactory completion of 30 hours of approved graduate credits is required. Six (6) credits of MECH 699 will be completed with a project report based on a current practical industry-type problem.

**Model Plan of Study - Mechanical Engineering**

**Course requirements**

| Course Category | Thesis option | Non-Thesis |
|---|---|---|
| **Common courses** | 6-9 | 6-9 |
| **Special Topic & Elective courses** | 12-15 | 15-18 |
| | | |
| **MS Thesis (MECH 699)** | 9 | N/A |
| **MS Project (MECH 699)** | N/A | 6 |
| **Total Credits** | **30** | **30** |

**Common courses:**

- MECH 500 Research Methods and Technical Communication (required)
- CVEN 501 Advanced Engineering Mathematics or equivalent Math course (required)
- ELEC 507 Probability and Random Processes
- CVEN 562 Reliability and Optimization Methods in Engineering
- BGMT 506 Management Theory and Practice

**ME Special Topics Courses & Electives:**

The student's MS advisor will determine the special topics courses for the students working under their supervision and support. Special topics provide depth of knowledge in the focus area by directly working with their faculty advisor. . Elective courses are selected to support the student interests and the thesis research area. Additionally, MS students are encouraged to take electives via the Consortium, in accordance with eligibility requirements.

**Example Focus Areas (based on elective courses):**

Advanced Manufacturing Focus
MECH 501 Mechatronics System Design
MECH 502 Product Design
MECH 505 Advanced Manufacturing
MECH 512 Advanced Mechatronics
MECH 546 Nanoscale Materials and Devices

Energy Science and Technology Focus
MECH 541 Photovoltaic Cells and Solar Thermal Energy Systems
MECH 542 Fuel cell and Battery Science and Technology
MECH 545 Design of Energy Systems
ELEC 510 Communications and Security for Smart Grid
MECH 546 Nanoscale Materials and Devices

Biomedical Engineering Focus
MECH 522 Physiological Systems Analysis
MECH 501 Mechatronics System Design
MECH 547 Biomedical Imaging Systems and Signal Processing
MECH 548 Machine Learning for Medical Detection & Diagnoses

**Graduate courses in Mechanical Engineering**

MECH 500 Research Methods and Technical Communication (3)
MECH 501 Mechatronics System Design (3)
MECH 503 Finite Element Analysis (3)
MECH 505 Advanced Manufacturing (3)
MECH 512 Advanced Mechatronics (3)
MECH 522 Physiological System Analysis (3)
MECH 535 Nano-to-Macro Transport Processes (3)
MECH 541 Science of Photovoltaic Cells and Solar Thermal Energy Systems (3)
MECH 542 Science of Fuel Cell and Batteries (3)
MECH 545 Theory and Design of Energy Systems (3)
MECH 546 Nanoscale Materials and Devices (3)
MECH 547 Biomedical Imaging Systems and Signal Processing (3)
MECH 548 Machine Learning for Medical Detection & Diagnoses (3)

MECH 549 Biomedical Imaging Systems and Signal Processing (3)
MECH 611 Special Topics in Mechanical Engineering (3)
MECH 631 Mechanical Fundamentals and Design of Electronics System (3)
MECH 643 Theory & Design of Wind Energy Systems (3)
MECH 699 Graduate Research (3-9)

## GRADUATE COURSE DESCRIPTIONS: MECHANICAL ENGINEERING (MECH)

**MECH 500** Research Methods and Technical Communication (3)

**MECH 501 Mechatronics System Design (3)**
Principles of transducers and sensors and how to interface them with a process in a computer environment. Discussion topics about types of transducers and different sensors include operating principles, modeling, design considerations, and applications. Computer interfacing work includes signal conversion, interface components, and real-time applications of microcomputer systems to problems in manufacturing. Component integration and design considerations are addressed by case histories presented by the instructor. Student design projects involve problems from industry that require computer interfacing and experimental techniques. Topics include principles of transducers and sensors, signal processing, data acquisition, and computer interfacing using case studies.

**MECH 502 Product Design (3)**
Principles of Design for Manufacturing, Integrated Product and Process Design, Part geometry and its effect on assembly. Several tools and methods for design for assembly and disassembly, product rating for assembly based on geometry or assembly motions, manufacturability evaluation methods. Emphasis on optimization tools, FMEA, root cause analysis and lean manufacturing on product design. Strategy for organizing design for manufacturing techniques in industry.

**MECH 503 Finite Element Analysis (3)**
Principles and applications of finite element methods. The principle of virtual work is used to develop finite element equations for the representation and analysis of engineering structures. Hand calculations and computer modeling are used to analyze two- and three-dimensional constructs.

**MECH 505 Advanced Manufacturing (3)**
Mechanics and thermal models of machining, machining economics and optimization. Stability analysis of machine tools. Specialized machine process such as EDM, ECM, laser, CVD and PVD processes.

**MECH 506 Principles of Six Sigma (3)**
Implementing the Six Sigma philosophy and methodology. Several tools and methods including process flow diagrams, cause and effect diagrams, failure mode and effects analysis, gage R&R, capability studies, and design of experiments. Strategy for organizing six sigma techniques in industry.

**MECH 507 Supply Chain Engineering (3)**
The course introduces the student to supply chains starting from the movement of raw materials and components into an organization, through internal processing of materials into finished goods, to the delivery of finished goods to the end-customer. The course introduces the key tactics such as risk pooling and inventory placement, integrated planning/collaboration and information sharing. The class also presents new opportunities and issues introduced by the internet and e-commerce, discusses models and software tools for logistics network design, capacity planning and integration with product development. All models and methods for supply chain analysis and optimization are presented via lectures, case studies and class projects.

**MECH 511 Advanced Materials (3)**
Introduction to properties and processes of production of high strength and/or high modulus of elasticity materials including composites, fibers, ceramics, polymers, and elastomers; principles of materials selection using modern software tools; survey of design, analysis, fabrication, and testing.

**MECH 512 Advanced Mechatronics (3)**
System design methods applied to intelligent electromechanical devices. Analysis of dynamic response, performance and reliability. Mechatronic design is able to optimize in a systematic manner the available methodologies to produce quality products in a timely manner. The course addresses the ideas of optimized design, modeling parameters of sensors and actuators and computer interfacing. Industrial case studies are discussed. The unifying factor of this course is the integration of various disciplines into a successful mechatronics design.

**MECH 521 Rehabilitation Engineering (3)**
This course is aimed to educate students on project definition, and the design, development and technology transfer of potential biomedical products (in particular, those used for patient rehabilitation). During lectures, case study examples will be provided. Students will learn best practices for bioengineering device development including: product development via design and process control, intellectual property and innovation in biomedical engineering (including patents), and clinical regulatory issues, including clinical trial design.

**MECH 522 Physiological Systems Analysis ( 3)**
This graduate-level course provides in-depth understanding of systems theory with applications and case studies from bioengineering and physiology (e.g., nerve function, muscle dynamics, cardiovascular regulation, physiologic feedback control systems, properties of muscle, cardiovascular function). Analyses within the course includes: differential equations, linear and nonlinear systems, stability, time and frequency domain methods, feedback control, and biological oscillations. Case studies readings and analysis of actual physiologic data will comprise a portion of this course, and further, students will work on a detailed research project throughout the term.

**MECH 531 Intermediate Heat and Mass Transfer (3)**
This course covers problems of heat and mass transfer in greater depth and complexity than is done in those courses and incorporates many subjects that are not included or are treated lightly in undergraduate heat transfer courses; analysis is given greater emphasis than the use of correlations.

**MECH 532 Engineering Numerical Modeling Methods (3)**
Numerical methods for solving problems arising in heat and mass transfer, fluid mechanics, energy engineering, biomedical and molecular simulation. Topics: numerical linear algebra, solution of nonlinear algebraic equations and ordinary differential equations, solution of partial differential equations (e.g. Navier-Stokes), numerical methods in molecular simulation (dynamics, geometry optimization). All methods are presented within the context of Mechanical Engineering problems.

**MECH 533 Engineering Optimization (3)**
This graduate course presents applied aspects of computational models and methods for single- and multi-objective design optimization with a focus on continuous variables. The course will involve an overview of design optimization models and methods and usage of Matlab and Excel optimization tools in homework and project assignments.

**MECH 534 Failure Mechanism and Reliability (3)**
Reliability is the ability of a product to properly function within specified performance limits, for a specified period of time, under the life cycle application conditions. By understanding reliability principles, the students have the fundamentals and skills in the field of reliability as it directly pertains to the design and the manufacture of electrical, mechanical, and electro mechanical products. The following topics will be covered:
1. Reliability concepts including failure distributions, reliability metrics, and redundancy as well as risk assessment, mitigation and management. 2.Techniques to design and manufacture electronic products with improved reliability, based on the study of Root-cause failure mechanisms. 3. Techniques to assess failures along with methods to conduct failure analysis. 4. Skills to develop a reliability program. 5. Methods to design and implement accelerated testing. 6. Methods to understand the reliability issues associated with warranties, safety, regulatory requirements, and the law.

**MECH 535 Nano-to-Macro Transport Processes ( 3)**
Parallel treatments of photons, electrons, phonons, and molecules as energy carriers, aiming at fundamental understanding and descriptive tools for energy and heat transport processes from nanoscale continuously to macroscale. Topics include the energy levels, the statistical behavior and internal energy, energy transport in the forms of waves and particles, scattering and heat generation processes, Boltzmann equation and derivation of classical laws, deviation from classical laws at nanoscale and their appropriate descriptions, with applications in nano- and microtechnology

**MECH 541 Photovoltaic cells and Solar thermal systems (3)**
This course focuses on science and technology of solar energy harvesting. One important module of this course teaches about the solar radiation and how to get maximum solar radiation at a given point. Next this course will delve into science and technology of solar thermal water and air heating systems. This course place special emphasis on photovoltaics cells (PV). This course will teach science and technology of PV cells. Various complimentary systems required to channel energy from PV cells to electrical appliances will be discussed. This course will also introduce key technological developments that are useful in making solar energy harvesting economical. This course will benefit from UDC experimental resources such as Zero energy home, solar thermal water heater trainer, vacuum tube solar thermal water heater, current-voltage meter to study the solar cell efficiency etc.

**MECH 542 Fuel Cell Science and Technology (3)**
This course show how Fuel cells can power hydrogen car, make a home self-reliant in energy, and power big stores and hotels with very high efficiency. This course provides in depth understanding of fundamentals of different types of fuel cells e.g. Polymer exchange membrane fuel cells, Solid oxide fuel cells, etc. This course covers the thermodynamic principles behind voltage generation and definition of fuel cell efficiency. Science behind generating high current in fuel cell is covered under dedicated module. This course will

utilize UDC state of the art experimental facilities, including Potentiostate, LabVolt fuel cell trainer, Fuel cell powered automobile, hydrogen charging station, to provide experiential learning.

**MECH 543 Wind Turbine Science and Technology (3)**
This course teaches the science and technology for converting wind energy into electricity. This course will start with an introduction of wind resources and knowledge about selecting site for the wind turbine installation. One module of this course focus on the Horizontal axis and vertical axis wind turbines. Bernoulli principle will be utilized to explain the science of blade rotation. Different components such as yaw control, pitch control, air foil design etc will be covered, This course will immensely benefit from two 900 W horizontal axis wind turbine, vertical axis wind turbine, configurable wind turbine with various blade types.

**MECH 545 Design of Energy System (3)**
This course analyzes the entirety of energy systems with a focus on mechanisms by which energy is produced, transported and transformed. Energy system involved, solar thermal water heating, nuclear fuel based electricity generation, refrigeration systems, geothermal heating and cooling systems will be discussed. Students in this course will be asked to utilize heating cooling system and power plant at UDC campus. Student will also experimentally analyze solar thermal water heater systems and geothermal cooling and heating systems.

**MECH 546 Nanoscale Materials and Devices (3)**
This course teaches the fundamental difference between the properties of nanomaterials and conventional materials. Experiential activities use current technology to produce a number of materials, such as nanowires, using bottom-up and top-down approaches. One important component of this course teaches the ability to integrate nanomaterials into device forms. A number of characterization tools such as the Scanning Electron Microscope (SEM), and atomic force microscope (AFM) are covered as tools for nanometer scale metrology. Students will be participating in a number of experimental modules to learn about elements of nanotechnology. They will learn to use the cleanroom and methods of photolithography, thin film deposition, and device fabrication.

**MECH 547 Biomedical Imaging Systems and Signal Processing (3)**
An graduate-level course provides and in-depth discussion on biomedical signals and images including imaging modalities such as X-ray, computerized axial tomography (CT), positron emission tomography (PET), and magnetic resonance imaging (MRI). Fundamentals of signal and image processing including data acquisition, filtering, 2D signals and systems, noise reduction methods and homomorphic filtering for image enhancement will be discussed. An overview of random signals and linear systems and power spectra will also be discussed, and further, students will work on detailed research projects.

**MECH 548 Machine Learning for Medical Detection & Diagnoses (3)**
This course covers an overview of the fundamental Big Data challenges. Complex data structures, data cleaning, data preprocessing, and semantic integration of heterogeneous, distributed biomedical databases will be examined. Existing machine learning, data mining, neural and other novel computing tools for biomedical data analysis will be explored. Data visualization and imaging analysis will be discussed. In addition, the nature of clinical data will be introduced and the architecture and design of healthcare information systems will be covered. Comparisons of the state of the art clustering and feature selections methods for microarray data classification will be furnished. Lastly, privacy and security issues will be discussed. For the course topics described above, case studies will aid in describing contemporary systems and current research.

**MECH 611 Special Topics in Mech. Engineering (3)**
Exploration of special topics in concurrent engineering, such as intelligent design and manufacturing. Detailed examination of feature-based design and roles of quantitative reasoning, flexible-based design and roles of quantitative reasoning, flexible fixture systems, knowledge-based process planning for mechanical and electronic components, control of manufacturing systems, tools for building expert systems, neural networks to solve manufacturing problems.

**MECH 621 Special Topics in Biomed. Engineering (3)**
The purpose of this course is to train students to become skilled biomedical researchers via: 1) developing their understanding of professional and ethical responsibility, 2) training them how to formulate research ideas and develop a research plan, and 3) facilitating a semester long research project involving contemporary issues in human health and medicine. There will also be guest speakers throughout the course.

**MECH 631 Mechanical Fundamentals and Design of Electronic Systems ( 3)**
An understanding of the fundamental mechanical principles used in design of electronic devices and their integration into electronic systems will be provided. Focus will be placed on the effect of materials compatibility, thermal stress, mechanical stress, and environmental exposure on

product performance, durability and cost. Both electronic devices and package assemblies will be considered. analysis of package assemblies to understand thermal and mechanical stress effects will be emphasized through student projects.

**MECH 671 Science and Technology of Fuel Cells and Batteries (3)**
Fuel cells are fast growing energy device to produce electricity out of the water. Batteries are widely used for energy storage. The objective of this course is to educate graduate students about the underlying principles of fuel cells and batteries. Thermodynamic mechanism and electrochemistry will be used to define fuel cell and battery fundamentals. We will closely study the materials and design aspect of this system. Some common fuel cells and batteries will be discussed individually.

**MECH 672 Nanomaterials for Next Generation Computers (3)**
Increasing computational power and memory is the most pressing need for the current computers. Utilization of nanomaterials and nanostructures is vital to keep advancing computer technology. This course will discuss the science and technology of nanomaterials in the present computers. This course will also provide the profound understanding of the nanomaterials for the futuristic quantum computers.

**MECH 673 Computational materials science (3)**
Computers have revolutionized the process of innovation and new discoveries in the area of materials for every field. This course will discuss the science of computing materials properties. In this course, students will gain the fundamental understanding of Monte Carlo simulation, Finite element analysis, and quantum mechanical calculations.

**MECH 674 Advanced science and technology of solar cells (3)**
Solar cells are one of the most reliable and cleanest forms of energy harvesting technology. This course covers the science and technology of common types of solar cells. Students learn about the energy band diagrams, solar absorption mechanism, etc. Students learn about the mathematical models to describe the mechanism for solar cells.

**MECH 679 Special Topics in Mech Engineering (3)**
Covers a specific area related to mechanical engineering that is not normally covered in core Ph.D. classes.

**MECH 699 Master's Thesis (6-9)**
A supervised research project for thesis option equivalent to two regular three-credit courses. Topics to be determined by student and supervisor.

# Accelerated Bachelor's/Master's Program

In our highly technical and globally competitive society, a Master's degree is frequently viewed as the "working degree" for many engineers and computer science graduates. The School of Engineering and Applied Sciences offers an accelerated path between its Bachelor's and Master's degree programs called the Accelerated Bachelor's/Master's (ABM) program which affords outstanding undergraduate students the opportunity to complete the requirements for both the bachelor's and master's degrees at an accelerated pace, typically within five years. Undergraduate engineering and computer science students admitted to the ABM program may take up to 9 graduate-level technical elective credits for engineering majors prior to admission to the Master's program. A minimum grade of B is required in these graduate-level courses which will be counted towards both the bachelor's and master's degree requirements. The courses must be recommended by the student's academic advisor and approved by the chair of the department.

Permission to pursue the ABM path does not guarantee admission to the Master's degree program. Admission is contingent on meeting all eligibility requirements at the time of application to the graduate program. Graduate courses taken prior to admission to the Master's program will be designated as applicable to the graduate program of study after the student receives the bachelor's degree and enrolls in the graduate program.

## Application for Admission

Undergraduate students will generally apply for the accelerated program at the beginning of the second semester of their junior year. Students applying for entry into the ABM degree program must meet the following criteria at the time of submitting an application:

- Junior standing;
- A minimum of 80 semester credit hours (70 credit hours for civil engineering majors) completed (typically at the end of the fifth semester of undergraduate study) including nine credits of 300-level coursework required by the undergraduate program;
- A cumulative GPA of 3.2 or higher; and
- If a transfer student, must have completed a minimum of two semesters as a full-time student at UDC—a minimum of 30 hours.

Application materials:
Application to the accelerated BS/MS program includes:
a) Completed application form;
b) Statement of purpose explaining motivation for graduate study;

c) Unofficial UDC transcript;
d) Three letters of recommendation, two of which must be from the department faculty; and
e) Approved program of study.

- The student applying to the ABM program must have a faculty advisor with whom he/she must consult to compose a program of study, including a list of courses to be taken from the senior year through the end of the Master's program. The program of study must be approved by the faculty advisor and the department chair before being submitted as part of the application.

Nomination
Students may be admitted to the ABM program via a nomination process.

- A faculty member may nominate a student, in his/her department, with a cumulative GPA between 3.0 and 3.2.
- A memo of nomination, with justification, must be submitted for consideration of the candidate.
- The candidate must submit the required application information.

### Continuation in the Program

The student must maintain a GPA of at least 3.2 for all undergraduate courses taken, and a GPA of at least 3.0 in all graduate courses taken in order to remain in good standing in the program. If a student's GPA drops below 3.2, the student will be placed on academic probation within the program for one semester. If the student raises their GPA to 3.2 or higher, he or she will be removed from probation and restored to good standing. If after one semester the student is not able to raise the GPA to 3.2, she/he will be withdrawn from the ABM program.

### Opt-Out Option

A student may withdraw at any time from the ABM program, by informing the department chair in writing. A student who either desires to withdraw or is denied continuation in the ABM program will be able to complete the traditional BS degree program. The graduate courses taken may be counted as technical electives towards the BS degree. Graduate course credits used for the undergraduate degree program may not be used toward the graduate degree at a later date. It is important to note that permission to pursue the ABM path does not guarantee an admission to the Master's degree program. Admission is contingent on meeting all eligibility requirements at the time of entering the graduate program.

## Ph.D. Program in Computer Science and Engineering

The Doctor of Philosophy in Computer Science & Engineering (PhD) has an interdisciplinary focus with emphasis on design thinking and the ability to solve complex problems. The Ph.D. offers the following:

- Specialization in Biomedical Engineering
- Specialization in Civil Engineering
- Specialization in Computer Science
- Specialization in Electrical Engineering
- Specialization in Mechanical Engineering

Doctoral research will focus on the interface between computer science and engineering including additive manufacturing, biomedical engineering, mechatronics, advanced communication, nanotechnology, simulation, modeling, smart grids, cybersecurity, system level design, big data analysis, robotics, artificial intelligence, machine learning, geo-transportation, environmental engineering, and urban engineering.

The Ph.D. program requires coursework, a qualifying examination, a dissertation proposal and research competency exam, a research seminar, dissertation research, and a dissertation defense.

## Admission and Policies

### Admissions

Applicants must submit the official transcripts, a resume, a personal statement of research and career goals, three letters of recommendation and official GRE general test results.
Applicants whose native language is not English must demonstrate proficiency by taking the TOEFL or IELTS exam. The minimum score required for admission is 550 on the TOEFL paper-based exam, 213 on the TOEFL computer-based exam, 79 on the TOEFL Internet-based exam (with a minimum of 20 in each section), or 6.5 on the IELTS exam.
Application materials are reviewed by a Ph.D. committee chaired by the Ph.D. Program Director which makes a recommendation to the Office responsible for Graduate Admissions.

### Program Requirements

Students must complete a minimum of 72 graduate credits. The 72 hours of required doctoral-level credits typically consist of 45 credits of regular coursework, 24 credits of dissertation research and 3 hours for attending research colloquiums. More than half of the 72 credits applied to the doctoral degree must be earned at UDC.
Ph.D. Program requirements are:

1. Completion of 45 semester-hours of graduate coursework
2. Completion of 24 research semester-hours
3. Attendance of 3 hours of colloquia (1 credit per semester)
4. A passing grade on the qualifying examination (written and oral)
5. An approval of proposal defense (written and oral)
6. Completion of dissertation (written)
7. Passing of dissertation defense (oral)

**Reduction of Credit**
The minimum required of 72 graduate credits may be reduced by a maximum of 30 credits from a completed master's degree. Reduction of credit requires the approval of the Ph.D. program director and the Dean of SEAS. They determine whether the credits are eligible for reduction of credit and applicable to the degree program and the number of credits to be reduced. Students who do not receive a full credit reduction should choose additional credits in consultation with their advisor.

## Degree Requirements

Minimum total credits: 72

Students need to complete at least 45 credits of required graduate coursework with a minimum GPA of 3.0 and must always obtain at least a "B" grade in department or program-specific Ph.D. courses. Any course that is nearly equivalent to the one taken during the master's program will not be counted towards the Ph.D. credits. After passing the Ph.D. qualifying examination, a student must remain registered in the program each semester for at least 3 credits of research or dissertation. To complete the Ph.D. program, a student needs to finish a minimum 24 research/dissertation credit hours.

After the completion of the master's degree at UDC, students can fulfill the Ph.D. course requirements by completing at least 9 hours of coursework in the student's specialized field and 6 hours in a computer science specialization field. In addition, students are required to take colloquia to satisfy the minimum 3 colloquium credits.

**Biomedical Engineering Specialization Field**
BMEG 681 Machine Learning for Medical Detection and Diagnoses (3)
BMEG 682 Biomedical Imaging Systems and Signal Processing (3)
BMEG 683 Biomedical Engineering Seminar (3)
BMEG 684 Physiological Systems Analysis (3)
BMEG 689 Special topics in computer enabled biomedical engineering topics (3)

**Civil Engineering Specialization Field**
CVEN 651 Computational engineering and scientific modeling (3)
CVEN 652 Systems Engineering Approach (3)
CVEN 653 Engineering Systems: Modeling & Simulation (3)
CVEN 654 Water Resources System Analysis (3)
CVEN 655 Water Resources System Modeling (3)
CVEN 669 Special Topics in Computational Science (3)

**Computer Science Specialization Field**
CSCI 601 Advanced Algorithm Analysis (3)
CSCI 602 Theory of Computational Complexity (3)
CSCI 603 Pattern Recognition (3)
CSCI 671 Autonomous Mobile Robots (3)
CSCI 672 Visual Analytics (3)
CSCI 673 Virtual Reality (3)
CSCI 674 Advanced Topics in Networking (3)
CSCI 675 Spatio-Temporal Databases (3)
CSCI 676 Big Data Science (3)
CSCI 689 Special Topics in Computer Science (3)

**Electrical and Computer Engineering Specialization Field**
ELEC 631 Advanced Computational Intelligence (3)
ELEC 632 Advanced Computer Architecture (3)
ELEC 633 Advanced Embedded System design (3)
ELEC 634 Detection and Estimation (3)
ELEC 635 VLSI Architecture (3)
ELEC 636 Advanced Electronic Materials and Devices (3)
ELEC 637 Advanced Communication Systems (3)
ELEC 649 Special Topics in Computer Engineering (3)
ELEC 689 Special Topics in Electrical Engineering (3)

**Mechanical Engineering Specialization Field**
MECH 671 Science and technology of fuel cells and batteries (3)
MECH 672 Nanomaterial for next generation computers (3)
MECH 673 Computational materials science (3)
MECH 674 Advanced science and technology of solar cells (3)
MECH 679 Special Topics in Mechanical Engineering (3)

**Research and Dissertation Credits**
CCEN 701 Research/Dissertation (1-8)
CCEN 702 Colloquia (1)

Courses that constitute a student's plan of study will be chosen in consultation with the student's advisor and Ph.D. Program Director to include:

- 6 credits at the 600-level outside the SEAS (UDC or Consortium) in a subject considered foundational for the area of emphasis.
- For courses taken elsewhere, the equivalent levels are to be determined by the Ph.D. Program Director/Ph.D. advisor, subject to approval by the SEAS Dean.
- 6 credits within SEAS but outside the area of emphasis. This requirement may be satisfied with courses taken during previous studies, subject to approval.
- A maximum of 3 credits of individualized reading courses at any level.

## Examination and Dissertation

Before candidates can register for research or dissertation credits, they must have earned at least 30 credits and passed the Ph.D. Qualifying Examination.

If a student did not choose a Ph.D. advisor(s), the Ph.D. program director a will be assigned as a temporary Ph.D. advisor when admitted to the program. Before the end of their fourth semester in the program, students should select a doctoral advisor and, in consultation with their doctoral advisor, form a Qualifying Examination Committee. The Qualifying Examination Committee should include at least three doctoral faculty members from UDC, including the doctoral advisor. The Qualifying Examination Committee will determine the chair of the committee. The Ph.D. Program Director will serve on the committee bringing the Qualifying Examination Committee members total to a minimum of 4 doctoral faculty.

**Qualifying Examination**

The purpose of the qualifying examination is to allow students to demonstrate that they are capable of scholarly level research leading to a Ph.D. dissertation. The goal of the qualifying examination is to make this exam a constructive component in the development of a student's research skills and use the course work to qualify doctoral students.

**Qualifying Examination Rules**

Students must take the Qualifying Examination no later than two semesters after completing 30 hours of coursework (out of the 45 hours coursework requirement). Each student must select a primary area of focus and then pass a qualifying examination in that area, given and evaluated by the student's Qualifying Examination Committee. The student must file an Application for Qualifying Examination at least one month before the examination takes place. The qualifying examination will be offered December and May each academic year. Students should be enrolled in Ph.D. classes at the time the Qualifying Examination is offered.

**Qualifying Examination Structure**

The Qualifying Examination consists of two mandatory components: written and oral examination. For the written part of the qualifying examination, the Qualifying Examination Committee will utilize a written comprehensive examination to assess the student's ability to apply theoretical concepts of research design and methods in the student's area of research.

The oral part of the qualifying examination is the student's presentation of the written part of the qualifying examination. The oral presentation will be followed by an open-ended question and answer session that may include questions specific to the research project as well as questions generally relevant to the research area. Upon completion of the presentation of the report, the Qualifying Examination Committee will make its final decision within one month. A pass must be the majority decision by the Qualifying Examination Committee members.

**Evaluation**

The purpose of the examination of the written part is to test the candidate's broad understanding of the field. A failure of the written part disqualifies the student from moving to the oral examination part.

The Qualifying Examination Committee will evaluate the written part of the qualifying examination based on the corresponding rubric given below and grade it on a pass/fail basis.

- Ability to articulate a research problem and its significance.
- Ability to critically review the literature.
- Ability to communicate and interpret research results.

A second failure of the exam will result in the termination of the student's enrollment in the Ph.D. program.

After passing the Qualifying Examination, the student will be allowed to register for research and dissertation credits.

**Dissertation Committee**

After passing the qualifying examination, the student will request the Ph.D. Program Director to set up a Dissertation Committee consisting of at least four graduate faculty members, which are all Ph.D. faculty members. This Committee may, but is not required to, consist of the same faculty members as the Qualifying Examination Committee. Ordinarily, the chair of this committee will be the student's advisor(s), who must be a Ph.D. faculty member and will ensure that the composition of the committee is appropriate.

The Dissertation Committee must be approved by the Ph.D. Program Director. After identifying and obtaining the signatures of the faculty who will be serving on the Committee, the Dissertation Committee Form must be submitted to the Dean of SEAS.

**Proposal Defense**
Each student must present and successfully defend a Ph.D. dissertation proposal after passing the qualifying examination and within ten (10) semesters since entering the Ph.D. program. The proposal defense will be conducted by the student's Dissertation Committee and will be open to the Ph.D. faculty and students.

The student shall provide copies of the written proposal to the Committee members at least two weeks before the scheduled defense. At the discretion of the Dissertation Committee, the defense may include questions that cover the student's program of study and background knowledge in the area of the proposal. The proposal defense will be graded as pass/fail according to the corresponding rubrics by the Committee.

A pass must be the unanimous decision by the committee members; otherwise, the proposal defense fails. A student can retake the proposal defense if he/she cannot pass it the first time and should consult the Ph.D. Program Director before the second attempt. The second failed defense of a dissertation proposal will result in the termination of the student's enrollment in the Ph.D. program.

**Ph.D. Candidacy**
A doctoral student advances to Ph.D. candidacy after the dissertation proposal has been successfully defended.

**Dissertation Defense**
Each student must complete a research program approved by the student's Dissertation Advisor(s) that yields a high quality, original and substantial piece of research. The Ph.D. dissertation describes this research and its results. The dissertation defense is a public presentation. A written copy of the dissertation must be made available to each member of the student's Ph.D. Dissertation Committee at least two weeks before the public defense. The date of the defense must be publicly announced at least two weeks prior to the defense. The student must present the dissertation and defend it in a manner accepted by the Dissertation Committee.

The dissertation will be graded as pass/fail based on the corresponding rubrics by the Dissertation Committee. A pass decision must be unanimous and must be approved by the Dean of the Graduate School and/or Dean of SEAS. A student who fails the defense of a dissertation twice will be terminated from the Ph.D. program.

## REQUIRED COURSE DESCRIPTIONS:

**CCEN 701 Research/Dissertation (1-8)**
This course will be taken by the Ph.D. candidate after passing the qualifying examination. It is a research-based course and it is directed by the Ph.D. advisor.

**CCEN 702 Colloquia (1)**
This course will be taken by the PhD candidate after passing the qualifying exam. It is a colloquiums based course and it is directed by the PhD advisor.

# School of Business and Public Administration (SBPA)

https://www.udc.edu/sbpa/

**Departments, Degrees and Certificates**
The School of Business and Public Administration is organized into three departments – Accounting and Finance, Business Management and Graduate Programs.

The School offers three Bachelor degrees:

- Bachelor of Business Administration in Accounting
- Bachelor of Business Administration in Finance
- Bachelor of Business Administration in Business Management. In addition, students may opt to have concentrations in Marketing and Management Information Systems

**In addition, <u>all majors</u>** can opt for the Logistics and International Trade Analytics concentration

The School offers one Master degree:

- Master in Business Administration (MBA)

**Accreditations**
All the degree programs in the departments of Accounting and Business Management (BBA and MBA) are accredited by the Accreditation Council for Business Schools and Programs (ACBSP): https://acbsp.org/.

**Student Organizations**
Accounting Club
Delta Mu Delta International Honor Society
Entrepreneurship Club
Marketing Club
National Association of Black Accountants (NABA)
UDC Nonprofit Leadership Alliance (NLA) Student Association

All current students are encouraged to visit the University's website www.udc.edu/sbpa or call the academic department for curricular information and advising assistance.

**Course Requirements For All Business Majors:**

**Required IGED Courses/Substitutions (37 Credits*)**

**Pre-Business Core Courses For ALL Business Majors (18 credit hours)**
Before becoming a business major, you must complete the courses below with a cumulative GPA of 2.5.
BGMT 208 Business Communication (3)
ECON 201 Principles of Macroeconomics (3)
ECON 202 Principles of Microeconomics (3)
ACCT 201 Financial Accounting (3)
ACCT 202 Managerial Accounting (3)
FINA 220 Business Statistics (3)

**Business Core (33)**
BGMT 304 Introduction to Management (3)
BGMT 310 Introduction to International Business (3)
BGMT 311 Introduction to Spreadsheet Analytics (3)
BGMT 312 Introduction to Digital Analytics (3)
BGMT 411 Leadership (3)
BGMT414 Production and Operations Management (3)
BGMT 419 Business Policy and Strategy (3)***
BLAW 214 Legal Environment of Business (3)
FINA 314 Introduction to Finance (3)
MGIS 302* Introduction to Management Information Systems (3)
MKTG 304 Introduction to Marketing (3)

***Requires permission of the department chairperson. You must be within 18 credits of completion degree requirements.

## Logistics and International Trade Analytics (LIT) Concentration (available to ALL majors)

The concentration in Logistics and International Trade (LIT) Analytics prepares students for STEM-Business focused global business logistics and international trade, which incorporates supply chain, logistics, transportation, and international trade analytics The following courses are required for the LIT concentration:

**Required Courses LIT Concentration**
**12 credit hours (4 courses)**

Global Logistics Stream 1-
BGMT 313 Global Logistics and Supply Chain Mgmnt. 3

International Trade Stream 2
Pick **any three** (3) from the courses listed below:

| | | |
|---|---|---|
| MKTG 308 | International Marketing | (3) |
| FINA 318 | International Finance | (3) |
| BGMT 311 | Spreadsheet Analytics | (3) |
| BGMT 308 | Entrepreneurship | (3) |
| MKTG 404 | Marketing Research | (3) |
| MKTG 305 | Consumer Behavior | (3) |
| BGMT 407 | Multinational Corporate Management | (3) |
| BGMT 395 | Study Abroad in STEM Business LIT | (3) |
| MKTG 304 | Introduction to Marketing | (3) |
| MATH 381 | Probability and Statistics | (3) |
| MECH 406 – Engineering Economics | | (3) |

# COURSE DESCRIPTIONS: BUSINESS MANAGEMENT (BGMT)

**BGMT 104 Introduction to Business (3)**
Examines and analyzes the basic structure and practices of the business community; Emphasis on modern business functions in a dynamic environment, the nature and scope of business components, the cause of business problems, and factors that tend to influence behavior in business organizations.

**BGMT 208 Business Communications (3)**
Covers the essential principles involved in communicating in today's workplace. Students are expected to gain expertise in both written and oral communications. Course provides for a review of basic English principles as applied to management in all aspects of communications, including listening, interpersonal skills, verbal and nonverbal messages. Requirements include activities related to effective interviewing; successful business meetings; working in teams; and developing, organizing, and delivering presentations. Prerequisite: IGED 111.

**BGMT 304 Introduction to Management (3)**
Examines the concepts and principles of management; evolution of management thought; principles and methods of planning, organizing, leading, and controlling; types of plans; leadership and decision making styles; approaches to the improvement of managerial and employee performance; systems-oriented management; and the impact of computer technology on the management process. Pre-req: ECON 202

**BGMT 305 Conceptual Foundations of Business (3)**
Examines the ideological and philosophical background of the private enterprise system that forms the basis for its values and outlook and determines its place in ever-changing society. Topics include the social responsibility of business, business-government relations, and business ethics. Pre-req.: BGMT 208

**BGMT 306 Human Resources Management (Personal Management) (3)**
Examines the policies governing human resources management; human resources planning; strategies for acquiring and maintaining human resources; the personnel functions of recruitment, selection, testing, compensation, training development, and promotions and transfers. Also, personnel research programs and activities, the legal environment of human resources management, equal opportunity policies, job analysis, evaluation and classification, and reduction-in-force procedures. Pre-req.: BGMT 304 or equivalent.

**BGMT 307 Labor-Management Relations (3)**
Discusses the evolution of labor unions and collective bargaining, negotiation of collective bargaining agreements, agreement administration, settlement of labor disputes, and the legal environment of collective bargaining. Pre-req.: BGMT 304 or equivalent.

**BGMT 308 Entrepreneurship (3)**
Examines and analyzes the small business sector in the American economy; the processes of establishing and managing a small business enterprise; problems associated with small business planning, financing, and staffing; and survival and growth strategies for small businesses. Pre-req.: BGMT 304.

**BGMT 309 Introduction to E-Commerce: Business on the Internet (3)**
This course consists of five sections: Section 1-Introduction to Electronic Commerce; Section 2-Personal and business services online; Section 3-Buying online; Section 4-Doing business on the web; and Section 5- Developing an electronic commerce web site. In class exercises and work on the computer/internet are critical and integral parts of this course. Pre-req.: IGED 250 or MGIS 120

**BGMT 310 Introduction to International Business**
This course provides a broad-based introduction to international business including its logics, institutions, and dynamics. Throughout the course students examine the influence that variation in economic, social, cultural, political, and legal environments has on businesses operating in multiple national contexts.

**BGMT 311 Spreadsheet Analytics (3)**
This course provides students with basic understanding of the role that business analytics plays in transforming data into business insights. It trains students with essential analytical tools such as visualization, spreadsheet modeling, data mining, forecasting and optimization methods, to develop the skills of identifying important patterns and relationships of key variables and constructing predictive models as well as preparing business plans based on the analysis results. Pre-req.: IGED 250; MGIS 120

**BGMT 312 Introduction to Digital Analytics**
This course introduces basic analysis skills using computer programs targeting at the application of quantitative models which are covered in business statistics, finance, and management sciences fields. It focuses on inferential statistic models, basic time-series forecasting models, decision tree models, optimization models including linear and nonlinear models, as well as the network models. The course materials will be instructed via a combination of

lectures, example practices, assignment reading, case analysis, and homework problems. Pre-req.: BGMT 311

**BGMT 313 Global Logistics and Supply Chain Management (3)**
This course introduces students to key concepts in supply chain management along with management activities related to the coordination and integration of a firm's operational processes with those of the broader supply chain. Students learn to structure, manage, and improve the flows of products, services, information, and money and synchronize an organization's goals and processes with its partners. Course includes training of SAP software through SAP University Alliance. The course is a required course in the Logistics and International Trade (LIT) Analytics concentration. Pre-req.: BGMT 304

**BGMT 319 Business Ethics (3)**
Provides an overview of business ethics and decision-making codes of ethics, ethical conduct in different business situations, ethical issues surrounding conflict of interest in business relations, and factors influencing ethical conduct. Pre-req.: BGMT 304.

**BGMT 395 Study Abroad (STEM-Business focus) (3)**
Study abroad course is designed to give participants exposure to business practices, economic and political environments, science and technology developments, and culture of another country (e.g. China, UK, etc.). At the end of the trip, students should have a broad understanding of each of these in comparison to U.S. environments and practices. An emphasis is placed upon the application of this understanding to the changing business environment, including opportunities and challenges of doing business as a multinational in another country. Pre-req.: Instructor permission.

**BGMT 396 Global Logistics and Supply Chain Management**
This course introduces the management activities related to the coordination and integration of a firm's operational processes with those of the broader supply chain. Students learn to structure, manage, and improve the flows of products, services, information, and money and synchronize an organization's goals and processes with its partners. The course is a required course in the Logistics and International Trade (LIT) Analytics concentration and is suitable for students seeking to learn about the strategic imperatives associated with operating a business in today's global environment.

**BGMT 406 Decision Theory (3)**
Discusses theories, methods, and quantitative techniques of management analysis and decision-making in business, industrial, and governmental organizations as applied to specific management functions and situations. Topics include the establishment and management of decision support systems. Pre-req.: BGMT 311.

**BGMT 407 Multinational Corporate Management (3)**
Examines the processes of planning, organizing, and control in global enterprises; the problems that confront multinational corporate managers; and the impact of the domestic and international environments on the operations of multinational firms. Pre-req.: BGMT 304

**BGMT409 Organization Theory and Behavior (3)**
Studies organization theories, concepts, and structures; individual and group behavior; the communication process; leadership; conflict management; motivation; problems of reorganization; and management of change. Pre-req.: BGMT 304

**BGMT 411 Leadership (3)**
Basic theories, principles, and strategies of creative and effective leadership in multiple business environments and situations. Pre-req.: BGMT 304.

**BGMT 414 Operations and Supply Chain Management(3)**
Covers the establishment of production systems, methods of production planning and scheduling, automated production systems, and approaches to production control and quality assurance. Pre-req.: FINA 220.

**BGMT 419 Business Policy and Strategy (3)**
Applies the skills acquired in prior courses through an integrated approach to the development of business policy and strategy. Cases and exercises in establishing, presenting, defending, and publishing business policy and strategy. Pre-req.: Department Chair permission and within 18 hours of completion.

**BGMT 495 Independent Study (3)**
Studies a particular problem or topic in business management under the direction of a faculty member. Maximum of three credit hours for each student degree program. Pre-req.: Senior standing and GPA of 2.8 or higher and Department Chair permission.

## BUSINESS LAW (BLAW)

**BLAW 214 Legal Environment of Business (3)**
Introduces the American legal institutions; the judicial, executive, and legislative branches of government; judicial reasoning; administrative procedures; law; government regulation of business; contracts and torts: studies of the basic elements of determining contract or tort liability; the

formation, operation, and discharge of contracts in a business context. Pre-req.: IGED 111.

**BLAW 318 Commercial Law (3)**
Studies contracts, agency, negotiable instruments and sales; the legal variable encountered in business and commercial transactions; application to practical problems. Pre-req.: BLAW 214.

# Department of Accounting and Finance

## Bachelor of Business Administration (BBA) in Accounting

The BBA in Accounting program provides students with the knowledge and skills required by the 21st Century accounting industry. The goals are for all students to demonstrate: knowledge of the core accounting disciplines; awareness and understanding of ethical, international, and technological issues facing the accounting profession; and the ability to utilize accounting and business software applications.

**Accreditations**
The Department of Accounting and Finance is accredited by the Accreditation Council for Business Schools and Programs (ACBSP): https://acbsp.org/

**Credit Statement**
The BBA program in Accounting requires completing a total of 124 credit hours for graduation, of which 27 credits are in major requirements, 51 credit hours are business core and other requirements, 37 credits are in general education courses, and 9 credits in accounting/general electives.

**Language Requirements** (Non-native English speakers)

**GPA statement**
Students must earn a minimum grade of "C" in all business courses and earn a cumulative GPA of 2.0 in order to remain in good standing.

**Transfer Requirements**
Transfer students must earn a minimum of 12 credits of Accounting at UDC.

**Required Accounting (27 credits)**

ACCT 301 Intermediate Accounting I (3)
ACCT 302 Intermediate Accounting II (3)
ACCT 312 Federal Income Tax I (3)
ACCT 325 Cost Accounting (3)
ACCT 401 Auditing I (3)
ACCT 402 Auditing II (3)
ACCT 404 Advanced Accounting (3)
ACCT 407 Accounting Information Systems (3)
BLAW 318 Commercial Law (3)

**Electives (9 credits)**
Accounting Elective (3)
General Elective (6)

## COURSE DESCRIPTIONS: ACCOUNTING (ACCT)

**ACCT 201 Financial Accounting (3)**
First half of the elementary accounting year should be followed immediately by ACCT 202. Includes the principles of accrual-basis accounting, the accounting cycle, merchandising transactions, treatment of inventories, cash, internal control, receivables, plant assets, and other topics. Pre-req.: Completion of all prescribed developmental courses.

**ACCT 202 Managerial Accounting (3)**
Second half of the elementary accounting year. ACCT 201 and 202 should be taken consecutively. Includes accounting for corporations, long-term debt, the Statement of Cash Flows, financial statement analysis, cost accounting, cost/volume/profit analysis, incremental analysis, operational and capital budgeting, and other topics. Pre-req.: ACCT 201

**ACCT 301 Intermediate Accounting I (3)**
Reviews the basic accounting concepts and principles beginning with an overview of the balance sheet and income statement, financial statement preparation, working capital, and current assets. Advanced study of non-current assets and compound interest, annuities, and present value. Pre-req.: ACCT 202.

**ACCT 302 Intermediate Accounting II (3)**
Studies analytical processes, including statements from incomplete records, financial statement analysis, cash-flow reporting, and price-level changes, and accounting for pensions and leases. Pre-req.: ACCT 301.

**ACCT 312 Federal Income Tax I (3)**
Examines the Federal Income Tax laws as these apply to individuals; tax consequences of business decisions and accounting procedures. Pre-req.: ACCT 202.

**ACCT 325 Cost Accounting (3)**
Analyzes accounting for manufacturing costs, including job order costs, continuous process costs, and standard systems. Principles of budgeting for use in profit planning and control. Pre-req.: ACCT 202.

**ACCT 396 Special Topics in Accounting**
Pre-req.: Permission of department chair person

**ACCT 401 Auditing I (3)**
Surveys auditing standards and practices. Reviews internal control systems, procedures for audit verification of accounts and financial statements, preparation of auditing working papers, and audit practice cases. Pre-req.: ACCT 301.

**ACCT 402 Auditing II (3)**
Provides advanced study of contemporary auditing practice and theory, problems in auditing and financial statement presentation, audit sampling, and auditing computerized accounting systems. Pre-req.: ACCT 401.

**ACCT 404 Advanced Accounting (3)**
Involves a study of the following areas: partnerships;, installment sales;, consignments; fiduciary accounting,; business combination,;; actuarial methods; business consolidations; mergers; accounting for foreign currency transactions; equity and cost methods of subsidiary investments and reporting for segments of a business enterprise. Pre-req.: ACCT 302.

**ACCT 405 Accounting Theory (3)**
Discusses contemporary theory, principles, practices, and controversies in financial accounting; specific areas include income reporting, price level changes, cash flows, inventories, depreciation, accounting for income tax expenses, and equities. Pre-req.: ACCT 302.

**ACCT 406 Governmental and Fund Accounting (3)**
Explores fund accounting for governmental and non-profit entities including appropriations, encumbrances, and fund transfers. Also examines the planning and budgeting cycle, agency accounting, municipal budgeting, and accounting. Pre-req.: ACCT 301

**ACCT 407 Accounting Information Systems (3)**
Examines modern accounting systems with emphasis on information technology. Includes basic concepts and standards, accounting equipment and procedures, sales and cash collection, accounts receivable, inventories, and payrolls. Pre-req.: ACCT 302.

**ACCT 412 Federal Income Tax Accounting II (3)**
Continues 2201-312, including income taxes applicable to partnerships and corporations, foreign taxpayers, estate taxes, gift taxes, and procedures of the Internal Revenue Service. Pre-req.: ACCT 312.

**ACCT 426 Managerial Analysis (3)**
Examines how management uses accounting data in planning and controlling business activities of the firm. Discusses the nature, preparation, analysis, and interpretation of accounting reports. Also explores cost accounting, capital budgeting, and internal controls and how these are used in the management decision process. Pre-req.: ACCT 325.

**ACCT 427 Accounting Practicum (3)**
The course is designed to familiarize students with basic tax laws and to apply these laws in a practical way by completing at least eight tax returns on the computer in the classroom. Students will also have to complete two examinations offered by the VITA branch of the Internal Revenue Service. In addition, each student is required to complete two tax returns for residents of the District of Columbia and the surrounding areas. Pre-req.: ACCT 312.

## Bachelor of Business Administration (BBA) in Finance

The BBA in Finance program leads to careers in corporate financial management, commercial banking, thrift institution administration, mortgage lending, brokerage of securities, real estate, insurance, financial counseling, and investment management, or to government careers in regulatory agencies and budgeting.

**Credit Statement**
The BBA program in Finance requires completing a total of 121 credit hours for graduation, of which 18 credits are in major requirements, 51 credit hours are business core and other requirements, 37 credits are in general education courses, 9 credits in finance electives, and 6 credits in business electives.

Language Requirements (Non-native English speakers)
**Transfer Requirements**
Transfer students must earn a minimum of 12 credits of Finance at UDC.

Residency Statement
**Required IGED Courses (37 cr.)** See IGED Table

| **Required Finance (18 credits)** |
|---|
| FINA 318 International Finance (3) |
| FINA 411 Financial Management I (3) |
| FINA 412 Financial Management II (3) |
| FINA 414 Security Analysis (3) |
| FINA 416 Financial Institutions and Capital Markets (3) |

| **Electives (15 credits)** |
|---|
| Finance Electives (9) |
| 300/400 Level Business Electives (6) |

## COURSE DESCRIPTIONS: BUSINESS FINANCE (FINA)

**FINA 220 Business Statistics (3)**
Analyzes graphical and tabular methods of representing data. Also explores measures of location and variation, elementary probability concepts, probability distributions, and index numbers and how these are used. Pre-req.: College level Mathematics.

**FINA 314 Introduction to Finance (3)**
Introduces the concepts used in business financial decisions. Concepts covered include the analysis of financial statements and cash flows, the time value of money, and the capital budgeting decision. Students are introduced to the money and capital markets as well as the valuation of securities traded in those markets in addition to working capital management and interest rate computations. Pre-req.: ACCT 201; Math 116.

**FINA 316 Real Estate Finance (3)**
Provides the skills necessary to analyze the financial feasibility of real estate opportunities. Topics emphasized are buying and selling, and financing of residential and commercial real estate. Market analysis, property valuation and underlying legal principles include mortgages as well as leases. Pre-req.: FINA 314.

**FINA 318 International Finance (3)**
Presents an overview of the international financial environment and applies the theory and mechanics of international trade and finance. Describes the role of the international financial institutions in stabilizing exchange rates and promoting work trade, and developing countries' financial problems. Pre-req.: ECON 201 and 202.

**FINA 350 Financial Analytics & Models (3)**
Introduces the principles and techniques for building financial models utilizing Microsoft Excel. Topics covered include building financial statements, analysis of financial statements, modern portfolio theory, capital budgeting, regression analysis, and both linear and nonlinear programming for financial applications. Pre-req.: FINA 314

**FINA 396 Special Topics in Finance**. Prerequisites: FINA 314 or permission of Permission of Department Chairperson.

**FINA 411 Financial Management I (3)**
Examines in-depth the concepts of financial planning and forecasting, risk and rates of return, and interest rates relevant to the financial environment. Introduces the cost of capital, capital structure and leverage, hybrid financing techniques. derivatives, and multinational considerations. Also addresses the concept of advanced capital budgeting. Pre-req: FINA 314

**FINA 412 Financial Management II (3)**
Examines the role of the financial manager in executive decision making. Discusses how to apply concepts studied in accounting and finance courses. Uses case studies exclusively to apply various concepts, including financial analysis and forecasting, cost of capital, capital budgeting, equity management decisions, capital structure, hybrid financing, and enterprise valuation. Pre-req: FINA411

**FINA 414 Security Analysis (3)**
Offers a survey of the theory and practice of investments including the valuation process of equities, fixed-income securities, and derivatives. Analyzes the selection and management process of these investments based on risk and return characteristics and introduces portfolio construction techniques. Pre-req.: FINA314

**FINA 415 Portfolio Analysis (3)**
Researches and analyzes investment problems and techniques of selection and management of various types of funds. Discussion of stocks, bonds, derivatives as they relate to portfolio development. Pre-req.: FINA414 or permission of Department Chairperson.

**FINA 416 Financial Institution & Capital Markets (3)**
Examines the process of capital formation in a free enterprise economy. Also examines the role of commercial banks and financial intermediaries as sources of short-term and long-term financing, and the role of government regulatory agencies, emphasizing bank management issues such as bank lending, investments, and capital. Pre-req.: FINA 314

**FINA 495 Independent Study (3)**
Independent study of selected topics in economics or finance under the supervision of a faculty member of the department. Pre-req.: FINA 314 or permission of Department Chairperson.

## Department of Business Management Business Management (BBA)

**Department Offerings**
In addition to the Bachelor of Business Administration (BBA) in Business Management, the department offers concentrations in:

- Marketing
- Management Information Systems

**Accreditation**
The BBA in Business Management Concentrations in Marketing and Management Information Systems are accredited by the Accreditation Council for Business Schools and Programs (ACBSP): https://acbsp.org/

**Credit Statement:**
The BBA program in Business Management requires the successful completion of 121 credit hours which include general education requirement, business core, and other requirements and electives.

**Admission Statement**
Business Management is an unrestricted major, and any student eligible for admission to the University is eligible to declare it. However, students must earn a minimum 2.5 GPA in the 21 hour Pre-Core courses to continue in the major.

Language Requirements (Non-native English speakers)
**Transfer Requirements**
Transfer students must earn a minimum of 12 credits of Business Management at UDC.

**Required IGED Courses (37 cr.) See IGED Table**

**Required Management (18 credits)**

PSYC 201 Introduction to Psychology (3)*
BGMT 305 Conceptual Foundation of Business (3)
BGMT 306 Human Resources Management (3)
BGMT 406 Decision Theory (3)*
BGMT 407 Multinational Corporate Management (3)
BGMT 409 Organizational Theory and Behavior (3) *
*Not required for students electing a concentration.

**Electives (15 credits)**

Management Elective/Practicum (6)
Business Elective (3)
Public Management Elective (3)
General Elective (3)

## Concentrations:
## Management Information Systems (MIS)

The concentration in MIS prepares students for careers in the field of Information Technology (IT) by developing skills in systems analysis and design, programming, network administration, database management, and Internet web site development

| | |
|---|---|
| MGIS 220 Programming for Business | (3) |
| MGIS 225 Problem Solving with Visual Basic | (3) |
| MGIS 330 Internet Programming | (3) |
| MGIS 401 Business System Analysis and Design | (3) |
| MGIS 405 Introduction to Telecommunications | (3) |
| MGIS 420 Database Programming | (3) |

## COURSE DESCRIPTIONS: MANAGEMENT INFORMATION SYSTEMS (MGIS)

**MGIS 120 Computer Applications in Business (3)**
Demonstrates techniques for using Office Suite applications in a business environment. Particular emphasis on integrating applications within the Suite; fundamental Internet concepts; World Wide Web browsing, searching, publishing, and advanced Internet productivity tools. Includes laboratory. Pre-req.: None

**MGIS 220 Programming for Business (3)**
Introduces fundamental concepts of business application development. Structured logic is used to define requirements, write specifications, design, develop, test and integrate applications. Emphasis is placed on problem solving techniques using variables, conditional statements, loops, procedures, and debugging techniques. Pre-req: MGIS 120

**MGIS 225 Problem Solving with Visual Basic (3)**
Focuses on techniques to design and develop advanced business applications from concepts of event-driven programming with graphical user interface. Examines how to apply principles of loops, decisions, strings, arrays, and files in business assignments. Develops business applications with objects and understand the basic concepts of object-oriented programming. Prerequisite: MGIS 120.

**MGIS 330 Internet Programming (3)**
Examines website programming using HTML, scripts, and web authoring tools; objects, methods, functions, events, and interactive forms. Analyzes use of databases, spreadsheets, and graphic objects for business applications. Pre-req.: MGIS 120.

**MGIS 401 Business Systems Analysis and Design (3)**
Examines principles of data systems analysis with a focus on systems evaluation, planning, and implementation. Pre-req.: MGIS 225.

**MGIS 402 Management Information Systems (3)**
Examines advanced problems involving management information systems with an emphasis on management information systems planning, information processing, techniques of documentation, and written procedure. Lec. 3 hrs., Pre-req.: BGMT 304.

**MGIS 405 Introduction to Telecommunications (3)**
Reviews terms and concepts applied to data communications and teleprocessing, network structures, and knowledge of hardware and software systems used in teleprocessing. Pre-req.: MGIS225.

**MGIS 420 Database Programming (3)**
Examines the fundamentals of database design, file organization, and access methods, as well as the relational, network, and hierarchical views of databases, including the

appropriate query languages and implementations, client-server planning, testing, and installation. Includes methods used to parse and optimize queries, reliability, security and integrity of databases. Requires students to conduct several programming projects. Pre-req.: MGIS 225

**MGIS 507 Management Information Systems (3)**
Discusses management information systems as developed in a computer environment, including the impact of these systems on managerial decision-making. Pre-req.: Graduate Standing.

## Marketing

The concentration in Marketing prepares students for careers in marketing management, sales, advertising, marketing research, retailing, distribution, and international marketing. The following courses are required for the Marketing concentration:

| | |
|---|---|
| MKTG 304 Introduction to Marketing | (3) |
| MKTG 305 Consumer Behavior | (3) |
| MKTG 306 Promotion Management | (3) |
| MKTG 307 Principles of Retailing | (3) |
| MKTG 308 International Marketing | (3) |
| MKTG 310 Direct Marketing Management | (3) |
| MKTG 312 Social Media Marketing | (3) |
| MKTG 404 Marketing Research | (3) |
| MKTG 405 Marketing Strategy | (3) |

**Total: 27 credits required**

## COURSE DESCRIPTIONS: MARKETING (MKTG)

**MKTG 304 Intro to Marketing Management (3)**
Provides a managerial approach to the study of marketing, including target market selection, product, price, promotion and distribution strategies. Emphasizes consumer behavior and decision. Nonprofit and international marketing issues will also be included. Pre-req.: BGMT 304

**MKTG 305 Consumer Behavior (3)**
Examines consumer and organizational buying behavior, incorporating concepts and findings from behavioral sciences. Includes the study of an integrated model of consumer behavior and the factors which influence the decision process. Pre-req.: MKTG 304

**MKTG 306 Promotion Management (3)**
Studies theories and processes relating to marketing communications with a focus on planning and managing the communication mix: personal selling, advertising, sales promotion, and publicity. Views promotion as a marketing tool coordinated with other elements of the marketing mix. Pre-req.: MKTG 304.

**MKTG 307 Principles of Retailing (3)**
Examines planning and managing retailing strategy, including evaluation of trading area, selection of retail store site, merchandising, inventory management, store layout, merchandise assortment, pricing, promotion, and customer service. Pre-req.: MKTG 304.

**MKTG 308 International Marketing (3)**
Examines theories, concepts, and practices relating to international marketing management, with a focus on the cultural, social, political and economic environments. Topics include strategic decisions about product, price, promotion, and distribution as well as emerging issues and institutions in global marketing. Pre-req.: MKTG 304.

**MKTG 310 Direct Marketing Management (3)**
Examines the direct consumer/user marketing approach, including a review of the media of direct marketing, such as mailing lists, magazines, newspapers, broadcasts, and telephone. Explores techniques of creating direct mail packages, catalogs, production, and research as related to direct marketing. Pre-req.: MKTG 304.

**MKTG 312 Social Media Marketing(3)**
Use of social media by marketers to increase brand awareness, identify key audiences, generate leads and build meaningful relationships with customers. Social media allows businesses to gain a competitive advantage through the creation and distribution of valuable, relevant and consistent content to attract and retain clearly-defined audiences. Students will utilize new and constantly updated social media marketing strategies for businesses. Pre-req.: MKTG 304.

**MKTG 396 Special Topics in Marketing (3)**
Integrates flexibility into the marketing discipline. Topics of interest is dependent on the needs of both the marketplace (industry) and the students (academia). Topics may include: Non Profit Marketing, Digital Marketing, Marketing and Artificial Intelligence, Marketing and Robotics, Sports Marketing, Creative Marketing Strategies, Brand Management, Pricing or others as necessary. Pre-req.: MKTG 304.

**MKTG 404 Marketing Research (3)**
Studies the fundamentals of scientific investigation used to solve marketing problems. Examines methodologies and processes used in marketing research including problem identification, research design, sources of information and methods of information gathering, sample design, organization and control of field survey, tabulation, analysis,

interpretation of data, and the presentation of a research report. Pre-req.:, MKTG 304.

**MKTG 405 Marketing Strategy (3)**
Presents a capstone course for marketing majors designed to test the student's analytical skills in developing sound marketing policies and strategies. Includes project investigations of contemporary issues in the field of marketing. Pre-req.: MKTG 404

**MKTG 504 Marketing Management (3)**
Explores the nature and scope of marketing management, market structure, consumer behavior, and marketing channels. Also examines the various approaches to the analyses of demand, and cost and profit in addition to functional problems, policies, selling, advertising, and pricing. Pre-req.: Graduate business standing.

**MKTG 507 Marketing Strategy (3)**
Uses case studies to incorporate concepts and techniques covered in previous marketing courses. Analyzes the overall problems of managing the functions of business. Pre-req.: MKTG 504.

**MKTG 508 Buyer Behavior (3)**
Explores the concepts and the practical implications of the various processes and facets of consumer motivation and behavior. Pre-req.: MKTG 504.

**MKTG 509 Marketing Seminar (Marketing Functions) (3)**
Studies in-depth a select, functional area in marketing, with emphasis on prevailing marketing practices. Rotates topics such as promotion management, marketing channels, and physical distribution management; however, only one of the three are covered in a semester. Pre-req.: MKTG 504.

**MKTG 514 International Marketing Management (3)**
Studies the systematic treatment of marketing on a global scale. Explores areas of international marketing and global marketing strategies while examining each element of the marketing mix. Pre-req.: MKTG 504.

# Department of Management

## Bachelor of Science (BS) in Hospitality and Tourism Management

The School of Business and Public Administration (SBPA), Department of Business Management's Bachelor of Science (BS) in Hospitality and Tourism Management is a 2 + 2 program. It requires either an Associates or Applied Associates of Science Degree in Hospitality Management or Hospitality and Tourism Management prior to entering the bachelor program. The degree program consists of a specific combination of hospitality management, business management and general education courses that will provide students with a sound working knowledge of not just hospitality management, but of management and leadership in general that will prepare them for professional level leadership positions in the hospitality industry.

**Credit Statement**
The BS program in Hospitality and Tourism Management requires completing an Associates Degree. Additionally, a total of 60 credit hours for graduation are needed. Of those 60 credits, 30 are business required courses, 9 are hospitality required courses, 9 are required hospitality practicum/internship, 6 are general education and 6 are foreign language (sequential).

**Language Requirements** (Non-native English speakers)

**GPA Statement**
Students must earn a minimum grade of "C" in all business and hospitality courses and earn a cumulative GPA of 2.0 in order to remain in good standing.

**Transfer Requirements**
Transfer students must have earned an Associates Degree or Applied Associates of Science Degree in Hospitality Management or Hospitality and Tourism Management

**Business Course Requirements:**
BGMT 304 Introduction to Management (3)
BMGT 409 Organization Theory and Behavior (3)
BGMT 411 Leadership (3)
BGMT 419 Business Policy & Strategy (3)
BLAW 214 Legal Environment of Business (3)
BLAW 318 Commercial Law (3)
FINA 220 Business Statistics (3)
MKGT 304 Introduction to Marketing Management (3)
MKGT 405 Marketing Strategy (3)
BGMT 319 Business Ethics (3)

**Hospitality Course Requirements**
HMGT 325 Hospitality Financial Management (3)
HMGT 400 Hotel Asset Management (3)
HMGT 401 Revenue Management (3)
HMGT 390 Hospitality Practicum (9)

**Other Required Courses**
SPAN 101 Beginning Spanish I (3)
SPAN 102 Spanish II (3)

## COURSE DESCRIPTIONS HOSPITALITY AND TOURISM MANAGEMENT (HMGT)

**HMGT 325 Hospitality Financial Management (3)**
This course presents how accounting information is used by management to analyze and measure the efficiency and profitability of a hospitality business. The course emphasizes the managerial uses of accounting data in decision making, preparation of budgets and variance analysis, relevant cost analysis, regression analysis and cost-volume-profit relationships. Prerequisite(s): ACCT 202 or equivalent, junior status.

**HMGT 390 Hospitality Practicum (9)**
This internship is designed to give the student practical experience in both lodging and food and beverage areas. Rotational assignments incorporate both front- and back-of-the-house operations. It includes day, evening and weekend shifts. This experience will likely lead to full time employment offers or enhance the chances of gaining full time employment. The internship classifies as work experience, which organizations require as qualification for hire. Prerequisite(s): Junior Status

**HMGT400 Hotel Asset Management (3)**
This course explores diverse aspects of hospitality asset management and hospitality finance. Students will learn how to assess and benchmark hotel performance and how to evaluate financial investment decisions. Students will learn about hotel operating metrics, feasibility studies, the financial implications of operational decisions and they will perform cost benefit analysis on operational drivers at a hotel asset. Prerequisite(s): Senior Status or chairperson permission

**HMGT 401 Revenue Management (3)**
This course examines and illustrates the strategies, principles and techniques of revenue management as they relate to lodging, travel/tourism, food service and facilities management. The relationship between accurate forecasting, overbooking, reservation systems, marketing issues, pricing, and e-commerce as they relate to financial decision-making is investigated. Students are required to analyze revenue management scenarios. Prerequisite(s): ECON 102, HMGT 110C

# Master of Business Administration (MBA)

The Master of Business Administration (MBA) mission is to integrate sustainability, entrepreneurship, and globalization with a core of business fundamentals to produce creative graduates with an entrepreneurial mindset ready to provide leadership in private and public sector organizations. By obtaining a Master's degree in Business Administration, students will acquire skills in new technologies and methods in these fields to improve their standing in a competitive and challenging job market.

**Student Organization**
Graduate Student Government Association (UDC)

**Credit Statement**
Total credit hours of graduate-level courses required for graduation vary by track. The total credit hours for the MBA program is 36 in which 30 credit hours are core courses and 6 credit hours are electives.

Students electing a concentration must complete 39 hours with 9 credit hours in the area of concentration.

**Admission Statement**
Admission into the graduate MBA program requires a baccalaureate degree conferred by an accredited institution, a minimum of 2.5 grade point average, two letters of recommendation, a 500-word typed essay of objectives and career aspirations, and resume. Applicants with a Graduate Management Admission Test (GMAT) or Graduate Record Examination (GRE) taken within the last five (5) years will be reviewed by the Graduate Admissions committee. Students with non-business degrees must have the following pre-requisite business courses before admittance into the program: Managerial Accounting, Financial Accounting, Macroeconomics, Microeconomics, and Quantitative Research Methods or Statistics.

**SBPA Waivers for GMAT and GRE Requirements:**
The GMAT or GRE will be waived under the following conditions:

- Students completing a previous Master's degree requiring standardized exams with a 3.0 or better GPA.
- MBA applicants graduating from an AACSB accredited program or from SBPA with an undergraduate GPA of 3.5 or higher and grades of B or better in Accounting, Finance, Economics, and Quantitative Methods.
- MPA applicants graduating with any undergraduate degree with a GPA of 3.5 or higher.

**GPA Statement**
MBA students must maintain a grade point average of 3.0 or better and must achieve a B or better in all courses.

**Residency Statement**
Of the 36 MBA required credits, 30 must be taken in residence at the University of the District of Columbia. The MBA Program allows only six (6) transfer credits.

**Eight-Week Class Schedule**
The School of Business and Public Administration follows an 8-week program design:

- An 8-week program allows the student to finish his/her graduate degree sooner with no additional cost. They will earn three credits per course in a more efficient manner.
- It allows for more flexibility and convenience for prospective and current students, as well as working professionals. The student can participate in the program on a full-time or part-time basis. Depending on the number courses taken, the student will be on campus 1 or 2 days a week.
- On a full-time basis, the student can complete a graduate degree in 18 months (possibly 12 months) instead of 2 years.
- At the beginning of each semester, the student will register one time for the courses offered for the two 8-week sessions.

**Foundation Business Courses:**
Before a student can enroll in the 36-credit hour Master of Business Administration program, a potential student needs to have completed the following undergraduate foundation courses: Principles of Accounting; Principles of Finance; Macroeconomics; and Statistics.

**Core Courses**

| | | |
|---|---|---|
| ACCT 504 | Managerial Accounting | (3) |
| MKTG 507 | Marketing Strategy | (3) |
| BGMT 508 | Organization Development & Behavior | (3) |
| BGMT 511 | Leadership and Ethics | (3) |
| BGMT 514 | Operations and Supply Chain Management | (3) |
| FINA 504 | Financial Management | (3) |
| BGMT 535 | Business Analytics and Statistics | (3) |
| MGIS 507 | Management Information Systems | (3) |
| FINA 505 | Managerial Economics | (3) |
| BGMT 529 | Global Strategic Management | (3) |
| | Two Electives | (6) |

## Concentrations:
There are two concentrations offered within the MBA program: International Business and Public Management.

**International Business**
The concentration in International Business provides students with the knowledge and understanding of international business operations and practices to engage in business on a global scale. Required courses:

BGMT 516 International Business Management (3)
FINA 517 International Economics and Finance (3)
MKTG 514 International Marketing Management (3)

**Public Management**
This concentration in Public Management provides students with the knowledge and understanding the operation and structures of the government service sector along with working with non-profit organizations and in the private sector. The student must complete three (3) of the five (5) courses listed below. There are no prerequisites.

PMGT 503 Introduction to Public & Nonprofit Management (3)
PMGT 512 Political Economy & Public Administration (3)
PMGT 514 Management of Government Organizations (3)
PMGT 519 Public Policy Development and Implementation (3)
PMGT 529 Public Finance and Budgets (3)

## COURSE DESCRIPTIONS: GRADUATE BUSINESS ADMINISTRATION (ACCT) (BGMT) (FINA)

**ACCT 504 Managerial Accounting (3)**
Provides an understanding of the reporting, control, and analytical context in which accounting functions including: pre-planning and analyzing financial statements, cost/volume/profit relationships, and capital budgeting. Pre-req.: Graduate business standing.

**ACCT 505 Acct. Reporting, Theory and Practice (3)**
Studies the theory, logic, and actual practice of corporate financial reporting; develops an understanding of the strengths and weaknesses of financial reporting from the manager's point of view. Structured in an issue-oriented format with current readings and case studies. Pre-req.: ACCT 504

**ACCT 506 Cost Analysis and Controls (3)**
Concentrates on the major areas of interest in management accounting and control including: budgetary planning, capital expenditure analysis, control through standards, variable costing, cost/volume/ profit relationships, and responsibility accounting. Structured in an issue-oriented format with readings and case studies in cost analysis and control. Pre-req.: ACCT 504.

**ACCT 507 Contemporary Accounting Issues**
Explores contemporary accounting topics that accounting professionals will face in the workplace and how the accompanying requirements are changing the way that companies and their business partners use, report, analyze and interpret financial reports. Subjects covered will vary as conditions change but may include International Financial Reporting Standards, Fair Value Measurements, Post-Retirement Benefits, Revenue Recognition and other current topics. Pre-req: ACCT504

**ACCT 508 Government and Not-for-Profit Organization Accounting (3)**
Covers operation of government entities and educational, medical, social, and other not-for-profit organization. Concentrates on application of fund theory of accounting and budgeting process and achieving objectives through financial planning and control. Pre-req.: ACCT 504.

**BLAW 503 Business Law and Ethics (3)**
Focuses on lawful and ethical business decision making. Examines temporary legal and ethical issues in reporting, corporate governance, marketing, and management in both national and international organizations as well as the ethical philosophies and social issues underlying the current business environment

**BGMT 506 Management Theory and Practice (3)**
Studies concepts of management, application of management principles, comparative management practices in different types of organizations, and the impact of modern computer technology. Pre-req.: Graduate business standing.

**BGMT 508 Organizational Dev. and Behavior (3)**
Explores traditional and modern theories of organization, behavioral consequences of alternative organization designs, and internal organization elements, such as goals, structures, roles, power, authority, communications, and control. Pre-req.: Graduate standing in business or public management.

**BGMT 509 The System Approach and Project Management (3)**
Examines management and the systems concept, including: matrix management, project planning, organization, staffing, direction, and control. Also explores project management authority; project budgeting and cost analysis as well as project implementation and evaluation. Pre-req.: Graduate Standing.

**BGMT 510 Sustainability Entrepreneurship (3)**
This course will address various aspects of Sustainability Entrepreneurship and the opportunities available to start-ups and large businesses to establish ventures in the global economy.

**BGMT 511 Leadership in Organizations (3)**
An advanced seminar designed to explore the foundations, principles and strategies of leadership by examining the interrelation between leadership and managerial effectiveness. Pre-req.: Graduate Standing.

**BGMT 514 Production Management (3)**
Examines integration of management principles and concepts, with emphasis on the production and operational functions of manufacturing, service, and governmental organizations. Also explores production control, quality control, materials handling, and value analysis. Pre-req.: BGMT 526.

**BGMT 515 Minority Business Enterprises (3)**
Examines the status of minority-owned business in today's economy, including the processes need to plan and manage emerging companies, the opportunities and challenges facing minority business, and problem-solving strategies. Pre-req.: Graduate Standing.

**BGMT 516 International Business Management (3)**
Examines the dimensions of international business including: types of international business operations; organization of multinational firm; policy formulation; personnel selection, and control methods in overseas subsidiaries. Also explores the impact of the foreign and domestic investment climates on decision-making in multinational firms, and the impact of foreign investment on domestic investment and employment. Pre-req.: BGMT 506 or BGMT 508.

**BGMT 518 Human Resources Management (3)**
Studies the basic personnel functions required to build and work with an effective and satisfied work force. Focuses on tasks needed to procure, develop, maintain, and deploy a work force. Explores topics such as specifying job and manpower requirements; attracting, screening, interviewing, and testing people; employee training and development; merit evaluation; compensation and employee service programs; and collective bargaining. Pre-req.: BGMT 506 or BGMT 508.

**BGMT 519 Policy Formulation (3)**
Provides students with the opportunity to demonstrate knowledge and competence developed in other courses. Simulates actual business situations through cases and team competition. Explores major issues relating to business operations, including social responsibilities and business ethics to determine how to apply appropriate business

policies and plans. Pre-req.: Course is taken by MBA students in the final term before graduation.

**BGMT 529 Global Strategic Management (3)**
This course involves the application of concepts acquired in prior courses in the development and analysis of global business policies and strategies. Cases and exercises are used for establishing, presenting and defending the choice from strategic options for business stability and growth. Pre-req.: Department Chairperson permission.

**BGMT 679 Intern/Coop Graduate Practicum**
This course provides an opportunity for students to engage in on-the-job practical work experience. (paid or unpaid) that is directly related to their program of study. Student interns are supervised on a specific work site by designated mentor/supervisor. A University-design Coordinator meets with the student interns monthly or as pre-arranged and oversees the overall internship experience. Student Intern are required to complete a minimum of 150 hours during the semester. Pre-req: 2.8 cumulative grade point average and permission of Department Chairperson.

**FINA 504 Financial Management (3)**
Reviews actual cases from the world of business and finance that expose the student to problems typically encountered in financial management. Students work out cases in short-term asset management, financial analysis and control, planning, capital, budgeting, and the cost of capital and growth through consolidation and merger. Pre-req.: ACCT 201 or equivalent and Graduate business standing.

**FINA 505 Managerial Economics (3)**
Covers the fundamental analytical tools of economics and the application to decision-making in the firm, including: theory of demand, production, and distribution, market structure and performance, and problems facing management in use of resources and pricing. Pre-req.: ECON 202 or equivalent and Graduate business standing

**FINA 509 Advanced Business Forecasting (3)**
Explores business forecasting techniques used in managerial planning, and evaluates short-term and long-term forecasting methods employed to indicate trends in national economic activity and in the economic activity of various industries. Pre-req.: FINA 526 and graduate standing.

**FINA 514 Investment Management (3)**
Studies methods used to evaluate investment risk and estimation of return and techniques of security analysis. Also analyzes investment in common stocks, bonds, real estate, mortgages, municipal bonds, commodities, options, and investment companies. Pre-req.: FINA 504 and Graduate business standing.

**FINA 515 Money and Capital Markets (3)**
Studies the nature and functions of money and capital markets. Topics include sources and uses of funds, stock prices, interest rates, financial intermediaries, markets for U.S. government securities, corporate equities, and municipal bonds. Pre-req.: FINA504 and Graduate business standing.

**FINA 517 International Economics and Finance (3)**
Examines international monetary and financial theories, as well as institutions and practices of the international economy. Topics include balance of payments problems, international flow of funds, exchange controls, and conflicts between international and domestic objectives. Pre-req.: FINA 504 and Graduate business standing.

## Master of Public Administration (MPA) (Teach Out)*

The Master of Public Administration program prepares effective and ethical leaders with strong managerial skills who can build strategies to help shape policy and solutions that meet demanding challenges in the government and nonprofit sector. In addition to the required core courses, students choose one of the following areas of emphasis: Public Management, Nonprofit Management, or Procurement and Public Contracting.

**Credit Statement**
The program consists of 39 semester credits. Twenty-one credits are devoted to the core which must be taken by all students. Twelve credits are taken in the selected area of emphasis; plus, one elective and a three-credit capstone project are required.

***Applications are no longer being accepted for the MPA program.**

**GPA Statement**
MPA students must maintain a grade point average of 3.0 or better and score a B or better in all courses.

**Residency Statement**
Of the 39 MPA required credits, 30 must be taken in residence at the University of the District of Columbia. The MPA Program allows only nine (9) transfer credits.

**Core Courses (21 Credit Hours)**

| | |
|---|---|
| PMGT 508 Quantitative Methods for Public Administration | (3) |
| PMGT 509 Public Management Research | (3) |
| PMGT 512 Political Economy of Public Admin. | (3) |
| PMGT 514 Management of Govt. Organizations | (3) |

PMGT 519 Public Policy Development and Implementation (3)
PMGT 529 Public Finance and Budgetary Process (3)
BGMT 511 Leadership in Organizations (3)
PMGT 539 Capstone (3)

**Program Electives**

**Public Management Area of Emphasis (Select 4 courses - 12 Credit Hours)**

PMGT 503 Administrative Process of Public and Nonprofit Organizations (3)
PMGT 504 Advanced Public Personnel Management (3)
PMGT 506 Government and Business Relations (3)
PMGT 507 Intergovernmental Relations (3)
BGMT 508 Organizational Development and Behavior (3)
PMGT 524 Planning Government (3)
NPMG530 Management and Leadership of Nonprofit Organizations (3)

**Nonprofit Management Area of Emphasis (Select 4 courses - 12 Credit Hours)**

NPMG 530 Management and Leadership in Nonprofit Organizations (3)
NPMG 532 Governance and Executive Leadership (3)
NPMG 534 Strategic Revenue Development (3)
NPMG 535 Nonprofit Talent Development: Staff and Volunteers (3)
NPMG 539 Public Policy, Advocacy and Social Chng (3)

**Procurement and Public Contracting Area of Emphasis (Select 4 courses – 12 Credit Hours)**

PAPC 540 Management of Contract Systems (3)
PAPC 542 Contract Source Selection, Pricing, and Negotiation (3)
PAPC 544 Government Contract Performance (3)
PAPC 546 Green Contracting in the Government (3)
PAPC 548 Legal and Ethical Aspects of Government Contracting (3)

## COURSE DESCRIPTIONS: MASTER OF PUBLIC ADMINISTRATION (NPMG) (PAPC) (PMGT)

**NPMG 294 Program Design and Evaluation (3)**
Provides the students with the fundamentals of constructing a program from assessment to evaluation. Programs are one of the most important methods for accomplishing the organization's mission. Comprehensive knowledge of all aspects of program planning, design, implementation, and evaluation are critical to the organization's success.

**NPMG 305 Intro to Nonprofit Organizations (3)**
Fundamental overview of the nonprofit sector and the general principles of managing a nonprofit, human service agency. Leaders from the nonprofit community give presentations on both theory and practical applications.

**NPMG 306 Fundraising**
Practical orientation to nonprofit fundraising, including exploration of government, foundation, corporate, earned income, fee generating work, and other potential sources of funds for nonprofit organizations. Outside speakers and a strong hands-on component will provide focus and content.

**NPMG 308 Intro to Volunteer and Staff Mngmt. (3)**
Exploration of the field of volunteer management in profit organizations combined with presentations by representatives of a range of agencies which rely on volunteers for their operations.

**NPMG 530 Management and Leadership of Nonprofit Organizations (3)**
Provides an overview of the historical development, role, and importance of philanthropy, nonprofits, and civil society. Also addresses the unique characteristics of size, impact, types, organization structures, and the mission-driven orientation that make-up the nonprofit sector.

**NPMG 532 Governance and Executive Leadership (3)**
Focuses on how important the Executive Director and effective Board development and management are to successfully govern nonprofit organizations. Students will learn about the roles of the Board and Executive Director in accomplishing the mission and vision of the organization; the legal rights, responsibilities, and obligations of Directors and Board members; various models of Board governance, and best practices in Board development and management; and the challenges of executive leadership in a nonprofit organization.

**NPMG 534 Strategic Revenue Development (3)**
Provides an overview of the components and implementation of diversified revenue sources, emphasizing how, in addition to traditional fundraising methods, how critically important it is to be able to practice a variety of revenue generating methods. Includes methods on how to create and maintain earned income streams, social entrepreneurship, and other cutting edge trends. Provides students with opportunities to apply practical methods to generate revenue.

**NPMG 535 Nonprofit Talent Development: Staff and Volunteers (3)**
This course provides a comprehensive examination of the strategic role of Human Resources, staff and volunteers, in

the mission-driven operation of a nonprofit organization. Leading and managing the process of planning and management, assessment, design, implementation, recruitment, training, maintaining and sustaining a viable volunteer program.

**NPMG 539 Public Policy, Advocacy, and Social Change (3)**
Focuses on the unique role nonprofit organizations play in affecting social change and influencing public policy. Students will gain an understanding of how nonprofits shape public policy through strategies such as community organizing, public education, policy research, and lobbying and litigation; the role of Board members, staff, and volunteers as agents of and for social change; and examine case studies of effective and ineffective nonprofit social change initiative.

**PAPC 540 Contract Administration (3)**
Examines the government's system of contract management including the structure and use of contract administration functions, coordination between the contracting office, the technical people, the users and the audit agencies. Also explores the duties and responsibilities of the contracting personnel based on the federal acquisition regulations and the type of contract. Students will learn to use various computer programs to aid in contract administration, such as MS Project Contract Administration.

**PAPC 542 Contract Source Selection, Pricing and Negotiation (3)**
Examines how to prepare requirements, bidders lists, and other methods to assure competition. Emphasizes quantitative aspects of conducting cost and price analysis to prepare for negotiation. Discusses cost types and behavior of different costs as well as concepts involving learning curves and total cost of ownership. Using various purchasing scenarios, students will simulate negotiation incidents using strategies, tactics, and techniques critical to a successful contract negotiation.

**PAPC 544 Government Contract Performance (3)**
Emphasizes the use of performance-based contracting, beginning with the contract requirements, the statement of work, the proposal, the evaluation of past performance, risk evaluation, mitigation and performance.

**PAPC 546 Green Contracting in the Government (3)**
Emphasizes the use of quantitative analysis to justify green procurement, and the importance of including environmental consideration as a normal part of the purchasing process. Examines commonly used tools and standards in the green market place, pollution prevention, and multiple environmental aspects of a life-cycle cost. Also explores how to compare environmental impacts when selecting products or services.

**PAPC 548 Legal and Ethical Aspects of Government Contracting (3)**
Explores the Federal Acquisition Regulations and the Defense Acquisition Regulations, specifically how these aspects are to be applied, implemented, and interpreted. Also examines the impact of executive orders and other administrative actions on government contracting as well as court decisions and the operations of the, Board of Contract Appeals and Comptroller General. The ethics rules are unique to procurement.

**PMGT 503 Administrative Process of Public and Nonprofit Organizations/Agencies (3)**
Serves as the introductory course to government and non-profit organization management practices and issues. Addresses the general effectiveness of major agencies including their relationships with legislative bodies, clientele, other governmental units and public and non-profit bodies. Establishes the broad parameters of what constitutes public and non-profit managers' roles, responsibilities, major activities, and influencing factors. Examines theories and develops analytical techniques used to identify and resolve issues that commonly occur in public management and non-profit administration.

**PMGT 504 Advanced Public Personnel Mgmt. (3)**
Covers management of human resources in public agencies, changing conditions affecting employment policies, selection procedures, and promotions. Examines the issues relating to testing and selection, productivity, incentives, union-management relations, supervisory relationships, political participation, minority employment, upward mobility, affirmative action, employee development, and training. Pre-req.: Graduate Standing.

**PMGT 506 Government and Business Relations (3)**
Examines policy issues of government regulation of business. Explores the public concern for environmental-related issues, the subsequent development of government regulations, and controls and their impact upon private enterprise. Also explores the impact of regulation and deregulation on business activity. Pre-req.: Graduate standing.

**PMGT 508 Quantitative Methods for Public Administration (3)**
Covers inferential statistics, simple and multiple regression, time series, index numbers, and graphic and tabular presentation. Pre-req.: Undergraduate course in Descriptive Statistics

**PMGT 507 Intergovernmental Relations (3)**
Studies the dynamics of relations among governmental units, including the movement towards regionalization and councils of government. Explores the impact of Federal government policies and programs on state and local resources, issues, and problems.

**PMGT 509 Public Management Research (3)**
Studies research methods for public management, including the development of research design, problem definition, and evaluation and reporting on research findings. Students will work individually or jointly on public management-oriented research projects.

**PMGT 512 Political Economy of Public Administration (3)**
Examines the interrelationship of political and economic factors that influence both public, political, and economic outcomes. Key means of analysis will include application of micro- and macro-economic theories to better understand political and administrative decision-making processes. Topics will include the theory of collective action, comparative economic performance, political business cycles, and theories of economic voting.

**PMGT 514 Management of Government Orgs. (3)**
Studies government organizations, management practices and problems, and the management of relationships between major agencies, the legislature, and clientele. Reviews the process of planning, controlling, and decision-making in governmental organizations. Pre-req.: Graduate Standing.

**PMGT 519 Public Policy Development and Implementation (3)**
Examines the dynamics of public policy development and implementation, the process of translation of issues into public policy through legislative enactment and executive implementation, and the analysis and evaluation of public policies.

**PMGT 524 Planning in Government (3)**
Examination of the planning and evaluation activities of the various government units. Particular emphases are given to the various techniques and methods of program planning, citizen participation, regional and local planning councils and the influence of community planning on the management of government programs.

**PMGT 525 Management of Metropolitan Governments (3)**
Covers management issues and practices as these apply to urban and metropolitan governments, including program management and fiscal issues. Pre-req.: Graduate standing.

**PMGT 529 Public Finance and the Budgetary Process (3)**
Analyzes public fiscal policies, the interaction of such policies and their impact on government programs, operations and services, and the interrelationship between governmental fiscal policies and the budgetary process.

**PMGT 538 Independent Study in Public Administration (3)**
Involves an intensive study of a particular issue in an area relating to governmental administration under the direction of a faculty member. Requires the prior approval of the Department Chair.

**PMGT 539 Public Administration Capstone (3)**
This course is intended only for students who are completing the Masters of Public Administration (MPA). The Capstone Project offers each student the opportunity to demonstrate mastery of the theory and practice of public administration by applying the knowledge and skills gained in the MPA program to a project of the student's choice with the approval of the instructor. Pre-req.: Public Administration Research Methods, or its equivalent, the completion of 30 hours in the MPA program, and School permission.

**PGMT 679 Internship/Coop Graduate Practicum**
This course provides an opportunity for students to engage in on-the-job practical work experience (paid or unpaid) that is directly related to their program of study. Student interns are supervised on a specific work site by designated mentor/supervisor. A Coordinator meets with the student interns as pre-arranged and oversees the overall internship experience. Student Intern are required to complete a minimum of 150 hours during the semester. Pre-req: 3.0 cumulative grade point average and permission of Department Chairperson.

# SBPA Additional Course Descriptions

## ECONOMICS (ECON)

**ECON 201 Principles of Macroeconomics (3)**
Introduces supply and demand, income and employment theories. Analyzes the causes of inflation and unemployment, and the policy alternatives for affecting macroeconomic change. Discusses the institutional arrangements of a market economy.

**ECON 202 Principles of Microeconomics (3)**
Analyzes theories of consumer behavior, production costs, and decision making by individuals and firms. Examines price and output determination under different market conditions. Discusses factor markets and income distribution.

# David A. Clarke School of Law (UDC-Law)

https://law.udc.edu/

**History of the UDC David A. Clarke School of Law**

UDC-Law is a law school with a proud history and distinguished alumni. From its founding as Antioch School of Law in 1972, it has had as its mission to recruit and enroll students from groups underrepresented at the bar, provide a well-rounded theoretical and practical legal education that will enable students to be effective and ethical advocates, and to represent the legal needs of low-income residents though the School's legal clinics. Antioch pioneered a comprehensive clinical curriculum which became a model for other law schools, and which continues to educate UDC-Law students to be knowledgeable, effective, compassionate advocates, from their first year in law school.

When Antioch found it necessary to close more than two dozen of it branches in 1986, the District of Columbia Council established the independent District of Columbia School of Law, retaining the core of Antioch's mission, curriculum, and personnel. In 1996, the School of Law became part of the University of the District of Columbia, the only public university in Washington, D.C., and urban land-grant university in the nation. The University has been designated as a Historically Black College and University by the federal government, a status which carries prestige and brings special resources.

In 1999, the University of the District of Columbia School of Law was named for David A. Clarke, former chairperson of the District's City Council, whose life exemplified the qualities of service and commitment that the school helps to develop in its students and whose efforts established UDC-Law as Washington, D.C.'s public law school.

UDC-Law is fully accredited by the American Bar Association.

**Studying Law at UDC-Law**

UDC-Law is committed to training attorneys who have the knowledge, skills and practical experience required for admission to the bar and effective and responsible participation in the legal profession. UDC-Law occupies a unique niche in legal education as a publicly funded urban land-grant HBCU committed to public service and clinical legal education. That unique focus provides graduates with an opportunity to develop habits of professionalism, ethics, and life-long learning that will serve them throughout their legal careers.

As the nation's only publicly funded urban land-grant law school, we train students to understand the role of lawyers in society, and their responsibility to use their legal training to ensure justice and help resolve society's most pressing issues. As an HBCU committed to opening up the legal profession to groups under-represented at the bar, we train students to value diversity and interact effectively with clients, colleagues and others from a range of racial, social, economic and ethnic backgrounds.

The School of Law also shares the public land-grant mission of the University of the District of Columbia to provide academic programs, research and scholarship that serve the needs and aspirations of the District of Columbia, the region, and the nation in the 21st century. Students learn, faculty members teach, and University scholars pursue their inquiries—grounded and inspired by this purpose.

**For more information about UDC Law or to apply, please visit https://law.udc.edu/**

# University of the District of Columbia Community College (UDC-CC)

https://www.udc.edu/cc/

The University of the District of Columbia-Community College (UDC-CC) serves the city's residents by integrating workforce preparation, employability skill development, quality education and remediation, economic development and employer linkages, and school-to-career training, providing a seamless transition from K-12 to adult education and literacy to college preparation and continuous lifelong learning. The College provides new opportunities to DC citizens, employers, and the District of the Columbia government. Its associate degrees, certificates, workforce development, and lifelong learning programs are market-driven and learner-focused. UDC-CC serves as a vital link to the intellectual, economic, civic, and cultural vitality of the region.

UDC-Community College is a branch campus of the University of the District of Columbia and is accredited by the Middle States Commission on Higher Education.

## Degree Offerings:

**Associate Degrees** – Two-year academic degree programs leading to careers that are in demand;
**Workforce Development** – Job and professional training to help students develop the skills that local employees need in today's job market.

**Workforce Development and Lifelong Learning**

The Mission of the Workforce Development and Lifelong Learning Division (WDLL) is to reduce unemployment and under-employment in the District of Columbia by enhancing the skills of its residents. WDLL provides non-credit training to DC residents aimed at helping them obtain jobs, get promoted and train for careers in new industries. The WDLL offers residents of Washington, DC, training programs in five career pathways: construction and property management; health care (direct care and health care administration); hospitality and tourism, information technology and office administration; and transportation. These career pathways represent high-growth, high-demand industries in the Washington Metropolitan Region. For more information, please visit the WDLL website: https://www.udc.edu/cc/workforce-development/

## The Community College C.A.R.E. Program (College Access and Readiness for Everyone)

The CARE Program is an undergraduate program that allows pre-college DC students to experience success in college by earning college credits, at no cost. Students enrolled in the CARE Program prepare for college by experiencing it firsthand and receive an array of support services to make a smooth transition to college.

**The program components include:**

*Dual-Enrollment Program*
High school students can take credit bearing college-level courses at UDC-CC.

*Early ACCUPLACER Testing*
Provides Accuplacer pre-testing for all 10th, 11th and 12th graders, which tells student whether or not they are academically ready for college-level courses.

*College READY Interventions*
Service provides free online interventions for students who do not meet the required Accuplacer scores for reading, writing, and math.

*Articulation Agreements*
Students receive college credits for completion of identified courses taken in high school.

*College Readiness Institute*
This is an institute hosted by UDC-CC which focuses on collaborating with school administrators, counselors, and teachers on how to help students become college ready.

*College for a Day Experience*
High school students spend a day at UDC-CC learning about the admission process, taking a tour of the campus, and interacting with students, faculty, and administrators.
**CARE Dual Enrollment Program email: CARE Program Staff at care@udc.edu**

## Office of Student Achievement

The Office of Student Achievement (OSA) is committed to creating a positive experience for students attending UDC-CC. To accomplish this, the OSA provides an array of student support services under the following areas.

## The Testing Assessment Office

Students entering the University for the first time and whose primary language is English, and students pursuing a degree who have not completed courses in English and Mathematics at another postsecondary institution are required to take the Reading, English and Mathematics section of the ACCUPLACER test before registering for classes. This computerized placement test enables academic and faculty advisors to place students in the appropriate courses and thereby support students' academic success. To register for the ACCUPLACER test, please visit the UDC-CC website:
https://www.udc.edu/cc/cc/accuplacer/

High school students also may qualify to take courses at UDC-CC through the Dual Enrollment Program which allows students to be dually enrolled in high school and college at the same time. To determine eligibility, the Testing and Assessment Office participates with Washington, D.C., Public and Charter Schools in testing the high schools students in 10th through 12th grades. Students must obtain scores that are needed to enroll in college-level English or Mathematics to participate in the Dual Enrollment Program. International students whose native language is not English, and who did not graduate from high school or receive a GED in the United States, must successfully complete the Test of English as a Foreign Language (TOEFL). This requirement will be waived upon UDC-CC receiving an official transcript from an accredited American college or university. For more information, please call 202.274.6063.

### UDC-CC Student Success Center

Building 53, 2nd Floor, Room 205, 202.274.6988, cc@udc.edu
**https://www.udc.edu/cc/cc/student-success-center/**
The Center offers academic success workshops, provides tutoring, and engages students in activities that will contribute to their overall success and make the college experience rewarding and fun. The Student Success Team is committed to helping UDC-CC students to succeed academically and achieve their education and career goals.

### Academic Advising

The Student Success Center provides academic advising to UDC-CC students. The staff also works closely with faculty in assisting students with advising in their major area of study. Students can make an appointment via phone or visit the Center during office hours to meet a Student Success Specialist.

### Office of Counseling & Disability Services

https://www.udc.edu/cc/counseling-and-accessibility-resource-center/
The mission of the Office of Counseling & Disability Services (OCDS) is to provide confidential counseling and disability services that accommodate and serve the emotional, psychological, and physical needs of UDC-CC students. The counseling services provide support and referral services to students in the form of individual counseling, crisis intervention, workshops and events for UDC-CC students. OCDS has the responsibility of coordinating reasonable accommodations and providing support services for the UDC-CC students with disabilities in compliance with the Americans with Disabilities Act (ADA) and the Rehabilitation Act of 1973. For more information, please call 202.274.6173 for counseling services or call 202.274.6182 for disability services.

## UDC-CC's Office of Career Services

Building 53, Floor 2, Room 228, 202.274.6920
https://www.udc.edu/careerservices
The Office of Career Services (OCS) prepares undergraduate and graduate students as well as alumni for career success through career planning, career readiness, and career opportunities services in partnership with employers/recruiters and faculty and staff. Career counselors meet individually and in group career workshops with students to help with a variety of career development topics including career exploration assessments, career readiness assessments, resumes, cover letters, interview clothing, mock role-play interviews, jobs, internships, continued studies opportunities, professional development opportunities, and employment related events such as career fairs, employer information sessions, interview sessions, and more.

## UDC-CC's Office of Academic Affairs

Building 53, 3rd Floor, Suite 318, 202.274.5830
https://www.udc.edu/cc/cc/academic-affairs/
The Office of Academic Affairs (OAA) is committed to the pursuit of excellence in all of the College's academic activities. The goal of OAA is to attract and retain the best faculty and staff to assist in offering an outstanding education for the students of UDC-CC. The cumulative programs are designed to provide opportunities for the students to obtain the requisite skills for today's workforce and to prepare for the needs of tomorrow.

The College is organized into the following four academic divisions:
**Humanities and Criminology**
**Business and Education**
**Nursing, Allied Health, Life and Physical Sciences (NAHLPS)**
**Math, Information Technology, and Engineering (MITE)**

UDC-CC offers 26 degree programs at the associate level and 17 of them are CTE (Career and Technical Education) programs. Academic disciplines serve as service courses for allied health programs and general education requirements. These disciplines include but are not limited to: Biology, Chemistry, English, ESL, Geography, Mathematics, Physics, Oral Communication, and Urban Studies. Another part integral to increasing student success is the First-Year Seminar, a course that is

designed to introduce students to college work, career development, and psychological dynamics that contribute to academic achievement and becoming goal-oriented. Finally, UDC-CC offers developmental education courses in reading, math and English for students whose skills and abilities need improvement in these areas; however, the College's long-term goal is to reduce the enrollment in these courses and design alternative methods, such as supplemental instruction and accelerated learning, to move these students more quickly towards college-level courses in English and math.

**Graduation Requirements: Associate Degree**
All students must meet the following requirements to earn an associate's degree from UDC:

- Residency: The University confers the associate degree upon students who complete the last 15 semester credit hours of study in residence at the University of the District of Columbia. Additionally, students must attain a minimum cumulative grade point average of 2.00.
- Listed below are the university-wide requirements needed to complete an associate degree at the University of the District of Columbia:
    - Students are required to meet with the program advisor or division director of their selected academic program to determine the minimum number of credit hours of college level courses, including specific courses identified in the departmental program of study, needed to complete the associate's degree at the University of the District of Columbia.

**General Education Requirements for the Associate Degree:**
IGED 110C Foundation Writing I (3 credit hours)
IGED 111C Foundation Writing II (3 credit hours)
IGED 120C Foundation Quantitative Reasoning (3 credit hours)*
IGED 220C Discovery Quantitative Reasoning (3 credit hours)
IGED 260C Discovery Science OR Natural Science Lecture and Lab (4 total credit hours)**
Social Science Elective***

*Math classes vary by major. Please see specific degree requirements for your major.
**Science classes vary by major. Please see specific degree requirements for your major.
***Select courses from Psychology, Sociology, History, Social Work, Geography, and Political Science.

**Community College Honors**
If you are pursuing a two-year degree, you are eligible to graduate with honors if you have received 60 percent of the credits earned for graduation at the University of the District of Columbia, and earned a 3.30 cumulative grade point average in all attempted.

## Academic Programs

### Humanities and Criminology

| **Liberal Studies & Arts** |
|---|
| Liberal Studies AA |
| Liberal Studies AS |
| Graphic Design AA |
| Music AA |

| **Criminology** |
|---|
| Corrections Administration AAS |
| Law Enforcement AAS |
| Legal Assistant AAS |

### Business and Education

| **Business** |
|---|
| Business Administration (AS) |
| Computer Accounting Technology AAS |
| Fashion Merchandising AAS |
| Hospitality & Tourism Management AS |

| **Education AA** |
|---|
| Infant / Toddler Education |
| Early Childhood / School Age (PreK-Grade 3) |
| General Education (Elementary and Secondary) |

### Math, Information Technology, and Engineering (MITE)

| |
|---|
| Architectural Engineering Technology AAS |
| Aviation Maintenance Technology AAS |
| Construction Management AAS |
| Computer Science Technology AAS |

### Nursing, Allied Health, Life and Physical Sciences (NAHLPS)

Mortuary Science AAS
Nursing AASN
Respiratory Therapy AAS

## Humanities and Criminology Division

The Humanities Division offers a wide range of courses that are learner-focused and market-driven to respond to the individual education and career goals of our student population.

In keeping with the mission of the Community College, these courses provide students with the written and oral communication skills and competencies that will enable them to advance successfully in their chosen academic careers. Moreover, online course offerings are expanding to meet the needs of our diverse population. In addition, a specialized course in Technical Writing is available to those students who are pursuing a health science career such as nursing.

This course in Technical Writing focuses on the professional communication skills and tools that are characteristic in these areas. Students desiring to learn another language may enroll in beginning and intermediate French and Spanish courses.

For those students who are non-native speakers, courses are offered in both intermediate and advanced-level English as a Second Language which focus on language skills using an interactive approach.

For those students who may need to refresh their writing, reading, and critical thinking skills, the developmental English and Reading Improvement courses are designed to provide reinforcement of the fundamentals that are essential before progressing to the next level in English.

In order to satisfy the English communications segment of the general education requirements, qualified students may enroll in English Composition I and II which focus on developing clear and effective expository writing skills by exploring, explaining, and identifying the steps involved in the writing process.

## Life and Physical Sciences

The Life and Physical Sciences cluster offers a host of basic and applied science courses, which prepare students to matriculate into associate and bachelor degree programs in science related disciplines. Careers stemming from these disciplines include nursing, marine biologist, laboratory research assistant, environmental analyst, dietician, food technologist, and biotechnologist. Many of our students enter and complete allied health programs (e.g., respiratory therapy) and professional schools (e.g., medical, dental). In addition, courses prepare students to pursue teaching and research careers in science.

To date, courses offered in the Life and Physical Sciences cluster serve as a support cluster for the nursing and respiratory therapy programs at the University of the District of Columbia Community College. This cluster does not confer an associate degree.

## Mathematics and Engineering

The Mathematics and Engineering cluster offers a host of basic and non-basic mathematics courses which prepare students to matriculate into associate and bachelor degree programs in science- and non-science related disciplines.
The mathematics courses are currently viewed as service courses. These courses provide the student guidance in selecting and pursuing career paths in science and preparation for life after graduation; however, this cluster does not yet confer an associate's degree in mathematics.
Careers stemming from the supported disciplines include nursing, architecture, construction management, aviation mechanics technology, computer programming, and computer hardware/software technicians.

## Liberal Studies - AA or AS

The Liberal Studies program requires 63 credit hours and is designed to prepare students for transfer into bachelor's degree programs at a four-year college or university. By enrolling in the Liberal Studies program, students are afforded the opportunity to fulfill a broad array of general requirement courses for many degree programs in the humanities, social sciences, and natural sciences. In addition, the Liberal Studies program is well suited for students who know that they want to obtain a bachelor's degree, but are currently uncertain as to what specific field of study or degree program they would like to pursue. Students may choose either an Associate of Science (AS) or an Associate of Arts (AA) degree. Students interested in pursuing mathematics or the sciences should choose the Associate of Science degree. Students interested in focusing on the arts or humanities should choose the Associate of Arts degree. Students unsure of their major may choose either degree or make the selection towards the end of their program.

**Total required: 63 credit hours**

**University-wide Requirements (36 hours)**

| | |
|---|---|
| First Year Seminar | 1 hour |
| Foundation Writing I | 3 hours |
| Foundation Writing II | 3 hours |
| Foundation Oral Communications | 3 hours |
| Philosophy | 3 hours |
| Behavioral Science | 6 hours |
| Natural Science with lab | 8 hours |
| Math | 3 hours(AA)/ 6 hours(AS) |
| Arts/Humanities | 3 hours(AS)/ 6 hours( AA) |

**In all of the above courses, students must attain a grade of at least "C" in order to satisfy the requirement**. Students should understand that a course in which they receive a **"D" will not transfer for credit in a Bachelor's degree program.**

**Major Requirements (27 hours):**

Liberal Arts Electives 15 hours
Area of Concentration 12 hours

Liberal Arts Electives may be taken from any field of study within the following areas: Behavioral Studies, Natural Sciences, and Arts and Humanities.

Area of Concentration courses may consist of classes from any of the above listed areas, but may also be culled from other fields as well. Among the most commonly applied to Area of Concentration are classes from math, computer sciences, business, criminology, and education. The courses chosen to fulfill the Area of Concentration requirement must, however, work together as a coherent, related whole. Students in the Liberal Studies program should consult with the Student Success Specialists or the Liberal Studies Advisor to identify a viable Area of Concentration and plan their work accordingly.

## Corrections Administration

The Criminal Justice program offers an interdisciplinary course of study leading to associate and baccalaureate degrees in criminal justice. The associate in applied science program requires students to concentrate studies in corrections or in law enforcement. The curriculum includes policy and legal issues, qualitative and quantitative research, interpersonal relations, and administrative procedures. It integrates writing, computer, and verbal communications skills throughout the program.

**A.A.S. Corrections Administration**
**Total Credit Hours : 65**

| First Semester | | |
|---|---|---|
| Course# | Course Title | Credits |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| IGED 120C | Foundation Quan. Reasoning | 3 |
| POLI-206C | Intro to American Govt. | 3 |
| CRIM-100C | Criminal Justice Systems | 3 |
| CRIM-102C | Criminology | 3 |
| | **Total Credit Hours** | **16** |
| Second Semester | | |
| IGED 111C | Foundation Writing II | 3 |
| IGED 220C | Discovery. Quantitative Reasoning | 3 |
| PSYC-137C | Psychology of Adjustment OR | 3 |
| CRIM -271C | Dynamics of Human Relations | 3 |
| CRIM-203C | Forensic Sciences/Investigations | 3 |
| | Natural Science Elective w/Lab | 4 |
| | **Total Credit Hours:** | **16** |
| Third Semester | | |
| CRIM-222C | Criminal Procedures | 3 |
| CRIM-224C | Issues in Criminal Law | 3 |
| CRIM-232C | Criminal Behavior | 3 |
| CRIM-234C | Juvenile Justice Systems | 3 |
| CRIM 272C | Conflict Resolution/Mediation | 3 |
| | **Total Credit Hours:** | **15** |
| Fourth Semester | | |
| CRIM-175C | Geo-spatial Analysis | 3 |
| CRIM-221C | Investigations | 3 |
| | Corrections Special Topics OR | 9 |
| | Law Enforcement Sp. Topics | 9 |
| CRIM 310 | Ethics and Public Service | 3 |
| | **Total** | **18** |

**Special Notations:** English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. A "C" or better is required for all courses in the major. For special topics courses, students may take CRIM 111C, Contemporary Police Systems and Problems; CRIM 115C, History and Philosophy of Corrections; CRIM 150C, Justice Issues in Society; CRIM 235, Probation, Classification and Parole; and CRIM 294C, Special Topics.

## Law Enforcement

The Criminal Justice program offers an interdisciplinary course of study leading to associate degree and baccalaureate degrees in criminal justice. The associate degree in applied science requires students to concentrate their studies in corrections or in law enforcement. The curriculum includes policy and legal issues, qualitative and quantitative research, interpersonal relations and administrative procedures. It integrates writing, computer, and verbal communications skills throughout the program.

**A.A.S. Law Enforcement**
**Total Credit Hours: 65**

| **First Semester** | | |
|---|---|---|
| **Course#** | **Course Title** | **Credits** |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| IGED 120C | Foundation Quantitative Reasoning | 3 |
| POLI-206C | Intro to American Government | 3 |
| CRIM-100C | Criminal Justice Systems | 3 |
| CRIM-102C | Criminology | 3 |
| | **Total** | **16** |

| | | |
|---|---|---|
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| IGED 220C | Discovery Quan Reasoning | 3 |
| PSYC-137C | Psychology of Adjustment OR | 3 |
| CRIM -271C | Dynamics of Human Relations | 3 |
| CRIM-203C | Forensic Sciences/Investigations | 3 |
| | Natural Science Elective w/Lab | 4 |
| | **Total Credit Hours:** | **16** |
| **Third Semester** | | |
| CRIM-222C | Criminal Procedures | 3 |
| CRIM-224C | Issues in Criminal Law | 3 |
| CRIM-232C | Criminal Behavior | 3 |
| CRIM-234C | Juvenile Justice Systems | 3 |
| CRIM-272C | Conflict Resolution/Mediation | 3 |
| | **Total Credit Hours:** | **15** |
| **Fourth Semester** | | |
| CRIM-175C | Geo-spatial Analysis | 3 |
| CRIM 310 | Ethics and Public Service | 3 |
| CRIM-221C | Investigations | 3 |
| | Corrections Special Topics OR | 9 |
| | Law Enforcement Special Topics | 9 |
| | **Total Credit Hours:** | **18** |

**Special Notations:** English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. A "C" or better is required for all courses in the major. For special topics courses, students may take CRIM 111C, Contemporary Police Systems and Problems; CRIM 115C, History and Philosophy of Corrections; CRIM 150C, Justice Issues in Society; CRIM 235, Probation, Classification and Parole; and CRIM 294C, Special Topics.

## CORRECTIONS ADMINISTRATION and LAW ENFORCEMENT COURSES

**FSEM 101C First Year Seminar (1)**
The First Year Seminar is a unique transition course designed to facilitate integration into UDC-CC's learning community. The course enhances skills for academic success, develops understanding of community college culture, provides individualized academic advising, and fosters meaningful educational engagement. Also encourages active participation in the community college and post-experience reflection. Pre-req: English 015C or required score on placement test.

**POLI 206C Introduction to American Government (3)**
Introduces the major principles of American government and politics.
Focuses on major national institutions of the Presidency, Congress, and the courts. Also examines federalism, civil rights and civil liberties, and political behavior and dynamics.

**PSYC 137C Psychology of Adjustment (3)**
Emphasizes the understanding of everyday human behavior through the application of scientific principles derived from research. Examines foundations of psychological adjustment and the development of maladaptive behavior.
Discusses human reactions evoked by stressful and frustrating environmental events, as well as reactions to internal sources of frustration. Examines procedures of psychological assessment, change, and newer methods of enhancing adjustment.

**CRIM 100C Criminal Justice System (3)**
Provides an overview of the criminal justice system, including its main elements and functions. Also examines the social, political, and cultural considerations that have influenced and shaped system functions and institutions.

**CRIM 102C Criminology (3)**
Introduces the study of crime using computer software applications. Examines different types of crime and the problems of crime analysis. Stresses the importance of a geographical and demographic analysis of the incidence of crime.

**CRIM 111C Contemporary Police Systems and Problems (3)** Examines the philosophy of modern police systems in the U.S.A.; includes an evaluation of the purposes of the organization, jurisdiction, and law enforcement methods of specific law enforcement agencies.

**CRIM 115C History and Philosophy of Corrections (3)**
Traces the evolution of modern-day correctional thought in the United States, the development of institutional programs and architectural design, and the impact of theoretical and practical research on correctional standards and practices.

**CRIM 150C Justice Issues in Society (3)**
Examines a variety of contemporary justice issues in order to study the economic, political, and social basis of crime. Using a critical reasoning model, students develop a methodology of analytical reading and writing in order to study how social problems relate to crime and public safety issues.

**CRIM 175C Intro to Geo-Spatial Analysis (3)**
Introduces students to the study of crime using mapping and special analysis to understand the relationship between geospatial environment and human habitation. Uses crime mapping techniques as well as quantitative and qualitative methodologies to explore topics of crime causation and analysis from a geo-spatial perspective**.**

**CRIM 203C Intro to Forensic Investigations (3)**
Introduces students to the field of forensic science. Examines the application of science and technology to crime scene analysis. Utilizes computer analysis, as well as more traditional laboratory equipment. Prereq.: CRIM 100C; CRIM 102C.

**CRIM 221C Investigations (3)**
Investigates methods and techniques, with emphasis on criminal investigations. Covers crime scene search, development of leads, recognition, handling and preservation of evidence, witness identification, and techniques of interview. Prereq.: CRIM 100C; CRIM 102C.

**CRIM 222C Criminal Procedure (3)**
Focuses on the procedural requirements of the fourth, fifth, and sixth amendments to the U.S. Constitution through a study of leading Supreme Court cases. Prereq.: CRIM 100C

**CRIM 224C Issues in Criminal Law (3)**
Examines issues and principles in criminal law, utilizing legal concepts. Examines issues and principles not only from a systemic perspective, but also from the manner in which various societal groups are advantaged or disadvantaged. Also examines issues involving conditions of pretrial release, grand jury, elements of offenses, and affirmative defenses (such as insanity, entrapment), sentencing. Prereq.: CRIM 100C.

**CRIM 232C Criminal Behavior (3)**
Introduces the scientific study of behavior. Examines how criminologists study crime and criminal behavior using a variety of behavioral problems. Satisfies the University's social science requirement.

**CRIM 234C Juvenile Justice Systems (3)**
Explores the complexity of juvenile delinquency as a behavioral pattern by examining contemporary cultural and ecological environments and studying the differing theories of delinquent behavior. Examines the juvenile court, focusing on special constitutional and legal concerns facing juvenile offenders.

**CRIM 235 Probation, Classification and Parole (3)**
Covers general probation and parole objectives, methods, and procedures to include a working knowledge of the duties of the correctional treatment specialist. Includes the review and formulation of typical case studies and understanding of the principles and methods involved.

**CRIM 271C Dynamics of Human Relations (3)**
Introduces students to theoretical analysis, current research findings, models of helping methods, intervention designs, and follow-up evaluations for the adult and juvenile in criminal justice settings.

**CRIM 272C Conflict Resolution and Mediation Techniques (3)**
Examines the characteristics of these two approaches as a prerequisite for analyzing their effectiveness as prevention and intervention techniques used to avoid or reduce the likelihood of violent confrontations.
Develops an understanding of how an appropriate use of these approaches can facilitate interaction between the criminal justice system practitioner and individuals involved in one-on-one engagements with that practitioner. Prereq.: CRIM 100C.

**CRIM 294C Special Topics (3)**
Topical course offerings include: Homicide; Technology, Privacy and Justice in the 21st Century; Victimology; Female Offenders; Domestic Violence; Gangs and Gang Behavior; and Cybercrime & Terrorism in the United States; and Weapons of Mass Destruction

## Legal Assistant

This program provides for a practical career and early job placement in the legal environment field and leads to the Associate in Applied Science degree. Requirements for the completion of the paralegal program are 62 credit hours.

**A.A.S. Legal Assistant**
**Total Credit Hours: 62**

| **First Semester** | | |
|---|---|---|
| **Course#** | **Course Title** | **Credits** |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| IGED 120C | Found. Quant Reasoning | 3 |
| LATC-161C | Legal Research & Writing I | 3 |
| LATC-181C | Intro to Paralegalism | 3 |
| IGED 250C | Discovery Technology | 3 |
| | **Total Credit Hours:** | **16** |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| IGED 220C | Discovery Quan. Reasoning | 3 |
| LATC-162C | Legal Research & Writing II | 3 |
| LATC-171C | Legal Process I | 3 |
| OADM-104C | Introduction to Business | 3 |
| | **Total Credit Hours:** | **15** |

| | | |
|---|---|---|
| **Third Semester** | | |
| BLPC-214C | Legal Environment of Business | 3 |
| LATC-263C | Investigative Techniques/Evidence | 3 |
| | Business or Law Elective | 3 |
| | Legal Assistant Elective | 3 |
| | Natural Science Elective w/ Lab | 4 |
| | **Total Credit Hours:** | **16** |
| **Fourth Semester** | | |
| LATC 278C | Law Office Administration | 3 |
| | Business or Law Elective | 3 |
| | Legal Assistant Elective | 3 |
| | Legal Assistant Elective | 3 |
| | Social Science Elective | 3 |
| | **Total Credit Hours:** | **15** |

**Special Notations:** English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. A "C" or better is required for all courses in the major.

## LEGAL ASSISTANT COURSES

**FSEM 101C First Year Seminar (1)**
The First Year Seminar is a unique transition course designed to facilitate students' integration into the learning community of the community college. The course enhances students' skills for academic success, develops students' understanding of community college culture, provides individualized academic advising, and fosters students' meaningful educational engagement. Prerequisite: English 015C or required score on placement test.

**LATC 161C Legal Research and Writing I (3)**
Introduces the major techniques of legal research, in which students complete assignments and solve problems using various primary and secondary authorities, including federal and state law reporters, statutes, legislative and administrative publications, digests, loose leaf services, and legal encyclopedia. Students gain a basic knowledge of Shepard's Citations and West's Digest and Key Number System.

**LATC 181C Introduction to Para legalism (3)**
Introduces the American legal system and the role of the paralegal within that system.
This course exposes the student to rules of statutory and common law interpretation, techniques of case analysis, and the canons of legal ethics which apply to the conduct of paralegals, lawyers, and judges.

**APCT 104C Introduction to Applications of Computer Lecture (2)**
Identifies computer equipment; examines the functions of the components of a computer; binary, octal, and hexadecimal number systems; description of various programming languages; applications of computers; hands-on introduction to word processing, spreadsheets, database managers and microcomputer operating systems.

**IGED 111C Foundation Writing II (3)**
Continues the study of the writing process begun in English Composition I. This course focuses on argumentation and analysis with extensive practice in writing and in depth critical thinking through the use of supplemental readings; the course culminates in the writing of a research paper.

**LATC 162C Legal Research and Writing II (3)**
Applies skills acquired in legal research.
Conducts advanced manual and automated legal research in the process of drafting legal correspondence, office and legal memoranda, pleadings, appellate briefs, and interrogatories.

**OADM 104C Introduction to Business (3)**
Examines and analyzes the basic structure and practices of the business community. Emphasizes modern business functions in a dynamic environment, the nature and scope of business components, the cause of business problems, and factors that tend to influence behavior in business organizations.

**BLPC 214C Legal Environment of Business (3)**
Introduces the American legal institutions. Examines the judicial, executive, and legislative branches of government. Explores judicial reasoning, administrative procedures, and law. Explores the basic elements of determining contract or tort liability and the formation, operation, and discharge of contracts in a business context.

**LATC 263C Investig. Techniques and Evidence (3)**
Provides an overview of the law of evidence and its relationship to criminal and civil litigation. Additionally, the course introduces the techniques of fact investigations and verification associated with trial preparation.

**LATC 278C Law Office Administration (3)**
Examines, through an ethical lens, the basic management principles of the law office, including organization and administrative operations, the paralegal's administrative role and responsibility for maintaining the library, supervising other administrative staff, time-keeping, billing, and related systems.

# Graphic Design (AA)

The two-year Associate Degree in Graphic Design program offers a variety of courses in the aesthetic, technical, and theoretical aspects of graphic design. Those who complete the two-year program are eligible to transfer to the UDC Bachelor of Fine Arts in Graphic Design, provided they successfully pass the portfolio review and maintain a "B" average in all major courses.

Courses are taught in labs with up-to-date technology and cover the major areas of the graphic design field, including illustration, logo design, web design, and animation. Students are prepared with solid skills in conceptual thinking, drawing, color theory, art and design history, as well as knowledge of the computer programs essential to success in the field. The program gives students the opportunity to merge imagination with technique to produce cutting-edge design work.

**A.A. Degree in Graphic Design**
**Total Credit Hours: 62**

| First Semester | | |
|---|---|---|
| Course# | Course Title | Credits |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| IGED 120C | Found. Quan. Reasoning | 3 |
| ARTD-105C | Foundations I | 3 |
| ARTS-101C | Introduction to Drawing | 3 |
| GRCT-109C | Digital Applications | 3 |
| | **Total Credit Hours:** | **16** |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| IGED 220C | Disc. Quan. Reasoning | 3 |
| ARTD-124C | Computer Art | 3 |
| ARTS-145C | Photography | 3 |
| GRCT-107C | Desktop Publishing Lecture | 2 |
| GRCT-107C | Desktop Publishing Lab | 1 |
| ARTS-115C | Visual Thinking | 3 |
| | **Total Credit Hours:** | **18** |
| **Third Semester** | | |
| ARTD-113C | Graphic Design I | 3 |
| ARTD-201C | Computer Illustration | 3 |
| ARTD-126C | Typography | 3 |
| GRCT-113C | Digital Imaging I Lecture | 2 |
| GRCT-114C | Digital Imaging I Lab | 1 |
| | Natural Science Lecture and Lab | 4 |
| | **Total Credit Hours:** | **16** |
| **Fourth Semester** | | |
| ARTD-213C | Publication Design | 3 |
| ARTS-207C | Web Design | 3 |
| ARTD-208C | History of Graphic Design | 3 |
| ARTD-275C | Portfolio and Marketing Workshop | 3 |
| | **Total Credit Hours:** | **12** |

**Special Notations:**
English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test.

## GRAPHIC DESIGN COURSES

**ARTD 105C Foundations I (3)**
Introduces the basic fundamentals of graphic communications and design. Focuses on core principles, aesthetics, conceptualization and visualization processes. Includes rapid drawing as an integral part of the problem solving process. Explores methods used to investigate, synthesize, and problem solve. Introduces the concepts of perspective, abstraction, and shape/symbol creation long with the proper use of color. Lec. 3 hrs.

**ARTS 101C Introduction to Drawing (3)**
Introduces the fundamentals of drawing, including the study of line, value, texture, space, linear perspective, and experimental approaches to making drawings using a variety of media. Open to all students.

**GRCT 109C Digital Applications (3)**
Introduces a series of digital applications used in the graphic communications, design and publishing fields: Adobe Photoshop, Adobe Illustrator and QuarkXPress. Offers a studio class with the objective of providing beginning students with the software and computer skills needed for more advanced classes in the curriculum. Lab. 6 hrs.

**IGED 111C Foundation Writing II (3)**
Continues the study of the writing process begun in English Composition I; focuses on argumentation and analysis with extensive practice in writing and in depth critical thinking through the use of supplemental readings; the course culminates in the writing of an 8-10 page research paper.
Prerequisite: IGED 110

**ARTD 124C Computer Art I (3)**
Introduces the creation and production of art using the computer as a creative tool. Explores the computer as a graphic tool. Provides an overview and exploration of graphic and paint software in a workshop atmosphere. Utilizes templates to learn computer basics, aesthetics and composition building. Focuses on paint programs, such as Painter and Photoshop.

**ARTS 145C Photography (3)**
Introduces a comprehensive approach to black and white photography as both a graphics, as well as a fine arts tool. Explores the use of the adjustable camera, the development

of the negative, and the production of the photographic print. Studies techniques in composition, lighting, films, and dark room processing. Applies digital photography concepts. Requires the use of a 35mm camera.

**GRCT 107C Desktop Publishing (2)**
Introduces students to the basic fundamentals of desktop publishing using page layout software.
Topics include basic page formatting, composition, proofreading, and layout skills in combination with the use of peripheral hard ware, such as scanners, printers and digital storage devices.

**GRCT 107C Desktop Publishing Lab (1)**
Applied experiences in laboratory setting to be taken concurrently with 1104 207. Lab. 3 hrs.

**ARTS 115C Visual Thinking (3)**
Introduces conceptual visual thinking and the development of visual literacy as it applies to communication design and the fine arts. This is an idea-oriented course designed to help students solve visual and artistic problems through invention and interpretation. Emphasizes imagination and experimentation with concepts and ideas, and explores interdisciplinary approaches to art and design.

**ARTD 113C Graphic Design I (3)**
Introduces layout and design as concepts that form the foundation for problem-solving techniques in graphic design. These concepts are applied to print and other forms of digital media. Shape, composition, division of space, combined with type, art and color become a primary focus. Lec. 3 hrs., Lab. 2 hrs.

**ARTD 201C Computer Illustration I (3)**
Focuses on developing vector drawing skills while exploring the dynamics of color. Examines the fundamentals of picture making and image building techniques that are applied to visual communications.
Explores composition, object construction , illustration techniques, and software.

**ARTD 126C Typography (3)**
Surveys the use of type a graphic design element. Focuses on type selection, classifications, font usage, and type controls. Also explores type/font dynamics, creative manipulation, and special effects as these are applied to pages and publications, titles, web, media, and information designs and combines technical requirements and rules of typesetting using proper style guides in conjunction with the aesthetics of good typography.

**GRCT 113C Digital Imaging (2)**
Introduces Photoshop as an image editing tool and as a creative tool for problem solving. Explores techniques used to manipulate photographs and graphic attributes, including color, contrast, and other digital darkroom techniques.
Also covers photo retouching, use of filters, duotones, color, scanning, masking and scaling as well as file formats, size and resolution factors with a focus on both web and traditional publishing issues. Lec. 2 hrs.

**GRCT 114C Digital Imaging Lab (1)**
Applied experiences in a laboratory setting to be taken concurrently with 1104 113. Lab. 3hrs.

**ARTD 213C Publication Design (3)**
Introduces electronic pre-press.and the concepts in publication design that includes both traditional and digital applications. Instructs in techniques used for developing brochures, newsletters, and visual communication design, stressing typographic control and image manipulation, culminating in camera-ready documents.

**ARTD 207C Web Design (3)**
Description Under review

**ARTD 208C History of Graphic Design (3)**
Description Under review

**ARTD 275C Portfolio and Marketing Workshop (3)**
Focuses on preparing students for the job market through portfolio preparation and presentation. Provides techniques on how to prepare portfolios by revising, re-doing or creating new assignments. Discusses career guidelines, job pricing, and marketing tips. Portfolio review and resume are required. Prereq: Senior level in the AAS or BS program.
Provides introduction to algebraic concepts, definitions, notations, operations and symbols with emphasis on analysis and solution of applied problems. Includes algebraic fractions; exponential notation; linear and quadratic equations; simultaneous equations; inequalities; graphing; and linear programming. Lec. 3 hrs.

## Music (AA)

The Music Program provides specialized professional training in various disciplines of music and general courses for cultural enrichment. The two-year Associate in Arts in Music degree is offered in three areas of concentration: instrumental, keyboard, and vocal. The program prepares students for acceptance into the Bachelor of Music degree program at the University and provides the basic preparation for a career in music. To be admitted to any of the degree programs, students must apply to the Music Program, audition in their performance area(s), and pass the Music Program's placement examinations.

**Total Credit Hours: 65 (Including IGED courses)**

**Core Courses in Major**

Performing Ensemble Courses* 4
MUSC 100C, 101C Materials of Music I, II 6
MUSC 102C, 103C Ear Training and Sight Singing 4
MUSC 106C History of African American Music 3
MUSC 200C, 201C Materials of Music III, IV 6
MUSC 202C, 203C Ear Training and Sight Singing 4
MUSC 270C Computer Applications to Music I 3
MUSC 210C Directed Study (AA Seminar) 2
*Specific performing ensemble courses are required in certain programs

**Applied Major (8): Select one of the following eight credit hour sequences:**

Applied Major Keyboard: MUSC115C, 115C, 215C, 215C
Applied Major Voice: MUSC 125C, 125C, 225C, 225C
Applied Major Inst: MUSC135C, 135C, 235C, 235C

**Applied Minor (4): If Applied Major Voice or Applied Major Instrument is selected:**

Applied Minor Keyboard: MUSC 116C, 216C

**If Applied Major Keyboard is selected, choose one of the following four credit hour sequences:**

Applied Minor Keyboard: MUSC 116C, 116C 216C, 216C
Applied Minor Voice: MUSC 126C, 126C, 226C, 226C
Applied Minor Inst: MUSC 136C, 136C, 236C, 236C

**Additional Required Course(s): Select one of the following two credit hour sequences:**

Jazz Improvisation I MUSC 130C, 130C
Gospel Music Improvisation I MUSC 181C, 181C
***Or recommended alternative course(s)**
**For vocal; keyboard/vocal concentration (except Jazz or Gospel Music)**
Italian Diction for Voice Majors MUSC 114C

**Comments:** A grade point average of 2.0 is required for all music courses and 3.0 for all applied major courses.

## Business and Education Division

The Business Administration Program at the UDC Community College offers four degree options:

Associate of Science (AS) in Business Administration
Associate of Applied Science (AAS) in Computer Accounting Technology
Associate of Science (AS) in Hospitality and Tourism Management
Associate of Applied Science (AAS) in Fashion Merchandising

## Business Administration (AS)

The Associate of Science degree is designed to provide students with the knowledge required for entry-level positions in business, industry, and government. Also, it is designed to provide the essential skills needed for business startups and the operation of small business enterprises. Students must receive a grade "C" or better in all business requirements. Courses taken in this program may be applied toward the Bachelor of Science in Business Administration degree.

### A.S. in Business Administration
### Total Credit Hours 62

| Course# | Course Title | Credits |
|---|---|---|
| **First Semester** | | |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| MATH-105C | Intermediate Algebra | 3 |
| FINA-214C | Economics of Personal Finance | 3 |
| OADM-104C | Introduction to Business | 3 |
| IGED-250C | Discovery Technology (Computer Applications in Business) | 3 |
| | **Total Credit Hours:** | **16** |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| MATH-116C | Finite Math | 3 |
| OADM-208C | Business Communications | 3 |
| PHIL-108C | Intro to Social Ethics | 3 |
| BLAW-214C | Legal Environment of Business | 3 |
| | **Total Credit Hours:** | **15** |
| **Third Semester** | | |
| *ACCT-201 | Principles of Accounting I | 3 |
| *PSYC-201C | Introduction to Psychology | 3 |
| ECON 201C | Principles of Macroeconomics | 3 |
| IGED-130C | Foundations of Oral Communication | 3 |
| BGMT-200C | Global Environment of Business | 3 |
| | **Total Credit Hours:** | **15** |
| **Fourth Semester** | | |
| ECON-202C | Principles of Microeconomics | 3 |

| | | |
|---|---|---|
| ACCT-202C | Principles of Accounting II | 3 |
| FINA-220C | Business Statistics | 3 |
| BGMT-252C | Entrepreneurship | 3 |
| IGED-260C | Discovery Science & Lab | 4 |
| | **Total Credit Hours:** | **16** |

**Special Notations:**
English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. A "C" or better is required for all business and economics courses.

## Computer Accounting Technology (AAS)

The Associate of Applied Science degree in Computer Accounting Technology is designed to prepare students to become technicians or accounting clerks and to operate and maintain a microcomputer-oriented, general accounting system. The program trains students to enter the job market in semiprofessional categories. Also, it provides students with the background necessary for matriculation in the bachelor's program in accounting.
The use of cooperative job assignments is encouraged to provide students with practical accounting experience.

### A.A.S. Computer Accounting Technology
### Total Credit Hours 62

**First Semester**

| Course# | Course Title | Credits |
|---|---|---|
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| MATH-117C | Business Mathematics I | 3 |
| PHIL-105C | Introduction to Logic | 3 |
| OADM-104C | Introduction to Business | 3 |
| ACCT-201C | Principles of Accounting I | 3 |
| | **Total Credit Hours:** | **16** |

**Second Semester**

| | | |
|---|---|---|
| IGED 111C | Foundation Writing II | 3 |
| MATH-215C | Calculus for Business, Social and Life Sciences | 4 |
| ACCT-202C | Principles of Accounting II | 3 |
| IGED 250C | Discovery Technology | 3 |
| *ACCT-312 | Fed Income Tax Accounting I (*flagship) | 3 |
| | **Total Credit Hours:** | **16** |

**Third Semester**

| | | |
|---|---|---|
| *ACCT-301 | Intermediate Accounting I (*flagship) | 3 |
| *ACCT-325 | Cost Accounting (*flagship) | 3 |
| BLPC2-14C | Legal Environment of Business | 3 |
| | Accounting Elective | 3 |
| | Natural Science Elective w.Lab | 4 |
| | **Total Credit Hours:** | **16** |

**Fourth Semester**

| | | |
|---|---|---|
| ECON-201C | Principles of Macroeconomics | 3 |
| *ACCT-302 | Intermediate Accounting II (*flagship) | 3 |
| *ACCT-407 | Accounting for Info Systems (*flagship) | 3 |
| *BLPC-318 | Commercial Law (*flagship) | 3 |
| | Accounting Elective | 3 |
| | **Total Credit Hours:** | **15** |

**Special Notations:**
English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. A "C" or better is required for all business and economics courses.

## COURSE DESCRIPTIONS: BUSINESS ADMINISTRATION AND ACCOUNTING

**ACCT 201C Principles of Accounting I (3)**
Includes the principles of accrual-basis accounting, the accounting cycle, merchandising transactions, treatment of inventories, cash, internal control, receivables, plant assets, and other topics. Prereq.: Completion of all prescribed developmental courses. First half of the elementary accounting year should be followed immediately by ACCT 202C

**ACCT 202C Principles of Accounting II (3)**
Examines accounting for corporations, long-term debt, the Statement of Cash Flows, financial statement analysis, cost accounting, cost/volume/profit analysis, incremental analysis, operational and capital budgeting, and other topics. Second half of the elementary accounting year.

**ACCT206C Government and Not-for-Profit Accounting**
A study of basic fund accounting and financial reporting concepts, applications, and practices for governmental and not-for-profit entities. The course coverage also includes budgeting; transaction analysis; general journal and special journals; journal entries; preparation, use and analysis of financial statements; auditing issues; and recent GASB and FASB pronouncements.

**ACCT210C Ethics and Professionalism in Accounting**
An advanced course that addresses the concepts of ethical reasoning and the decision process. Topics include the professional judgment, corporate governance, American Institute of Certified Public Accountants (AICPA) code of conduct, accounting fraud, legal and regulatory obligations, earnings management, quality of financial reporting and International Financial Reporting Standards (IFRS) ethics.

**ACCT 312C Federal Income Tax I (3)**
Examines the Federal Income Tax laws as they apply to individuals; tax consequences of business decisions and accounting procedures.

**ACCT 301C Intermediate Accounting (3)**
Reviews the basic accounting concepts and principles beginning with an overview of the balance sheet and income statement, financial statement preparation, working capital, and current assets. Includes a rigorous study of non-current assets and compound interest, annuities, and present value.

**ACCT 325C Cost Accounting (3)**
Analyzes accounting for manufacturing costs, including job order costs, continuous process costs, and standard systems. Also examines principles of budgeting for use in profit planning and control.

**ACCT 302C Intermediate Accounting II (3)**
Studies analytical processes, including statements from incomplete records, financial statement analysis, cash-flow reporting and price-level changes, and accounting for pensions and leases.

**ACCT 407C Accounting Information Systems (3)**
Examines modern accounting systems with emphasis on information technology, including basic concepts and standards, accounting equipment and procedures, sales and cash collection, and accounts receivable, inventories, payrolls, and related areas.

**BMGT-200C – Global Environment of Business**
This course is designed to introduce students to the ever-changing global business environment. As the world becomes increasingly interconnected, business serves as a core institution that mediates relations between individuals across national boundaries. The global environment shapes business as much as business shapes it. This course will provide an overview of the global environment of business through the study of the political economy, international institutions and theories of international trade, and cooperation around issues such as sustainability, natural resources, labor, human rights, distribution of income, and the environment. The course will address implications of each of these topics for business.

**BGMT-252C Entrepreneurship**
Develops entrepreneurial skills through analysis and examination of the strategies employed by today's most successful entrepreneurs. The case study approach is utilized. Students learn about the entrepreneurial process, and about the opportunities and challenges facing entrepreneurs starting new business ventures. Identifying promising new opportunities, developing business concepts and marketing plans, and managing a new venture are integral components of this course.

## Hospitality and Tourism Management

The Associate in Science in Hospitality and Tourism Management provides students with the knowledge and skills needed to serve in entry positions in the hospitality industry—the second largest industry in the Washington Metropolitan Area. The program is designed for students who are interested careers in the Hospitality and Tourism industries. The program provides specialized instruction in various areas such as Front Office, Housekeeping, Sales and Meeting Management, Human Resources, Food and Beverage Operations, Cost Controls, and Tourism. Transferrable management skills such as planning, organizing, leading, coordinating, controlling, staffing, evaluating, and their applicability to the Hospitality and Tourism industries are emphasized. The program also exposes students to the legal aspects of hospitality and tourism organization.

**A.S. Hospitality and Tourism Management**
**Total Credit Hours 62**

| First Semester | | |
|---|---|---|
| Course# | Course Title | Credits |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| MATH-105C | Intermediate Algebra (or higher) | 3 |
| HMGT-104C | Intro to Hospitality Industry | 3 |
| IGED 250C | Discovery Technology (Computer Applications in Business) | 3 |
| FINA-214C | Economics of Personal Finance | 3 |
| | **Total Credit Hours:** | **16** |

| Second Semester | | |
|---|---|---|
| Course# | Course Title | Credits |
| IGED 111C | Foundation Writing II | 3 |
| MATH-116C | Finite Mathematics (or higher) | 3 |
| HMGT-110C | Front Office Management and Guest Services | 3 |

| | | |
|---|---|---|
| FBMT-106C | Food and Beverage Operations | 3 |
| IGED-260C | Discovery Science w/ Lab | 4 |
| | **Total Credit Hours:** | **16** |

Third Semester

| Course# | Course Title | Credits |
|---|---|---|
| IGED-130C | Foundation Oral Communication | 3 |
| TRVL-100C | Dynamics of Tourism | 3 |
| HMGT-200C | Hospitality Sales & Meeting Management | 3 |
| HMGT-215C | Managing Sustainable Hotel Support Operations | 3 |
| ACCT-201C | Principles of Accounting I | 3 |
| | **Total Credit Hours:** | **15** |

Fourth Semester

| Course# | Course Title | Credits |
|---|---|---|
| HMGT-290C | Hospitality Externship (HMGT 110C, HMGT 204C, HMGT 206C, or FBMT 106C) | 6 |
| ACCT-202C | Principles of Accounting II | 3 |
| HMGT-280C | Hotel Food and Beverage Controls | 3 |
| HGMT-211C | Hospitality Human Resources and Diversity Leadership | 3 |
| | **Total Credit Hours:** | **15** |

**Special Notations:**
English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test.

## HOSPITALITY & TOURISM MANAGEMENT COURSES (HMGT)

**HMGT 104C Intro. to the Hospitality Industry (3)**
Examines the hospitality industry, giving special attention to the roots of the industry's foundation and its evolution. Also examines its characteristics, its role in society, its socio-political environment, and current and future trends that shape the industry and will continue to shape it.

**HMGT110C Front Office and Guest Services (3)** This course familiarizes students with the front office department of the hotel. Emphasis is placed on: guestroom availability, reservation processing, guest registration, night audit and check out procedures through a computerized property management system. Students focus on all aspects of the unique relationship between the front office and the other departments in the hotel.

**FBMT 206C Food & Beverage Operations (3)** Covers the types and designs of food and beverage service systems. Incorporates those factors that determine how managers select and purchase food items and beverages. Examines storage and inventory management, cost-price analysis, pricing decisions, the human element in food and beverage service systems, interaction with other units in hotel/motel systems food production equipment acquisition, menu development principles, management control methods, and quality assurance.

**HMGT 220C Hospitality Sales and Meeting Mgmt (3)**
Examines the principles and techniques that apply when managing the different types of food service organizations. Topics include restaurant planning, market research, financial feasibility, internal organization structure, staffing requirements, menu management, pricing, promotion management, food safety and health regulations, and quality assurance methodology.

**HMGT 280C Hotel Food and Bevg. Cost Controls (3)**
This course is designed to complete a student's foundation in purchasing and food and beverage operational controls. Emphasis is on methods used by hotel managers in order to increase food and beverage operational profits through maximizing revenues and controlling costs. Students also develop income statements and utilize spreadsheet applications to analyze food and beverage operations.

**HMGT 215C Managing Sustainable Hotel Support System (3)**
This course introduces the student to the role of the property operations manager in a lodging context. Essential elements of engineering, housekeeping, and safety are studied. The student is introduced to technical, managerial, financial and legal issues related to these departments. The environmental impact of activities in this area of management is highlighted. The course content has application to other settings as well.

**HMGT 216C Law as Related to the Hospitality Industry (3)**
Reviews hotel, motel, restaurant, and tourism law, in order to the responsibilities the law imposes on the hospitality industry. Topics include the legal obligations to guests/customers and employees, and contract law.

**HMGT 290C Internship (9)** Designed to provide students with an opportunity to develop and/or increase professional competencies and skills by performing an internship in a hospitality-related setting. Requires attendance at a weekly seminar.

**TRVL 100C Dynamics of Tourism (3)**
This is a management-oriented course covering the economic, cultural, and social functions in the planning and development of the tourism industry. Emphasis is placed on organizational concepts.

## Fashion Merchandising (AAS)

The Fashion Merchandising program is designed to fulfill the needs of those students who are seeking a career in the business side of the fashion industry. Students in fashion merchandising learn about the planning, production, promotion, and distribution of products in fashion industries to meet consumer demand. Students learn to define and analyze target markets, forecast trends, design and use visual communication, and plan and promote fashion products. Students also gain real-world skills in verbal, written, and visual presentation, computer networking, product development, business communication, and project management. Students will be trained to work as interns at major fashion companies, sponsored by partnerships with corporations and internationally renowned organizations like Fashion Group International (FGI) and the Black Retail Action Group (BRAG), among others. The UDC-CC Fashion Merchandising program consists of 62 credit hours: 26 hours of liberal arts courses and 36 hours of Fashion Merchandising courses including one elective, an internship, and a capstone course. All core courses are held on the Backus Campus, Building 54.

**A.A.S. Fashion Merchandising**
**Total Credit Hours 62**

| Course# | Course Title | Credits |
|---|---|---|
| **First Semester** | | |
| FSEM-101C | Freshman Orientation | 1 |
| IGED 110C | Foundation Writing I | 3 |
| MATH-117C | Business Math I | 3 |
| IGED 130C | Foundation Oral Comm. | 3 |
| FSMD-101C | Fashion Merchandising Fundamentals | 3 |
| FSMD-103C | Principles of Clothing Construction I | 3 |
| | **Total Credit Hours:** | **16** |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| MATH-118C | Business Math II | 3 |
| GRCT-109C | Digital Applications | 3 |
| FSMD-121C | Textiles | 3 |
| FSMD-104C | Principles of Clothing Construction II | 3 |
| | **Total Credit Hours** | **15** |
| **Third Semester** | | |
| | Arts and Humanities elective | 3 |
| FSMD-225C | Principles of Retail Buying | 3 |
| FSMD-242C | Introduction to the Business of Fashion Merchandising | 3 |
| FSMD-296C | Internship - Fashion Industry Independent Study (need dept. approval) | 3 |
| | Behavioral/Social Science Elective | 3 |
| | **Total Credit Hours** | **15** |
| **Fourth Semester** | | |
| FSMD-255C | Trend Forecasting I | 3 |
| FSMD-261C | Intro to Fashion Marketing | 3 |
| | Natural Science w/ Lab elective | 4 |
| | Fashion Merchandising Elective | 3 |
| FSMD-299C | Fashion Merch. Capstone | 3 |
| | **Total Credit Hours:** | **16** |

**Special Notations:**
English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. Electives: Fashion in the Urban Marketplace, History of Costume, Color Theory Science, Advanced Textiles

## FASHION MERCHANDISING COURSES

**FSMD 101C Fashion Merchandising Fundamentals (3)**
Introduces fashion merchandising with an overview of the apparel production and merchandising system. Covers the history, characteristics, and global interrelationships of all segments of the fashion business. Also examines the development of merchandise from concept to consumer, and explores how fiber, textile, and apparel producers, retailers, and home furnishings companies merchandise and market their products within the industry and to the ultimate consumer.

**FSMD 103C Principles of Clothing Construction I (3)**
Introduces and applies the principles of garment construction. Emphasizes techniques for various fabrics, trim, and production methods for basic styles. Teaches and applies basic sewing techniques according to typical product development and quality control procedures.

**FSMD 121C Textiles (3)**
Examines natural and synthetic fibers, fabric, and textiles from raw materials through manufacturing and finishing. Includes analysis of the use and care of textiles, fashion design applications, and consumer selection. Emphasizes the use of textiles for fashion product development and merchandising.

**FSMD 104C Principles of Clothing Construction II (3)**
Expands the principles of garment construction, with emphasis on understanding proportion, balance and construction by sewing basic garments.
Applies sewing techniques by simulating real life situations in the fashion industry.

**FSMD 225C Principles of Retail Buying (3)**
Studies the principles, procedures, and techniques practiced by merchandisers of fashion goods in distribution of products, market sources, financing, and aspects associated with apparel and other products.
Analyzes the buying function and the differences of buyers' responsibilities in various types of merchandising organizations. Retail technologies are researched and the impact on consumers' shopping motivation and experiences are explored.

**FSMD 244C Product Development (3)**
This course introduces the concepts and methods, by which retailers create special, store-branded, merchandise for targeted market segments. The process of product development from research to production, to distribution is studied.

**FSMD 225C Internship Fashion Industry Independent Study (3)**
Provides internship experience within a fashion-related industry that prepares students for entry-level job placement. Participates in the operations of fashion industry activities through a supervised work program.

**FSMD 255C Trend Forecasting I (3)**
Traces the history of the industry, analyzing the impact of politics, art, media, the economy, and society on fashion, as well as the contributions of historical and modern fashion innovators. Students research analyze fashion trends and directions of apparel and related consumer products, e.g., accessories, home furnishings, and toys.

**FSMD 261C Introduction to Fashion Marketing (3)**
Focuses on the integration of fashion marketing concepts, practices, applications and how a marketing/merchandise plan develops. Analyzes opportunities for merchandise brand imagery, positioning, segmentation, and targeting of fashion apparel and other products.

**FSMD271C Visual Merchandising**
This course introduces a variety of equipment, techniques, and materials to create effective presentations. Students acquire hands on experience through projects emphasizing contemporary approaches to both interior and exterior fashion displays.

**FSMD272C Retail Retailing**
This course teaches retailing and merchandising principles with emphasis on real world parameters. This course simulates the steps in sequential order for establishing and operating a successful fashion retail business. This includes selecting the business form of ownership, choosing financial options, creating short and long term strategies with a clear vision, evaluating store layout, forming a merchandising plan, developing merchandising strategies, and initiating store policies including customer service, human resources, and risk management.

**FSMD 299C Fashion Merchandising Capstone (3)**
This capstone course expands on fashion merchandising practices. Explores product promotion, advertising, sourcing and retailing. Examines the impact of imports on the domestic apparel businesses. Explores the domestic stages of manufacturing, retail buying as well as consumer behavior in merchandising with emphasis on retail visual merchandising and display development. Also includes a study of inventory control systems.

**FASHION MERCHANDISING ELECTIVES**

**FSMD 240C History of Costume**
Examines the history of clothing from ancient civilizations to the 20th century. Explores the influences of American and international history, politics, media, psychology and culture. Also investigates the people, art, film, photographers, music, image-makers, architects, and events that have contributed to shaping various aesthetics in fashion.

**FSMD 222C Advanced Textiles (3)**
Studies textiles with an in-depth study of fiber classification, yarns, fabric construction, finishes and color applications.
Examines the fabrics commonly used in fashion merchandise for sources of material, construction, comparative qualities and usage from the fashion viewpoint from fiber-to-product cycle. Explores methods of fiber identification, yarns and construction.

## Education (AA)

The Associate of Arts degree in Education provides a comprehensive background in developmental theory, emphasizing the practical application of theory to appropriate environments for culturally, linguistically, and developmentally diverse children. The program includes development from the physiological, psychological, cognitive, and sociological perspectives for children from birth through adolescence.

The curriculum is designed to meet the needs of adults working in various early childhood settings, including both public and private day care homes, child development centers, kindergartens, Head Start, and pre-school and school-age care programs. The program complements the competency requirements for the Child Development Associate (CDA) credential and the standards set by the National Association for the Education of Young Children (NAEYC).

There are two options in the Associate degree program: Option I- Infant/Toddler Education and Option II- Early Childhood Education. These options are designed to provide courses that target the specific age groups as listed.

Students enrolled in the AA Programs in Education must be admitted into the program while they are enrolled in the first education course ECED 104C or EDFN 120C. Admission into the program includes an application, along with TB, police and finger printing clearances. Candidates must complete practicum and field experiences which are critical to many courses in the curriculum. The UDC Child Development Center serves as the practicum and field experience site for students in the program. Before- and after-school programs in the District of Columbia Public Schools and Recreation Department may also serve as experience sites.

**Special Notations:** English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. A grade of "C" is required in all college English and Mathematics courses.

**Option I: Infant / Toddler Education**
**Total Credit Hours: 62**

| **First Semester** | | |
|---|---|---|
| Course# | Course Title | Credits |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| IGED 120C | Found. Quan Reasoning | 3 |
| IGED 130C | Found. Oral Communications | 3 |
| EDIT 101C | Orient. Inf-Toddler Prof. Practice | 3 |
| ECED-105C | Principles of Child Development | 3 |
| | Total Credit Hours: | 16 |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| IGED 220C | Discovery Quan Reasoning | 3 |
| EDIT 201C | Observation and Assessment | 3 |
| EDIT 202C | Hlth/Saf&Nur Inf/Toddler Care | 3 |
| EDIT 203C | Responsive Curr. Inf & Toddlers | 3 |
| | Total Credit Hours: | 15 |
| **Third Semester** | | |
| GEOG-105C | World Cultural Geography | 3 |
| EDIT-204C | Inf/Tod Soc-Emotnl Dev & Guid | 3 |
| EDIT-205C | Practicum I (Infant/Toddler) | 3 |
| EDIT-206C | Physical & Cognitive Developmt. | 3 |
| ENSC-107C/109C | Integrated Science I Lecture/Lab | 4 |
| | Total Credit Hours: | 16 |
| **Fourth Semester** | | |
| EDIT-207C | Infant/Todlr Learning/Care Env. | 3 |
| EDIT-208C | Intro to Incl. Practices & Dual Language Learners | 3 |
| EDIT-209C | Infant/Toddler Internship | 3 |
| EDIT-210C | Ldrshp/Mgmt Infant/Todlr Prof. | 3 |
| TBD | Elective | 3 |
| | Total Credit Hours | 15 |

Suggested Electives: Children's Literature, Computer Science, and Teacher, Child, Community Interactions.

**Option II: Early Childhood/ (Pre-K – Grade 3)**
**Total Credit Hours: 62**

| **First Semester** | | |
|---|---|---|
| Course# | Course Title | Credits |
| FSEM-101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| IGED 120C | Foundation Quan Reasoning | 3 |
| IGED 130C | Foun. Oral Communications OR | 3 |
| SPCH-116C | Voice and Articulation | 3 |
| GEOG-105C | World Cultural Geography | 3 |
| ECED-104C | History and Philosophy of ECE | 3 |
| | **Total Credit Hours:** | **16** |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| IGED 220C | Discovery Quantitative Reasoning | 3 |
| ENSC-107C | Integrated Science I | 3 |
| ENSC-109C | Integrated Science I Laboratory | 1 |
| ECED-105C | Principles of Child Development | 3 |
| | Elective | 3 |
| | **Total Credit Hours:** | **16** |
| **Third Semester** | | |
| ECED-204C | Curriculum Content in Infant/Toddler | 3 |
| ECED 245C | Child in the Family | 3 |
| ECED-230C | Practicum I (Pre K – 3rd Grade) | 3 |
| SPED-204C | Intro to the Education of Exceptional Children | 3 |
| ECED-207C | Understanding Self and Relationships | 3 |
| | **Total Credit Hours:** | **15** |
| **Fourth Semester** | | |
| ECED-224C | Planning & Administering ECE Programs | 3 |
| ECED-208C | Emergent Literacy | 3 |
| ECED-231C | Practicum II (Pre K – 3rd Grade) | 3 |
| ECED-209C | Play Activities | 3 |
| | Elective | 3 |
| | **Total Credit Hours:** | **15** |

Suggested Electives: Children's Literature, Computer Applications, and Teacher, Child, and Community.

## EDUCATION COURSES

**ECED 104C History and Philosophy of Early Childhood Education (3)**
Traces the theoretical, social, and political roots of early childhood education. Discusses the impetus for the development of nursery schools, Head Start, special education programs, multicultural education, and child care. Highlights policy issues affecting young children and their families. PR: ENGL 111C.

**ECED 105C Principles of Child Development (3)**
Presents human development through the life span, with special emphasis on typical and atypical cognitive, language, physical, social, and emotional development from birth through age 8. Requires twenty hours of clinical observation. PR: ECED 104C

**ECED 204C Curriculum Content in ECE (3)**
Analyzes existing curricula emphases in Early Childhood Education as a basis for designing, developing, and evaluating curricula for use in early childhood education settings. PR: ECED 104C, 105C

**ECED 207C Understanding Self and Relationships (3)**
An experiential process course designed to enable students to explore their attitudes, beliefs, and values that contribute to behavior patterns in interacting with peers, colleagues, authority figures, and children. Discussion reading, role playing and writing serve as vehicles for promoting self understanding. PR: ECED 104, 105, and Sophomore standing.

**ECED 208C Emergent Literacy (3)**
Explores how language and literacy develop in young children. Identifies age-appropriate literacy activities for young children. Emphasizes an environment that encourages concepts and language development that make literacy practical. PR: ENGL 112, ECED

**ECED 209C Play Activities and Materials (3)**
Examines the principles of evaluation and selection of play activities and materials for pre-school and children in grades 1-3. Explores the design of learning environments and play strategies appropriate for individuals and groups and for appropriate developmental levels.PR: 112, ECED 104 and 105

**ECED 224C Planning and Administration of Early Childhood Programs (3)**
Discusses guidelines to achieve quality programming for early childhood programs. Focuses on effective interpersonal communication skills in program management. principles of management and operation, and designing and scheduling appropriate space and activities. ECED 104 and 105

**ECED 230C Practicum I (3)**
Provides directed observation and participation with preschool and primary grade (1-3) children. Focuses on instruments, skills, and assessment strategies of young children. Provides experience in team assessments. Requires lecture and 30-hour practicum. PR Sophomore Standing

**ECED 231C Practicum II (3)**
Provides direct observation and participation with preschool and primary grade (1-3) children. Focuses on management strategies and program activities for early childhood education. Allows opportunities to gain experience in assisting the classroom teacher. Requires lecture and 30-hour practicum PR Sophomore Standing

**ECED 245C The Child in the Family (3)**
Examines the influence of family interaction on the management of children. Explores personality development and the impact of parental practices on child rearing. Also examines current issues with appropriate multicultural examples, including child care and nontraditional parenting situations. Pre-req.: ENGL112, ECED104 and 105

**EDIT-101C Orient. Inf-Toddler Prof. Practice**
Provides a brief history of and an introduction to the field of early childhood education, specifically, the early care infant/toddler landscape. Critical foundational knowledge, philosophy and evidence-based practices in support of culturally, linguistically and ability diverse young children, strengthens students' capacity to consider and integrate this knowledge-base into everyday program practices.

**EDIT-201C Observation and Assessment**
Explores techniques for observing, recording and assessing growth and development of young children. Critical knowledge and evidence-based strategies and practices in support of culturally, linguistically and ability diverse young children, strengthens students' skills in data collection, individual child assessment and appropriate programming as a result. PR: EDIT 101c and ECED 105.

**EDIT-202C Hlth/Safety & Nurture Inf/Toddler Care**
Encompasses evidence-based and relationship-based practices vital to creating safe and healthy infant/toddler environments and nutrition components that support culturally, linguistically and ability diverse young children and families, including addressing state and local regulations

and national standards. First Aid and CPR (infant/child/adult) certification is part of the required coursework. PR: EDIT 101C and ECED 105C.

**EDIT-203C Responsive Curr. Inf & Toddlers**
Encompasses evidence-based and relationship-based practices vital to creating safe and healthy infant/toddler environments and nutrition components that support culturally, linguistically and ability diverse young children and families, including addressing state and local regulations and national standards. First Aid and CPR (infant/child/adult) certification is part of the required coursework. PR: EDIT 101C and ECED 105C.

**EDIT-204C Inf/Tod Soc-Emotional Dev & Guidance**
Explores the domains of social and emotional development of infants and toddlers and provides culturally-responsive guidance strategies that meet the needs of culturally, linguistically and ability diverse young children and create encouraging classrooms and evidence-based program practices. PR EDIT 101C and ECED 105.

**EDIT-205C Practicum I (Infant/Toddler)**
Explores the domains of physical and cognitive development including language and pre-literacy skills of and experiences for infants and toddlers. Critical foundational knowledge, philosophy and evidence-based practices in support of culturally, linguistically and ability diverse young children, strengthens students' capacity to consider and integrate this knowledge-base into everyday program practices. PR: EDIT 101c and ECED 105.

**EDIT-206C Physical & Cognitive Developmt**
Examines the role of family and community in infant/toddler development and care and offers perspectives and strategies that build a relationship with families and appreciation of their values, background and knowledge. Through evidence-based practices students will support culturally, linguistically and ability diverse young children by engaging their families in care and education programs. PR: EDIT 101c and ECED 105.

**EDIT-207C Infant/Toddler Learning/Care Env**
Explores the role environment (physical, social and emotional) plays in optimal development of infants/toddlers in care settings. Course content and activities are evidence-based and are constructed to build students' capacity to support culturally, linguistically and ability diverse young children. Covers professional standards and licensing regulations for infant/toddler environments. PR: EDIT 101C and ECED 105.

**EDIT-208C Intro to Incl. Practices & Dual Language Learners**
This course's content is intended to enhance students' ability to deliver highly individualized, culturally responsive practices, when working with all infants and toddlers, including those who are dual language learners. In addition, the course includes an introduction to the design and delivery of evidence-based practices for infants and toddlers with developmental delays. PR: EDIT 101C and ECED 105C.

**EDIT-209C Infant/Toddler Internship**
Supervised student teaching in a developmentally appropriate infant/toddler setting working directly with infants and toddlers for 10 hours per week. The students' practice includes evidence-based practices in support of culturally, linguistically and ability diverse young children practices. PR: ECED 105 and EDIT 101c, 201c, 202c, 203c, 204c, 205c, 206c, 207c and 208c

**EDIT-210C Leadership/Mgmt Infant/Toddler Prof.**
Explores how principled leadership can affect infant/toddler program management. Developing skills to operate programs/centers implementing high quality, developmentally-appropriate care and learning experiences for culturally, linguistically and ability diverse infants and toddlers is the major outcome of this course.

**EDPY 214C Educational Psychology (3)**
Examines current theory and practice in the teaching/ learning process. Explores implications of theories for teaching/learning activities. Discusses methods of assessing student learning, performance assessments, and standardized tests. Prereq.: EDFN 120C, EDFN 222C

**SPED-204C Introduction to Education of Exceptional Children (3)**
Studies the characteristics of exceptionality and the effects on how students learn. Examines each area of exceptionality, as well as historical development, basic concepts, current issues and programs, and future trends in special education. Emphasizes critical issues related to schools, family and society, existing attitudinal barriers, and current methods of support (Formerly Survey of Exceptional Children). Field experience required.

## Division of Math, Information Technology, and Engineering (MITE)

The Division of Math, Information Technology, and Engineering offers four degree options in the following areas: Architectural Engineering Technology (AAS); Aviation Maintenance Technology (AAS); Construction Management (AAS); and Computer Science Technology

(AAS). The division also teaches the math courses associated with the Liberal Studies AA program (Math and Engineering cluster).

## Architectural Engineering Technology (AAS)

The architecture program, which leads to the Associate in Applied Science (AAS) degree in Architectural Engineering Technology (AET), prepares students for entry-level employment in private sector architectural, consulting engineering, and construction firms, and related governmental agencies. The AAS degree in the AET program also satisfies the first two years of the four-year Bachelor of Science in Architecture/1.5 year Master in Architecture degree programs at UDC, and similar degree programs at other institutions. This feature of the program accommodates those students whose career objective is to become a licensed professional architect. The AET program's studios and classes are offered in the late evenings and on Saturdays to accommodate persons who must work during regular business hours.

**A.A.S. Degree in Architectural Engineering Technology: Total Credit Hours: 65**

| Course# | Course Title | Credits |
|---|---|---|
| **First Semester** | | |
| FSEM 101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| AETC 101C | Architectural Drawing & Design I | 3 |
| MATH 113C | Pre-Calculus with Trig I | 3 |
| AET 114C | Materials & Methods of Construction I | 3 |
| AETC 122C | Introduction to History of Architecture | 3 |
| | **Total Credit Hours** | **16** |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| AETC 102C | Architectural Drawing & Design II | 3 |
| MATH 114C | Pre-Calculus with Trig II | 3 |
| AETC 116C | Materials & Methods of Construction II | 3 |
| AETC 205C | Intro to Computer Aided Design | 3 |
| | **Total Credit Hours** | **16** |
| **Third Semester** | | |
| PHYS 101C | Intro to College Physics I Lec | 3 |
| PHYS 103C | Intro to College Physics I Lab | 1 |
| AETC 201C | Architectural Drawing & Design III | 4 |
| AETC 206C | CADD Doc/Spec & Estimate | 3 |
| AETC 244C | Mechanical & Electrical Systems | 3 |
| | Social Science Elective | 3 |
| | **Total Credit Hours** | **17** |
| **Fourth Semester** | | |
| PHYS 102C | Intro to College Physics II Lec | 3 |
| PHYS 104C | Intro to College Physics II Lab | 1 |
| AETC 202C | Architectural Drawing & Design IV | 4 |
| AETC 232C | Structural Design | 3 |
| AETC 246C | Environmental Systems II | 3 |
| AETC 292C | Seminar | 3 |
| | **Total Credit Hours** | **17** |

**Special Notations:** English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test.

## ARCHITECTURAL ENGINEERING TECH COURSES

**AETC 101C Architectural Drawing and Design I (3)**
Parallel development of mechanical drawing, basic model making, and simple 3-D computer aided designs are taught as it facilitates their integration as is common in an architectural office. Spatial visualization exercises in point, line, plane in orthographic, isometric drawings, reinforces descriptive geometry as a means to 3 dimensional perceptions critical to technical and design drawing skills. Lec. 2 Hrs. Prac. 3 Hrs.

**AETC 102C Architectural Drawing and Design II (3)**
This course is a continuation of the basic drawing, drafting, graphic, and visual communication techniques started in Architectural Drawing & Design I and focuses on the fundamental drawing and drafting standards that are in common use throughout the profession. Students learn how to use scales (architectural, engineering, and metric) as well as all types of drafting and drawing equipment. Projects include the development of floor plans, furnishing plans, reflected ceiling plans, MEP plans, building sections,

interior and exterior elevations, design details, and schedules.

**AETC 114C Materials & Methods I (3)**
The student will become familiar with the basic properties of metals, concrete, cementitious materials, and their uses. They will acquire an elementary understanding of primary construction problems, solutions and vocabulary related to these materials. A Lecture and Laboratory are conducted for this course.

**AETC 201C Architectural Drawing and Design III (3)**
This course provides the student with the skills necessary to understand the system of production drawing and its relation to the design development for a small building. Each student shall produce a set of production drawings. Building codes shall be incorporated in the design development for the small building. Total of 4 Hours (Lecture and Practice).

**AETC 202C Architectural Drawing and Design IV**
This course provides the student with the skills necessary to produce the basic elements for a set of architectural production drawings for a medium sized building. The student shall understand the integration and coordination of all aspects of the building, including structural, plumbing, mechanical, and electrical systems. Lec. 2 Hrs. Prac. 6 Hrs. (Prerequisite Architectural Drawing & Design III)

**AETC-116C Material & Methods II (3)**
The student will become familiar with the basic properties of metals, concrete, cementitious materials, and their uses. They will acquire an elementary understanding of primary construction problems, solutions and vocabulary related to these materials. A Lecture and Laboratory are conducted for this course.

**AETC 205C Introduction to CADD Construction Documents (3)**
Introduces the student to the general use of the computer as a design and production tool. The use of Computer-Aided Design Drafting (CADD) programs as a drawing and specification tool in office production and management will be studied. The course will further reinforce the construction document production techniques and principles learned in previous technical courses. Lec. 2 hrs. Prac. 3 hrs.

**AETC 206C CAD Documents, Specification Writing and Estimating (3)**
Explores the general use of Computer Aided Design Drafting (CADD) programs as a drawing and production tool for data and information coordination and communication. Emphasizes the drawing's relationship to the development of written specification and construction cost estimation. Lec, 2 Hrs., Lab 3 Hrs.

**AETC – 244C Environmental Systems I (3)**
This course focuses on heating, air conditioning, ventilation and conservation of energy. Teaches manual load calculations, heat transfer coefficients, analysis of temperature differences required by code or by good practice, and computation of HVAC supplies appropriate to the building and to the available fuels. Students analyze HVAC systems and plans for residences and small businesses. Energy recovery and conservation will be practiced in the system designs. Lecture and Lab.

**AETC 246C Environmental Systems II (MEP Systems II) (3)**
This course builds on the foundation of AETC 244C, with a continued focus on heating, air conditioning, ventilation and conservation of energy. A Lecture and Laboratory are conducted for this course.

**AETC 122C Intro to History of Architecture (3)**
An introduction to the principles of a wide-ranging area of design history and provide a survey of architecture, interiors, furniture, and decorative arts from the past to the present. The course covers the history of architecture, architectural details, architectural surface treatments, space planning, interior design, interior architectural features, interior surface treatments, motifs, furniture, color, lighting, textiles, and decorative accessories that are important aspects of the design and construction profession, as well as being fundamental information, which is widely used in the field today.

**AETC 292C Architectural Drawing and Design III (4)**
This course gives students opportunities to acquire a fundamental understanding of providing a preliminary foundation and understanding of the built environment as a setting for human interactions. This includes the consideration of structures as form/space generators; environmental systems analysis and integration in architecture; sustainable design; formal design composition and design order; and design as an expression of ideas and theories. The course should help a student to select, develop, and design projects that are integrated with programmatic contexts, i.e., physical, urban, and cultural; interior/exterior spatial relationships; and code compliance involving issues of life, health, and safety.

# Aviation Maintenance Technology (AAS)

Aviation Maintenance Technology (AAS) UDC's Aviation Maintenance Technology program offers two related paths of training in aviation: the Aircraft Mechanic's Certificate (license), and the Aviation Maintenance Technology Program (Associates Degree).
All of these aviation activities are centered at UDC's aviation facilities (Hangar #2) at Reagan Washington National Airport, just south of the old main terminal (Terminal A), next to the taxi parking garage.

**Certificate of Completion for Aircraft Mechanic's License**
This course of study requires successful completion of 40 academic credit hours (eight courses of five credits each), and is approved by the Federal Aviation Administration (FAA) to provide training for certification (licensing) as an Aircraft Mechanic, with Airframe and Power plant (A&P) rating. This program meets the requirements of Federal Aviation Regulation (FAR) part 147, and includes about 2000 hours of comprehensive lecture and laboratory instruction and experience. The overall instructional program is conducted in accordance with the provisions of the FAR, with FAA monitoring the instructional quality, technology incorporation, and administrative activities of the program.

Additionally, the FAA monitors student exam performance, attendance, and overall quality of performance. The Program provides diverse training for the student to obtain initial job entry-level skills in the aircraft maintenance industry. Training includes developing knowledge and work skills in 44 areas, including: A&P privileges and regulations, hydraulics, electricity, electronics, metal structures, environmental systems, welding, instrumentation, composite materials, turbine and reciprocating engines, propellers, and related systems. The UDC Certificate of Completion entitles the student to take the FAA administered exams for the A&P license.

To earn the A&P license, students must pass three examinations: one written, one oral, and one practical, administered by the FAA. Currently, these exams may be taken at the UDC airport facility.

## Aviation Maintenance Technology (AVMT)

In conjunction with the Certificate Program, a student may take 32 additional credits of instruction and earn an Associate of Applied Science (AAS) in Aviation Maintenance Technology. These additional courses are general education subjects such as math, English, physics, geography, graphics, and computer programming, and they are taught on UDC's main campus. See the course calendar at the end of this package for a listing of these courses.

### A.A.S. Degree in Aviation Maintenance Technology
### Total Credit Hours: 70

| | | |
|---|---|---|
| **First Semester** | | |
| FSEM 101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| MATH 113C | Pre-Calculus with Trig I | 3 |
| AVMT 121C* | Aviation Maintenance Fundamentals | 6 |
| AVMT 122C* | Aviation Mat. & Standards | 6 |
| | **Total Credit Hours** | **17** |
| **Second Semester** | | |
| IGED 111C | Foundation Writing II | 3 |
| MATH 114C | Pre-Calculus with Trig II | 3 |
| AVMT 124C* | Aircraft Metallic Structures | 6 |
| AVMT 125C* | Aircraft Systems and Components | 6 |
| IGED 250C | Discovery Technology | 3 |
| | **Total Credit Hours** | **19** |
| **Third Semester** | | |
| AVMT 211C* | Aircraft Electrical & Electronic Syst. | 6 |
| AVMT 212C* | Aircraft Turbine Engine Theory & Overhaul | 6 |
| PHYS 101C | Intro to College Physics Lec. | 3 |
| PHYS 103C | Intro to College Physics Lab | 1 |
| GEOG 104C | World Physical Geography | 3 |
| | **Total Credit Hours** | **17** |
| **Fourth Semester** | | |
| AVMT 214C* | Reciprocating Engine Theory & Overhaul | 6 |
| AVMT 215C* | Aircraft Engine Systems & Comp. | 6 |
| AETC 205C | Introduction to CAD | 3 |
| PHYS 102C | Intro to College Physics II Lec. | 3 |
| PHYS 104C | Intro to College Physics II Lab | 1 |
| | **Total Credit Hours** | **17** |

**Special Notations:** English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Placement Test. The eight classes with asterisks are the only ones required for the A&P Certificate program (40 credit total). They are taught at the Washington Reagan National Airport, Hangar #2.

## AVIATION MAINTENANCE COURSES (AVMT)

**MATH 113C Pre-Calculus I (3)**
Designed primarily for students preparing to take calculus, this course examines algebraic notation and symbolism, exponents and radicals, algebraic functions, solutions of

linear and quadratic equations and inequalities, relations and functions, rational functions and their graphs, conic sections, exponential and logarithmic functions and the appropriate graphs. Lec. 3 hrs., Prereq: 105C. Important note: credit will be given for only one of the following courses: MATH 112C, MATH 114C, or MATH 115C.

**AVMT 121C Aviation Maintenance Fundamentals (6)**
Introduces basic aircraft terminology and related federal aviation regulations, which include mechanic privileges, limitations, maintenance publications, forms and records, standard FAA aircraft, and repair and alteration drawings documentation. Examines the tasks required for aircraft ground handling, taxiing, and servicing. Also includes units on aircraft construction, nomenclature, data systems, basic aero-dynamics, and practical sciences applicable to the theory of flight of fixed and rotary wing aircraft. Lecture 5 hrs Practicum 12.5 hrs.

**AVMT 122C Aircraft Materials and Processes (6)**
Examines the design characteristics, material characteristics, typical construction, and the maintenance and repair of non-metallic airframe components and structures. Provides hands-on experience with fabric covering, wood structures, finishes, and current techniques involving fiberglass, Kevlar, and graphite composites used as a primary structure on today's aircraft. Lecture 5 hrs Practicum 12.5 hrs.

**MATH 114C Pre-Calculus II (4)**
Examines trigonometric functions, identities, and the appropriate applications. Also explores the solution of trigonometric equations, systems of equations and inequalities, operations with complex numbers, polynomials, and mathematical induction. Lec. 3 hrs. Prereq: MATH 113C.

**AVMT 124C Aircraft Metallic Structures (6)**
Examines the design characteristics, materials, typical construction, and maintenance of metallic airframe structures, including monocoque, semimonocoque, tubular truss, and metallic honeycomb structures. Emphasizes maintenance and repair of these structures, along with the use of FAA-approved and/or accepted repair data typical riveted and welded repairs.
Includes a welding repair laboratory using oxyacetylene and inert gas welding practices. Introduces aircraft ice and rain control and aircraft fuel systems. Lecture 5 hrs Practicum 12.5 hrs.

**AVMT 125C Aircraft Systems and Components (6)**
Examines the following aircraft systems: landing gear, wheels, tires, brakes, hydraulics, fuel systems, cabin atmospheric control, and ice and rain control. Students are required to perform a 100-hour conformity inspection on a particular aircraft. Lecture 5 hrs Practicum 12.5 hrs.

**GEOG 104C World Physical Geography (3)**
Presents a spatial systematic view of the earth and relates certain selected physical phenomena to the human-nature complex of the earth. These relation-ships emphasize the roles of the physical elements in man's environment.
Topics include; geographic tools, earth-sun relationships, atmosphere, lithosphere, hydro-sphere, and biosphere.

**AVMT 211C Aircraft Electrical & Electronic Syst. (6)**
Explores the fundamentals of direct current and alternating current; analyzes series, parallel, and series parallel circuits using Ohm's Law. Reading and interpreting electrical diagrams and troubleshooting electrical systems using the appropriate test equipment will be emphasized. Electrical system components will be examined and repaired by the students. Alternating current and transformer circuits with resistive, inductive and capacitive components will be maintained. Teaches inspection and repair of electrical systems for aircraft engine, navigation, and communication systems.

**AVMT 212C Turbine Engine Theory and Overhaul (6)**
Introduces aircraft reciprocating engine design and principles of operation. Develops into design characteristics and variables affecting engine power output. Provides practical training in engine inspection, overhaul, repair, run-up, and fault diagnosis. Examines engine lubrication, oil system configuration, oil analysis, and oil system fault isolation. Lecture 5 hrs Practicum 12.5 hrs.

**AVMT 214C Reciprocating Engine Theory and Overhaul (6)**
There are 4FAA approved subjects in this course: Reciprocating Engines, Engine Inspection, Reciprocating Engine Ignition & Starting Systems and Engine Fire Protection Systems. Students will develop an understanding of aircraft reciprocating engine operation and theoretical principles. Students will perform engine displacement calculations, and power measurements. Overhaul practices, including operational troubleshooting operations will be demonstrated and performed. Students will perform engine removal, inspection, repairs as necessary and engine reinstallation. Students will receive basic knowledge and hands-on in magneto inspection, testing, repair, overhaul and timing, as well as the various fire detection and fire protection system inspections, checks, servicing, troubleshooting and repair methods.

**AVMT 215C Aircraft Engine Systems and Components (6)**

Introduces the following engine systems: engine fuel systems, fuel metering, induction systems, engine codlings, exhaust systems, and propeller systems. Requires the student to perform a 100-hours conformity inspection on an aircraft engine. Lecture 5 hrs Practicum 12.5 hrs.

**AETC 205C Introduction to CADD Construction Documents (3)**
Introduces the student to the general use of the computer as a design and production tool. The use of Computer-Aided Design Drafting (CADD) programs as a drawing and specification tool in office production and management will be studied. The course will further reinforce the construction document production techniques and principles learned in previous technical courses. Lec. 2 hrs. Prac. 3 hrs.

## Computer Science Technology (AAS)

The Associate of Applied Science in Computer Science Technology is a 2-year associate's degree that prepares graduates to work directly in the field of computer programming or to transfer to a related 4-year degree program. Students are trained in the logic of problem solving, and are equipped to write computer programs in modern languages such as C++ and Java. Graduates of the program may go on to pursue certification in C++ or Java languages. **On completion of this program, students will be able to:**

- Apply logical skills and mathematical knowledge to analyze the problem, develop, and implement the general solution (algorithm) to the problems in computer science discipline.
- Articulate oral and written skills necessary to communicate technical information to those outside of computing field.
- Demonstrate an understanding of professional, ethical, and legal issues as they relate to computer science technology.
- Identify, formulate, and solve problems related to software engineering.
- Demonstrate knowledge of contemporary and emerging issues in computer science.
- Utilize the techniques, skills, and tools of the profession.
- Recognize the importance of identifying problem specifications and requirements from customers.
- Develop, test, and verify software solutions using different design methodologies and programming languages.

### A.A.S. Degree in Computer Science Technology
### Total Credit Hours: 61-62

| | | | |
|---|---|---|---|
| **First Semester** | | | |
| FSEM | 101C | First Year Seminar | 1 |
| IGED | 110C | Foundation Writing I | 3 |
| MATH | 113C | Pre-Calculus w/Trigonometry I | 3 |
| IGED | 250C | Discovery Technology | 3 |
| APCT | 115C | Computing Foundations | 3 |
| PHIL | 105C | Introduction to Logic | 3 |
| | | **Total Credit Hours** | **16** |
| **Second Semester** | | | |
| IGED | 111C | Foundation Writing II | 3 |
| MATH | 114C | Pre-Calculus w/Trigonometry II | 3 |
| APCT | 110C | Intro to Programming Lec | 2 |
| APCT | 111C | Intro to Programming Lab | 1 |
| | | Options Elective | 3 |
| | | Options Elective | 3 |
| | | **Total Credit Hours** | **15** |
| **Third Semester** | | | |
| APCT | 231C | Computer Science I Lec | 3 |
| APCT | 233C | Computer Science I Lab | 1 |
| PHYS | 101C | Intro to College Physics I Lec | 3 |
| PHYS | 103C | Intro to College Physics I Lab | 1 |
| | | Elective: Computer Science/Math* | 4 |
| | | Options Electives** | 3 |
| | | **Total Credit Hours** | **15** |
| **Fourth Semester** | | | |
| CMOP | 184C | Applied Operating Systems | 3 |
| APCT | 232C | Computer Science II (Lec) | 3 |
| APCT | 234C | Computer Science II (Lab) | 1 |
| | | CS Elective** | 3 |
| | | CS/Math Elective** | 4 |
| | | **Total Credit Hours** | **14** |

**Special Notations:**
*Also includes courses in Graphic Design and Desktop Publishing
**Software and Program Option: Electives from advanced programming, systems, or software applications courses

**Computer Network Option: Electives from computer network courses, such as courses applicable to MCSE or CCNA certification

English and Mathematics courses may require prerequisites depending upon results of ACCUPLACER Test.

## COMPUTER SCIENCE TECHNOLOGY COURSES

**APCT 105C Introduction to Applications of Computer Laboratory (1)** Laboratory associated with 4528 104, Lab. 2 hrs.

**APCT 110C Intro to Programming Lecture (2)**
Discusses development of algorithms to solve scientific and commercial problems; use of counting, loops, and termination techniques; array structures; top-down design; standard and structured flowcharting of algorithms using conventional symbols. Lec. 2 hrs.

**APCT 111C Intro to Programming Lab (1)**
Laboratory associated with 4528 110, Lab 2 hrs.

**PHIL 105C Introduction to Logic (3)**
Discusses the principles of correct reasoning, with emphasis on acquisition and strengthening of basic skills, such as recognizing arguments and analyzing them into their parts; distinguishing between inductive and deductive arguments; distinguishing between deductively valid and invalid arguments, and recognizing informal fallacies.

**APCT 231C Computer Science I Lecture (3)**
Examines algorithm and program development using a higher-level programming language, such as C++.
Explores use of control structures, functions, and arrays. Introduces objects. Lec. 3 hrs.

**APCT 233C Computer Science I Laboratory (1)**
Must be taken concurrently with 4 528 231, Lab 3 hrs.

**APCT 115C Foundations of Computing (3)**
Introduces applied concepts of iteration, induction, and recursion, functions and relations, propositional logic and predicate logic, graph and tree data structures, Boolean and computer logic, finite state machines, and algorithmic problem solving. Lec. 3 hrs.

**APCT 232C Computer Science II Lecture (3)**
Introduces data abstraction and objects, recursion, sorting algorithms and data structures, including stacks, queues, linked lists, and trees. Lec. 3 hrs.

**APCT 234C Computer Science II Lab (1)**
Must be taken concurrently with 4528 232, Lab 3 hrs.

## Construction Management (AAS)**

The Construction Management AAS program serves as a model for the emerging field of green construction training and prepares students for entry-level construction jobs such as:

- Engineering Aide
- Assistant Construction Manager
- Estimator
- Scheduler
- Small Construction Company Owner

****Program is not currently accepting applications.** The program consists of 65 semester credits—23 are general education and required courses, 39 credits are construction management courses, and 3 are for an elective. Full-time students can complete the program in two years.
Students will be taught using laboratory instruction, classroom instruction, and field trips to construction sites.

### A.A.S. Degree in Construction Management
### Total Credit Hours: 65

| **First Semester** | | |
|---|---|---|
| **Course#** | **Course Title** | **Credits** |
| FSEM 101C | First Year Seminar | 1 |
| IGED 110 | Foundation Writing I | 3 |
| MATH 113C | Pre-Calculus with Trig. I | 3 |
| CMTC 101C | Intro Construction Management | 3 |
| CMTC 121C | Construction Field Operations (Lec/Lab) | 3 |
| CMTC 103C | Construction Documents / Blueprint Reading & Specs. | 3 |
| | **Total Credit Hours:** | **16** |
| | **Second Semester** | |
| IGED 111 | Foundation Writing II | 3 |
| PHYS 101/103C | Intro to College Physics Lec/Lab | 4 |
| CMTC 102C | Sustainable Construction Mgmt Practices | 3 |
| CMTC 112/113C | Surveying (Lec/Lab) | 3 |
| CMTC 114C | Materials & Methods of Construction I | 3 |
| | **Total Credit Hours:** | **16** |
| | **Summer Session** | |
| CMTC 001C | Construction Management Internship | 1 |
| | **Third Semester** | |
| CMTC 201C | Construction Law & Contracts | 3 |
| CMTC 211C | Site Planning (for CM majors) | 3 |
| CMTC 224C | Cost Estimating I | 3 |
| OADM 208C | Business Communications | 3 |

| | | |
|---|---|---|
| CMTC 205C/106C | Intro to Computer Tech I (AUTO CADD) or II (REVIT) | 3 |
| TBD | Social Science Elective | 3 |
| | **Total Credit Hours:** | **18** |
| | **Fourth Semester** | |
| CMTC 202C | Construction Methodology | 3 |
| CMTC 235C | Planning and Scheduling | 3 |
| CMTC 206C | Cost Estimating II | 3 |
| CMTC 246C | Construction Safety Mgmnt. | 3 |
| CMTC 244C | Environmental Systems | 3 |
| | **Total Credit Hours:** | **15** |

**Special Notations:** English and Mathematics courses may require prerequisites depending upon results of the ACCUPLACER

## CONSTRUCTION MNGMT COURSES

**MATH 113C Pre-Calculus I (3)**
Designed primarily for students preparing to take calculus, this course examines algebraic notation and symbolism, exponents and radicals, algebraic functions, solutions of linear and quadratic equations and inequalities, relations and functions, rational functions and their graphs, conic sections, exponential and logarithmic functions and the appropriate graphs. Lec. 3 hrs., Prereq: 105C. Important note: credit will be given for only one of the following courses: MATH 112C, MATH 114C, or MATH 115C.

**AETC 101C Architectural Drawing and Design I (3)**
Parallel development of mechanical drawing, basic model making, and simple 3-D computer aided designs are taught as it facilitates their integration as is common in an architectural office.
Spatial visualization exercises in point, line, plane in orthographic, isometric drawings, reinforces descriptive geometry as a means to 3 dimensional perceptions critical to technical and design drawing skills. Lec. 2 Hrs. Prac. 3 Hrs.

**MATH 114C Pre-Calculus II (4)**
Examines trigonometric functions, identities, and the appropriate applications. Also explores the solution of trigonometric equations, systems of equations and inequalities, operations with complex numbers, polynomials, and mathematical induction. Lec. 3 hrs. Prereq: MATH 113C.

**CMTC 114C Materials and Methods of Constr. I (3)**
Familiarizes the students with the basic properties of wood, masonry, metals, cementitious materials, and their common uses. The students acquire an elementary understanding of primary construction problems, solution, and vocabulary related to these materials. Lec. 2 Hrs., Prac. 3 Hrs.

**AETC 206C CAD Documents, Specification Writing and Estimating (3)**
Explores the general use of Computer Aided Design Drafting (CADD) programs as a drawing and production tool for data and information coordination and communication. Emphasizes the drawing's relationship to the development of written specification and construction cost estimation. Lec, 2 Hrs., Lab 3 Hrs.

**PHYS 101C Introduction to College Physics I (3)**
Introduces laws of motion and the concept of energy, thermal and elastic properties of matter, and theories of waves and sound. Fulfills physics requirement for biology, premed, and other science majors. Includes one additional hour per week for problem solving. Lec 3 hrs.

**PHYS 103C Introduction to College Physics I Laboratory (1)**
Accompanies Introduction to College Physics I Lecture and must be taken concurrently with this lecture course. Lab 2 hrs. Laboratory section must correspond to the lecture section.

# Nursing, Allied Health, Life and Physical Sciences (NAHLPS)

## Mortuary Science (AAS)

The Community College offers an Associate of Applied Science degree in Mortuary Science. The Mortuary Science degree program at the University of the District of Columbia Community College is accredited by the American Board of Funeral Service Education (ABFSE), 992 Mantua Pike, Suite 108, Woodbury Heights, NJ 08097. (816) 233-3747. Web: http://www.abfse.org/

The Mortuary Science program's mission is to provide students with a comprehensive education in mortuary science and to prepare graduates to enter the funeral service profession to serve the diverse citizenry of the District of Columbia and society at large. It is designed to encompass the managerial and technical aspects of funeral service and its allied areas. It also provides the basis for further study in thanatology, pathology, grief counseling, post-mortem examination, and mortuary science. Careers in mortuary science include funeral director, embalmer, autopsy technician, and funeral merchandise marketing. To be admitted to the Mortuary Science AAS degree program, students must fill out a separate program-based application form, passed the prerequisite courses with a C grade or higher, have a prerequisite GPA of 2.75 and meet all program admission requirements as specified in the application packet available on the website: https://www.udc.edu/cc/programs-majors/mortuary-science-aas/

The UDC-CC program outcomes are posted on the American Board of Funeral Service Education (ABFSE) website: https://www.abfse.org/html/dir-dc.html.

### A.A.S. Degree in Mortuary Science
### Total Credit Hours: 70

| Prerequisite Mortuary Science Program Coursework | | |
|---|---|---|
| Course# | Course Title | Credits |
| FSEM 101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing I | 3 |
| IGED 120C | Found. Quantitative Reasoning | 3 |
| BIOL 111C | Anat. & Phys. I – Lecture | 3 |
| BIOL 113C | Anat. & Phys. I - Lab | 1 |
| IGED 250C | Effective Use of Technology | 3 |
| IGED 111C | Foundation Writing II | 3 |
| IGED 220C | Discovery Quan. Reasoning | 3 |
| CHEM 105C | Fundamentals Chemistry – Lec. | 3 |
| CHEM 106C | Fundamentals Chemistry – Lab | 1 |
| MSTC 104C | Funeral Service Orientation | 3 |
| | **Total Credit Hours** | **27** |
| **Mortuary Science Program Courses** | | |
| **Fall Semester** | | |
| MSTC 105C | Descrip. Path. & Micro. | 3 |
| MSTC 135C | Funeral Service Law | 3 |
| MSTC 124C | Theo of Embalm & Dispo. | 3 |
| ACCT 201C | Principles of Accounting I | 3 |
| | **Total Credit Hours** | **12** |
| **Spring Semester** | | |
| MSTC 220C | Embalm & Dispo. I – Lec. | 3 |
| MSTC 223C | Embalm & Dispo. I – Lab | 1 |
| MSTC 131C | Restorative Art I – Lecture | 3 |
| MSTC 155C | Small Bus. Mgmt. for FS | 3 |
| MSTC 205C | FS Mgmt. & Prin. – Lec. | 3 |
| | **Total Credit Hours** | **13** |
| **Fall Semester** | | |
| MSTC 213C | Restorative Art II – Lecture | 3 |
| MSTC 214C | Restorative Art II – Lab | 1 |
| MSTC 230C | Embalm & Dispo. II – Lec. | 3 |
| MSTC 232C | Embalm & Dispo. II – Lab | 1 |
| MSTC 254C | Psychology of Grief | 3 |
| | **Total Credit Hours** | **11** |
| **Spring Semester** | | |
| MSTC 206C | Funeral Service Management and Principles Practicum | 3 |
| MSTC 107C | History and Sociology of Funeral Service | 3 |
| MSTC 294C | National Board Seminar | 1 |
| | **Total Credit Hours** | **7** |

## MORTUARY SCIENCE COURSES

**MSTC-104C Funeral Service Orientation (3)**
This course examines the inception of the funeral service, its organizational structure, and its avenues of expansion. In addition, the orientation course analyzes trends and traditions in modern funeral services. Non-Mortuary Science students who register for this courses are invited to gain exposure to the funeral service industry.

**MSTC-105C**
**Descriptive Pathology & Microbiology (3)**
This course studies: medical terminology; various types of communicable diseases and how they may be isolated; the nature and causes of diseases; disturbances in circulation; neoplasia; cysts; forensic pathology; and the diseases of the blood and body systems. The students are also introduced to the structure, function and pathogenic nature of various microorganisms as they relate to infection, body resistance and diagnostic testing in mortuary science. Pre-req.: Mortuary Science Program Admission

**MSTC-107C**
**History and Sociology of Funeral Service (3)**
This course discusses the history of funeral service with emphasis on ethnic groups that have influenced contemporary funeral principles and practices. Also explores the social phenomena that affect all elements of funeral service. Pre-req: Mortuary Science Program Admission

**MSTC-124C**
**Theories of Embalming and Disposition (3)**
This course analyzes the objectives of embalming, disposition, signs and tests for death, post mortem changes of the body, pre-embalming techniques, and embalming practices from 4,000 B.C. to present. Pre-req.: Mortuary Science Program Admission

**MSTC-131C Restorative Art I (3)**
This course provides an introduction to the surface bones of the cranium as well as the structures of the ear, nose, mouth, and eyes. With this background information, students will learn the modeling techniques of the face with emphasis on head shapes, facial profiles, and physiognomy. Pre-req.: MSTC-105C

**MSTC-135C Funeral Service Law (3)**
The funeral service law course examines: the sources of mortuary law; the legal status of a dead human body; the rights and duties of disposal; and the rights of parties obligated for disposal of human remains. This course also explores the rights and duties of the mortician, their liability for funeral expenses, and the laws governing interment and disinterment. Pre-req.: Mortuary Science Program Admission

**MSTC-155C**
**Small Business Mgmt. for Funeral Services (3)**
This course analyzes small business management including: the role of small businesses in the United States; problems and risks of business ownership; buying an existing business; starting a new business; and marketing. Legal forms of business ownership, contract law, Uniform Commercial Code, laws governing negotiable instruments, and funeral service software applications will also be introduced. Pre-req.: ACCT-201C & Mortuary Science Program Admission

**MSTC-205C**
**Funeral Service Mgmt. and Principles – Lec. (3)**
This course concentrates on the study of caskets and their construction, merchandising, shipping of remains, cemeteries and mausoleums; clergy – funeral director relations, cremation history and all aspects of cremations. Pre-req.: ACCT-201C & Mortuary Science Program Admission

**MSTC-206C**
**Funeral Service Mgmt. & Principles – Pract. (3)**
This course provides field experience in the technical and administrative aspects of the funeral service profession. This course also explores techniques for implementing and directing funerals according to customers' sociological, theological, and psychological needs. Pre-req.: MSTC-205C

**MSTC-213C Restorative Art II - Lecture (3)**
This course explores color theory with emphasis on cosmetology/cosmetics and provides an examination on special restorative art treatment such as abrasions, lacerations, discoloration. Pre-req.: MSTC-131C. Co-req.: MSTC-214C

**MSTC-214C Restorative Art II - Lab. (1)**
This course provides practical instruction in restoration techniques regarding correct form, contour, color and shape. Pre-req.: MSTC-131C. Co-req.: MSTC-213C

**MSTC-220C Embalming & Disposition Principles I – Lec. (3)**
This course examines the theory and application of the instruments, accessories, and materials necessary for embalming and disposition, including chemical embalming solutions and dilutions. It provides the methods for case analysis, body positioning, posing of features, selecting and raising arteries, and injection using drainage types, as well as an examination of anatomical classification and linear guides. Pre-req.: MSTC-124C Co-req.: MSTC-223C

**MSTC-223C**
**Embalming & Disposition Principles I – Lab (1)**
A study of the process of chemically treating the dead human body to reduce the presence and growth of microorganisms; to temporarily inhibit organic decomposition; and to restore an acceptable physical appearance. The subject includes the study of the phenomenon of death in the human body, government regulations applicable to the embalming process, embalming analysis and reports, and instrumentation. Pre-req.: MSTC-124C Co-req.: MSTC-220C

**MSTC-230C**
**Embalming & Disposition Principles II – Lec. (3)**
This course is a study of the embalming process which is based upon the circulatory system, the muscular system, and the basic principles of chemistry as it relates to disinfection, sanitation, and preservation of human remains.
The course also includes OSHA requirements, case analysis, embalming procedures, special cases, and post-embalming care. Pre-req.: MSTC-220C; Co-req.: MSTC-232C

**MSTC-232C**
**Embalming & Disposition Principles II – Lab (1)**
This laboratory course continues the study of the embalming of human remains, the theory of embalming practices, and laboratory management from previous embalming courses with summative analysis. Pre-req: MSTC 223C; Co-req.: MSTC-230C

**MSTC 254C Psychology of Grief (3)**
This course examines the role of the funeral director in grief counseling, immortality, and dying and death, with discussions on normal and abnormal grief reactions including the concepts of "grief work" and the impact of death on the bereaved. Pre-req.: MSTC 135C; MSTC-124C; MSTC-131C; and MSTC-155C

**MSTC 294C National Board Seminar (1)**
This course provides a methodical review of all areas of funeral service with emphasis on specific competencies in preparation for the National Board Examination as well as state licensure examinations. Pre-req.: MSTC 135C and Approval of Program Director.

## Nursing (AASN)

The Community College offers a nursing curriculum that reflects high standards of professional practice and incorporates guidelines from practice trends, professional organizations, and accrediting agencies. The Associate of Applied Science in Nursing (AASN) Program is accredited by the Accreditation Commission for Education in Nursing (ACEN) 3343 Peachtree Road NE, Suite 850, Atlanta, GA

30326, (404) 975-5000 and approved by the District of Columbia Board of Nursing (899 North Capitol Street NE 2nd Fl, Washington, DC. 20002, 202.724.8800, ). Students completing the AASN program can sit for the National Council Licensure Examination for Registered Nurses (NCLEX-RN®). For information on the DC Board of Nursing, please visit: https://dchealth.dc.gov/bon. For information on ACEN accreditation, please visit: http://www.acenursing.us/accreditedprograms/programSearch.htm.

Students develop the knowledge base and clinical competencies required to meet the health care needs of clients across the health continuums. Nurses care for clients along the age and health-care continuums—from premature infants to the aged in critical care, acute care, long-term care, rehabilitation, and home care settings.

**Admission:** All pre-nursing courses identified under the General Education & Science Requirements must be completed with a grade point average of 3.0 or higher. General Education Requirements of the 15 credit hours must be completed before enrollment into Clinical courses. Once admitted into the nursing program, all nursing students must maintain a grade point average of 2.8 or higher.

All Clinical courses have a theory component and a practicum. There is only one grade given for the course. The student is required to attend the theory class, lab, and the assigned practicum.

Students apply for admission to nursing on or before the third Friday in September for spring semester or the third Friday in January for fall semester admission to Clinical Nursing courses. Basic requirements for admission to the nursing program are: course grades of "C" or better; science courses no older than five years; cumulative UDC grade point average of 3.0. or better; and a National Criminal Background Clearance. Application submission does not guarantee admission to the nursing program**.**

General Education Requirements: All pre-nursing courses listed below must be completed with grade point average of 3.0 or better. General Education Requirements must be completed before making application to the nursing program.

| General Education and Science Requirements | | |
|---|---|---|
| IGED-120C | Foundation Quantitative Reasoning | 3 |
| IGED-110C | Foundation Writing I | 3 |
| BIOL-111C | Anatomy and Physiology I -Lecture | 3 |
| BIOL-113C | Anatomy and Physiology I –Lab | 1 |
| BIOL-112C | Anatomy and Physiology II Lecture | 3 |
| BIOL-114C | Anatomy and Physiology II Lab | 1 |
| FSEM-101C | Freshman Seminar (Nursing) | 1 |
| **Total Gen-Ed and Science Total Credits** | | **15** |

| First Semester | | |
|---|---|---|
| **Course #** | Course Title | Credits |
| BIOL 245C | Clinical Microbiology Lec | 3 |
| BIOL 244C | Clinical Microbiology Lab | 1 |
| IGED 111C | Foundation Writing II | 3 |
| PYSC 201C | Principles of Psychology | 3 |
| *NURS 115C | Foundations of Nursing/Practicum | 5 |
| **Total First Semester Requirements (AASN)** | | **15** |

| Second Semester | | |
|---|---|---|
| **Course #** | Course Title | Credits |
| NURS 130C | Mental Health Nursing Theory/Practicum | 4 |
| NURS 131C | Common Concepts of Adults I Theory/Practicum | 5 |
| NURS 132C | Common Concepts of Adults I Simulation Lab | 1 |
| URST-105C | Introduction to Social Science | 3 |
| **Total Second Semester Requirements** | | **13** |

*All 100 level nursing coursed must be completed before matriculation the 200 level. A student with less than a "C" and/or 2.8 GPA will not be permitted to move to a 200 level course under any circumstances.*

| Third Semester | | |
|---|---|---|
| **Course #** | Course Title | Credits |
| NURS 205C | Nursing Pharmacology Theory/Practicum | 3 |
| NURS 228C | Maternal Newborn Nursing Theory/Practicum | 5 |
| NURS 229C | Nursing Care of Child Theory/Practicum | 5 |
| **Total Third Semester Requirements** | | **13** |

| Fourth Semester | | |
|---|---|---|
| **Course #** | Course Title | Credits |
| NURS 231C | Complex Concepts of Adults II Theory/Practicum | 8 |
| NURS 232C | Complex Concepts of Adults II Simulation Lab | 1 |
| NURS 290C | Nursing Seminar, AAS | 2 |
| **Total Fourth Semester Requirements** | | **11** |

| **Total Credits Hours (AASN)** | **67** |
|---|---|

*Disclaimer: The Program of Study is subject to change. Please visit either the UDC website or the Director of Nursing at the Community College for any updates to the Program of Study.*

## COURSE DESCRIPTIONS: ASSOCIATE OF APPLIED SCIENCE DEGREE IN NURSING

**BIOL-111C Fundamentals of Human Anatomy and Physiology I (3)**
Focuses on the human body as it relates to function, organization, and interrelationship of body structures as they form an integrated functional organism. Co-requisites: BIOL-113C

**BIOL-113C Fundamentals of Human Anatomy and Physiology I Laboratory (1)**
Examines the cellular, tissue, and organ levels of the organization of the human body and how these units coordinate activities and function in the living organism. Co-requisites: BIOL- 111C

**BIOL-112C Fundamentals of Human Anatomy and Physiology II (3)**
Details a continuation of Fundamentals of Human Anatomy and Physiology I. Emphasizes body systems and how they contribute to homeostasis. Prerequisites: BIOL-111C and BIOL-113C. Co-requisites: BIOL-114C

**BIOL-114C Fundamentals of Human Anatomy and Physiology II Laboratory (1)**
Focuses on detailed examination of the structure and function of the body systems with emphasis on balanced coordination of the living organism. Prerequisites: BIOL-111C and BIOL-113C Co-requisites: BIOL-112C

**PSYC-201C Principles of Psychology I (3)**
Introduces students to the history, methods, major theoretical viewpoints, and concepts of scientific psychology. Provides non-majors with an overview of the field of psychology; majors gain a foundation for further study.

**URST-105 Introduction to Social Science (3)**
Introduces students to the broad scope of the social sciences. Focuses on how historical and cross-cultural forms of social organization evolve. Emphasizes an interdisciplinary approach to major theoretical and methodological perspectives used in the social sciences.

**BIOL-245C Clinical Microbiology (3)**
Emphasizes the structure, function, and pathogenic nature of various microorganisms as they relate to infection, body resistance, and diagnostic testing.. Prerequisites: BIOL 111C and BIOL 113C or BIOL 101C and BIOL 103C. Co-requisites:BIOL-244C

**BIOL-244C Clinical Microbiology Laboratory (1)**
Focuses on exercises that involve the use of microbiological techniques in culturing select groups of microorganisms.. Prerequisites: BIOL 111C and BIOL 113C or BIOL 101C and BIOL 103C. Co-requisites: BIOL-245C.

**NURS-115C Foundations of Nursing Theory/Practicum (5)**
Introduces basic concepts related to health, health care, professional nursing identification and practices. Covers basic concepts and underlying scientific principles related to: (1) Professional Nursing and Health Care Concepts (ex. Professionalism, ethics, health education and health promotion, communication, safety; (2) Patient profile concepts (ex. Functional ability, culture and diversity); (3) Health and illness concepts (ex. Nutrition, elimination, pharmacology, fluid electrolyte balance, gas exchange; (4) Resilience (ex. Stress and coping and violence). Introduces the nursing process in the clinical component and applies in care facility: emphasis on assessment and basic nursing and health technologies. Prerequisites: BIOL-111C, BIOL-113C, IGED-110C, URST-105C.

**NURS-130C Mental Health Nursing Theory/Practicum (4)**
Focuses on the application of the nursing process in the care of adults with selected behavioral health disorders. Examines cognitive functioning, resilience, stress and coping as well as common disorders (ex. Mood disorders, addiction, psychosis). Stresses use of scientific rationales and evidence-based resources to understand disorders and interventions. Use of nursing process emphasizes assessment, planning and implementation to support critical thinking and clinical judgement skills. Prerequisites: BIOL-111C, BIOL-112C, BIOL-113C, BIOL-114C, IGED 120C, IGED-111C,, URST-105C, PSYC-201C, NURS-115C Co-requisites: NURS-131C, NURS-132C.

**NURS-131C Common Concepts of Adults I Theory/Practicum (5)**
The course focuses on concepts relating to nursing care of the adult client in the acute care setting with commonly occurring health problems. Emphasis of this course is on the use of the nursing process, development of concept maps, and application of knowledge of prior theoretical course concepts to health care issues. The student develops competence in providing and coordination nursing care. The course enhances analysis and integration of all prior theoretical course concepts to address beginning health care for adults with non-complex issues. Prerequisites: BIOL-111C, BIOL-112C, BIOL-113C, BIOL-114C, IGED 120C, IGED-110C, URST-105C, and PSYC-201C, NURS-115C Co-requisites: NURS-130C and NURS-132C.

**NURS-132C Common Concepts of Adults I Simulation Lab (1)**
This lab course is designed to assist the student to guided practice exercises of critical thinking and decision-making skills. Through the use of high-fidelity simulators, computer software, and case studies. Students will conduct assessment, development of care plans, and application of knowledge of prior theoretical course concepts to a healthcare/clinical issue. The course enhances analysis and integration of all prior theoretical course concepts to address beginning healthcare for adults with non-complex issues. Prerequisites: BIOL-111C, BIOL-112C, BIOL-113C, BIOL-114C, IGED 120C, ENG-112C, URST-105C, PSYC-201C, NURS-115C. Co-requisites: NURS-130C and NURS-131C.

**NURS-205C Nursing Pharmacology Theory (3)**
This basic nursing pharmacology course presents concepts in the pharmacodynamics of the drugs and their relation to the care of clients. Basic principles of safety as it relates to the administration of medications and mathematical dosage calculation will be included. The course also addresses principle of personal preference adherence, health promotion and health education. Prerequisites: BIOL-111C, BIOL-112C, BIOL-113C, BIOL-114C, BIOL-244C, BIOL-245C, IGED 120C, IGED-111C,, URST-105C, PSYC-201C, NURS-115C, NURS-130C, and NURS-131C Co-requisites: NURS-228C and NURS-229C.

**NURS-228C Maternal-Newborn Nursing Theory/Practicum (5)**
Focuses on the trends, issues, childbearing, universal developmental, health deviations, family dynamics, and self-care requisites related to maternity nursing. Emphasis is placed on the development of clinical judgment that reflects critical thinking, use of evidence-based resources, the nursing process, collaboration, and communication. In the practicum component of this course the student is provided the opportunity to use the nursing process in the promotion and maintenance of optimal family health within the maternity and neonatal setting. Prerequisites: BIOL-111C, BIOL-112C, BIOL-113C, BIOL-114C, BIOL-244C, BIOL-245C, IGED 120C, IGED-111C,, URST-105C, PSYC-201C, NURS-115C, NURS-130C and NURS-131C Co-requisites: NURS-229C and NURS-205C.

**NURS-229C Nursing Care of Child Theory/Practicum (5)**
Focuses on the theoretical foundations of pediatric nursing. Emphasizes critical thinking, therapeutic interventions the and communication. In the practicum component of this course, provides the student the opportunity to use the nursing process in health promotion and illness care of children and their families through adolescence in the pediatric setting. Prerequisites: BIOL-111C, BIOL-112C, BIOL113C, BIOL-114C, BIOL-244C, BIOL-245C, IGED 120C IGED-111C,, URST-105C, PSYC-201C, NURS-115C, NURS-130C, .NURS131C Co-requisites: NURS-228 and NURS-205C

**NURS-231C Complex Concepts of Adults II Theory/Practicum (8)**
This course focuses on the application of knowledge and skills to the care of adult patients in acute care environments, experiencing needs resulting from complex multisystem disruptions. Students apply the use of critical thinking, therapeutic interventions, nursing process, and evidence-based practice to achieve best outcomes. Emphasis is placed on prioritization of care through interdisciplinary collaboration with other members of the healthcare team, patients, and their families. The course enhances analysis and integration of all prior theoretical course concepts to address advanced and complex health care issues for adults. Prerequisites: BIOL111C, BIOL-112C, BIOL-113C, BIOL- 114C, BIOL244C, BIOL-245C, IGED 120C, IGED-111C, URST-105C, PSYC-201C, NURS-115C, NURS130C, NURS131C NURS-228C, NURS-229C, NURS-205C Co-requisites: NURS-232C and NURS-290C.

**NURS-232C Complex Concepts of Adults Simulation Lab (1)**
This lab course is designed to give students advanced and complex guided practice exercises to build critical thinking and decision-making skills. Through the use of high-fidelity simulators, computer software and case studies to conduct advanced health assessment, development care plans, and application of knowledge of prior theoretical course concepts to complex healthcare/clinical issues. The course enhances analysis and integration of all prior theoretical course concepts to address advanced and complex health care issues for adults. Lab is for at least 3 hrs per week. Prerequisites: BIOL-111C, BIOL-112C, BIOL-113C,BIOL114C,BIOL-244C,BIOL-245C, IGED 120C, MATH102C, IGED-111C, URST-105C, PSYC-201C, NURS-115C, NURS-130C, NURS131C NURS-228C, NURS-229C, NURS-205C Co-requisites: NURS-231C and NURS-290C.

**NURS-290C Nursing Seminar, A.A.S. (2)**
Focuses on issues and concepts essential to attainment of professional identity and the role of the associate degree nurse in a variety of health care settings. Emphasizes the graduate's entry into a first level nursing position. Lec. 2 hrs. Prerequisites: BIOL-111C, BIOL-112C, BIOL113C, BIOL-114C, BIOL-244C, BIOL-245C IGED 120C, IGED 220C, ENG-112C, URST-105C, PSYC-201C, NURS-115C, NURS-130C, NURS131C NURS-228C, NURS-229C, and

NURS-205C. Co-requisites: NURS-231C and NURS-232C.

## Respiratory Therapy (AAS)

https://www.udc.edu/cc/programs-majors/respiratory-therapy-aas/

The AAS Degree in Respiratory Therapy reflects high standards of professional practice and incorporates guidelines from practice trends, professional organizations, and accrediting agencies. Students develop the knowledge base and clinical competencies required to meet the health care needs of patients with cardiopulmonary disorders. Respiratory Therapists treat patients along the age and health-care continuums—from premature infants to the aged in critical care, acute care, rehabilitation, and home care settings. The Respiratory Therapy program is accredited by the Commission on Accreditation for Respiratory Care (CoARC), 264 Precision Blvd. Telford, TN 37690. https://www.coarc.com/

**Admission**

Upon admission to UDC, students identifying Respiratory Therapy as a major must complete all prerequisite courses. A separate application is required to enroll in the Respiratory Therapy Program.

Admission to the Respiratory Therapy Program is competitive. To be considered for admission to the Respiratory Therapy Program, eligible students must first be enrolled at the University, complete prerequisites of 17 semester hours earning a minimum grade of "C" in each identified course, and have a cumulative grade point average (CGPA) of 2.5 or higher.

**Transfer students** must also demonstrate a 2.50 GPA or higher, and have their official transcript(s) evaluated by the University prior to their application to the program. The prerequisite courses are: College Math I (3), English Composition I (3), Anatomy and Physiology I Lecture and Lab (4), and Anatomy and Physiology II Lecture, Lab (4), Introduction to Health Science(2), and First-Year Sem. (1).

Applications are due on or before the first Friday in March for the Fall semester (all applicants must begin in the fall term). Application submission does not guarantee admission. The Respiratory Therapy, Admissions and Progression Committee review all applications and recommend students for admission. Students who are not accepted must reapply for consideration. Admitted students are subject to the program requirements, policies, and regulations as identified in the Respiratory Therapy Program Student Handbook in effect at the time they begin their respiratory therapy coursework.

**Readmission**

Students in the Respiratory Therapy Program who have not been enrolled in a sequential Respiratory Therapy course for one or more semesters must submit a letter requesting readmission. Students applying for readmission must have a GPA of 2.50 or higher and may be required to repeat some or all of the Respiratory Therapy courses previously completed.

Readmission to the program is contingent upon space availability, and acceptance by the Respiratory Therapy Admissions and Progression Committee. Readmitted students are subject to the program requirements, policies, and regulations as identified in the Respiratory Therapy Program Student Handbook in effect at the time of their return to the program.

**Progression and Academic Standing**

Students must achieve a grade of "C" or better in all courses identified in the program of study. Also, students must pass each Respiratory Therapy course in sequential order. Failure to pass any Respiratory Therapy course with a grade of "C" or better prevents the student from taking the next course in the sequence. Students may repeat a Respiratory Therapy course only once and may repeat no more than two Respiratory Therapy courses. Students progress to the senior year upon completion of the summer semester within the Respiratory Therapy Program.

**Program Graduation Requirement**

The Associate Degree requires 72 semester hours, the final 15 of which must be in residence at the University. Completion of all course identified in the Program of Study, within four (4) years of initial enrollment, with a minimum grade of "C" in each.

**Major (Respiratory Therapy) Requirement: Performance on Comprehensive Exit Examination**

As part of Respiratory Seminar I and II course requirements, students must achieve an passing score on the comprehensive exit examination in order to progress to the final semester and meet graduation requirement.

**Additional Requirements**

**Health Clearance**: Students are required to have physical examination every year prior to clinical placement, in addition to any additional immunizations required by the clinical agencies and DC Law.

**CPR Certification**: All students enrolled in clinical Respiratory Therapy are required to have and maintain current certification in cardiopulmonary resuscitation(CPR for Health Care Providers (card "C").

**Professional Liability Insurance**: Students are required to maintain professional liability insurance throughout their clinical enrollment. Insurance is purchased in the cashier's office (Bldg. 39, 2nd Floor).

**Criminal Background Check**: Students taking clinical/practicum courses may be required to provide a criminal background check by the hospital/agency.

**Class Attendance**: Students must attend all classes and laboratories. Clinical attendance in Respiratory Therapy is mandatory.

**Code of Ethics**: In addition to University policy, students are expected to follow the Code of Ethics as adopted by the American Association for Respiratory Care (AARC). http://www.aarc.org/wp-content/uploads/2017/03/statement-of-ethics.pdf
Students who violate the code could be dismissed from the Respiratory Therapy Program.

**Prerequisite Courses:**
IGED 120C Foundation Quantitative Reasoning (3),
IGED 110C Foundation Writing in the Arts & Humanities (3),
BIOL 111C/113C Anatomy and Physiology I Lecture and Lab (4),
BIOL 112C/114C Anatomy and Physiology II Lecture, Lab (4),
RSPT 170C Introduction to Health Science (2),
FSEM 101C First Year seminar (1).

| First Year-Fall Semester | | |
|---|---|---|
| Course# | Course Name | Credits |
| RSPT 171C | Principles and Practice of Respiratory Therapy I | 4 |
| RSPT 173C | Ventilation and Gas Exchange Physiology | 2 |
| CHEM 105C | Fundamentals of Chemistry – Lecture | 3 |
| CHEM 106C | Fundamentals of Chemistry – Lab | 1 |
| IGED 220C | Discovery Quantitative and Economic Reasoning | 3 |
| | **Total** | **13** |
| **First Year-Spring Semester** | | |
| RSPT 172C | Principles and Practice of Respiratory Therapy II | 4 |
| RSPT 274C | Acid-Base and Hemodynamic Physiology | 3 |
| RSPT 271C | Respiratory Therapy Pharmacology | 3 |
| IGED 111 | Foundation Writing II | 3 |
| | **Total** | **13** |
| **First Year- Summer Semester** | | |
| RSPT 250C | Introduction to Mechanical Ventilation | 3 |
| RSPT 269C | Neonatal/Pediatric Respiratory Therapy | 1 |
| | **Total** | **4** |
| **Second Year- Fall Semester** | | |
| RSPT 270C | Critical Care and Ventilator Management | 4 |
| RSPT 273C | Cardiopulmonary Diagnostics | 3 |
| RSPT 276C | Respiratory Disease Management | 3 |
| RSPT 280C | Respiratory Therapy Seminar I | 1 |
| PSYC 201C | Introduction to Psychology **or** | 3 |
| SOCY 111C | Introduction to Sociology | 3 |
| | **Total** | **14** |
| **Second Year-Spring Semester** | | |
| RSPT 277C | Adjunctive Respiratory Therapies | 3 |
| RSPT 278C | Respiratory Therapy Clinical Preceptorship | 3 |
| RSPT 290C | Respiratory Therapy Seminar II | 1 |
| BIOL 245C | Clinical Microbiology Lecture (May be taken anytime) | 3 |
| BIOL 244C | Clinical Microbiology Lab (May be taken anytime) | 1 |
| | **Total** | **11** |
| | **Total Semester Hours** | 72 |

## COURSE DESCRIPTIONS: RESPIRATORY THERAPY (RSPT)

**RSPT-170C Introduction to Health Sciences (2)**
The student will be introduced to the contemporary systems of delivering and paying for medical care, the roles of the members of the health care team, communication within the health care setting, medical terminology, professional ethics, hospital records, and legal considerations. This course is available to all Community College students prior to application to the program. Prerequisite: None.

**RSPT-171C Principles and Practice of Respiratory Therapy I (4)** (2 hrs. lec., 3 hrs. lab, 5 hours clinical)
Topics include the chemistry and physics of medical gases, and their application and therapeutic delivery with an emphasis on oxygen administration modalities. Assessment of the patient and an introduction to infection control are included. Laboratory skills are developed in non-invasive assessment techniques, medical gas administration and the

principles of humidity/nebulization therapy, which are then translated to the clinical setting. Prerequisites: IGED 120C, IGED 110C, BIOL 111C/113C, BIOL 112C/114C, Co-requisites: RSPT 170C, RSPT 173C, CHEM 105C/106C.

**RSPT-173C Ventilation and Gas Exchange Physiology**
2 Credits (2 hours lecture)
This course discusses the normal physiology of the pulmonary system. It includes the physics of gas flow, the mechanics of breathing, the effects of static and dynamic lung characteristics on ventilation, ventilation-perfusion relationships, gas diffusion and transport. Prerequisites: IGED 120C, IGED 110C, BIOL 111C/113C, BIOL 112C/114C, Co-requisites: RSPT 170C, RSPT 171C, CHEM 105C/106C, or approval of instructor for transfer students.

**RSPT-172C Principles and Practice of Respiratory Therapy II (4)** (2 hrs. lec., 3 hrs. lab, 14 hours clinical)
This course focuses on the following principles: pharmacologic aerosol therapy, bronchial hygiene therapy, airway management, hyperinflation therapy and gas monitoring techniques. CPR management in the hospitalized patient builds on the student's Basic Life Support Certification. Laboratory and clinical experiences develop competency in the application of these principles. Prerequisites: RSPT 170C, RSPT 171C, RSPT 173C, CHEM 105C/106C, Co-requisites: RSPT 271C, RSPT 274C.

**RSPT-271C Respiratory Therapy Pharmacology (3)**
This course discusses the pharmacokinetic and pharmacodynamic phases of drug action and the calculation of drug doses. Special focus is given to an in depth study of drugs used to treat the respiratory system. Additional emphasis is placed on critical care and cardiovascular drug classes, neuromuscular blocking agents, and drugs affecting the central nervous and renal systems. Prerequisites: RSPT 170C, RSPT 171C, RSPT 173C, CHEM 105C/106C, Co-requisites: RSPT 172C, RSPT 274C.

**RSPT-274C Acid-Base and Hemodynamic Physiology (3)**
This course builds on the ventilation and gas exchange physiology and chemistry courses with an emphasis on physiologic acid-base balance and blood gas interpretation. Additional content explores the cardiovascular and renal systems as they relate to both homeostatic and pathologic acid base and hemodynamic regulation. Prerequisites: RSPT 171C, RSPT 173C, CHEM 105C/106C, Co-requisites: RSPT 172C, RSPT 271C, or approval of the instructor for transfer student.

**RSPT-250C Introduction to Mechanical Ventilation**
**3 Credits** (2 hours lecture, 3 hours lab, 7 hours clinical)
This course provides a transition from general floor therapy to the intensive care unit. Students are introduced to the common modes and equipment utilized in providing ventilatory support to hospitalized adult patients. Laboratory and clinical assignments offer a "hands-on" experience preparing students for assuming ventilatory care responsibilities in subsequent clinical courses. Prerequisites: RSPT 172C, RSPT 271C, RSPT 274C; Co-requisite: RSPT 269C.

**RSPT-269C Neonatal/Pediatric Respiratory Therapy (1)**
This course presents normal prenatal development followed by assessment of the neonate. Perinatal lung disease and intervention is included with emphasis on management of neonatal ventilation. Respiratory care procedures unique to the pediatric population are included in preparation for subsequent clinical placement. Prerequisites: RSPT 172C, RSPT 271C, RSPT 274C; Co-requisite: RSPT 250C.

**RSPT-270C Critical Care and Ventilator Management**
**4 Credits** (3 hours lecture, 14 hours clinical)
This course builds on the student's basic ventilatory care skills to develop expertise in the management of critically ill patients. Emphasis is placed on the therapist's role as a critical care team member stressing advanced ventilatory options. Prerequisites: RSPT 250C, RSPT 269C, Co-requisites: RSPT 273C, RSPT 276C, RSPT 280C.

**RSPT-273C Cardiopulmonary Diagnostics**
**3 Credits** (2 hours lecture, 3 hours laboratory)
This course includes the techniques involved in blood gas analysis, as well as the diagnostic measures of EKG'S, radiographic interpretation, bronchoscopy, pulmonary function studies, and polysomnography. Laboratory skills include the application, calculation and interpretation of diagnostic pulmonary analysis. Equipment familiarity will be stressed as well as calibration and quality control procedures to reinforce the didactic content. Prerequisites: RSPT 250C, RSPT 269C; Co-requisites: RSPT 270C, RSPT 276C, RSPT 280C.

**RSPT-276C Respiratory Disease Management (3)**
This course includes the study of the etiology, pathophysiology, clinical manifestations and management of pulmonary disease processes, exploring in detail the medical management of conditions manifesting in pulmonary dysfunction. Prerequisites: RSPT 250C, RSPT 269C, Co-requisites: RSPT 270C, RSPT 273C, RSPT 280C.

**RSPT-280C Respiratory Care Seminar I (1)**
The goal of the course is to prepare the student for the self assessment evaluation examination given by the National Board for Respiratory Care. Objectives will be met by small group exam review and analysis, computer programmed instruction, and frequent testing. Passing of the comprehensive exit examination is required prior to progressing to the final semester of the program. Prerequisites: RSPT 250C, RSPT 269C, Co-requisites: RSPT 270C, RSPT 273C, RSPT 276C.

**RSPT-277C Adjunctive Respiratory Therapies (3)**
This course emphasizes the sub-specialty areas of Respiratory Care, to include, but not limited to pulmonary rehabilitation, home care, smoking cessation, transport, hyperbarics, ECMO, metabolic and exercise testing, nitric oxide, heliox, partial liquid ventilation, and assisting with thoracentesis, cardioversion, chest tube insertion and management. Prerequisites: RSPT 270C, RSPT 273C, RSPT 276C, RSPT 280C; Corequisites: RSPT 278C, RSPT 290C.

**RSPT-278C Respiratory Therapy Clinical Preceptorship 3 Credits** (16 hours clinical)
This course allows for reinforcement of skills and the development of judgment and independence as the student assumes greater Respiratory Care responsibilities. Additional critical care experience will solidify ventilator management acumen. Specialized clinical rotations in the areas of diagnostic pulmonary functions, EKG's, hemodynamics, sleep lab, home care, and pulmonary rehabilitation are provided. Prerequisites: RSPT 270C, RSPT 273C, RSPT 276C, RSPT 280C; Co-requisites: RSPT 277C, RSPT 290C.

**RSPT-290C Respiratory Care Seminar II 1 Credit** (3 hours seminar)
This is a seminar course in which the National Board for Respiratory Care advanced practice examination matrices are explored. The methodical review of all areas of respiratory care services provides the framework with emphases on specific competencies necessary for passing the advanced National Board Examinations. Passing of the comprehensive exit examination is required prior to graduation. Prerequisites: RSPT 270C, RSPT 273C, RSPT 276C, RSPT 280C; Co-requisites: RSPT 277C, RSPT 278C.

## Natural Science (AS)

The Associate of Science degree in Natural science has two areas of concentration, Biology and Chemistry. The program is designed to fulfill the needs of those students who want to complete the first two years of an undergraduate degree in a Community College environment and then transfer to a four-year institution in concentrations of either Biology or Chemistry; are undecided about their educational goals and need an opportunity to explore their interests, or may be interested in obtaining only a two-year Natural Science degree.

The Natural Science program offers an associate degree that is equivalent to the first two years of a Bachelor of Science degree program, prepares students for transfer to four-year degree programs at the University of the District of Columbia as well as other institutions, allows room for additional natural science requirements not required by UDC-CC's Associate of Science degree but may be required in a four-year program to which the student may decide to transfer, and allows for an area of concentration, special interest, or prerequisites for a transfer program. Students may choose either an Associate of Science Biology or Chemistry concentration. Either of the programs gives the student the flexibility to fulfill the lower-division natural science requirements for transfer and to pursue a major of interest or fulfill prerequisites.

### Associate of Science (A.S.) in Natural Science (Biology Concentration)
### Total Credit Hours: 61

**Fall Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| IGED 110C | Foundation Writing I | 3 |
| BIOL 101C | Biological Sciences I – Lecture | 3 |
| BIOL 103C | Biological Sciences I – Lab | 1 |
| MATH 113C | Pre-Calculus with Trigonometry I | 3 |
| IGED 130C | Found. Oral Communications | 3 |
| FSEM 101C | First Year Seminar | 1 |
| | | **Total 14** |

**Spring Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| IGED 111C | Foundation Writing II | 3 |
| BIOL 102C | Biological Sciences II – Lecture | 3 |
| BIOL 104C | Biological Sciences II Lab | 1 |
| IGED 140C | Foundation in Ethics and Values | 3 |
| MATH 114C | Pre-Calculus with Trigonometry II | 3 |
| CHEM 111C | General Chemistry I Lecture | 3 |
| CHEM 113C | General Chemistry I Lab | 1 |
| | | **Total 17** |

**Fall Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| IGED 210C | Discovery Writing | 3 |
| BIOL 225 | Invertebrate Zoology Lec (Fall only) | 3 |
| BIOL 224 | Invertebrate Zoology (Fall only) | 1 |
| CHEM 112C | General Chemistry II Lecture | 3 |
| CHEM 114C | General Chemistry II Lab | 1 |
| MATH 215C | Calculus for Bus., Soc, & Life Sci. | 4 |
| | | **Total 15** |

**Spring Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| IGED 250C | Effective Use of Technology | 3 |
| BIOL 235 | Botany Lecture (Spring only) | 3 |
| BIOL 234 | Botany Lab (Spring only) | 1 |
| PHYS 101C | Intro. To College Physics Lecture | 3 |
| PHYS 103C | Intro. To College Physics Lab | 1 |
| BIOL 241 | General Microbiology Lecture | 3 |
| BIOL 240 | General Microbiology Lab | 1 |
| | | **Total 15** |
| | | **Program Total 61** |

Upon completion of 61 credit hours, students will have an option to either graduate with an associate degree (A.S. Natural Science--Biology), or they can pursue their undergraduate course of study towards a bachelor's in biology degree from semester 5 onwards.

### Associate of Science (A.S.) in Natural Science (Chemistry Concentration)
### Total Credit Hours: 60

**Fall Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| FSEM 101C | First Year Seminar | 1 |
| IGED 110C | Foundation Writing, I | 3 |
| CHEM 111C | General Chemistry I – Lecture | 3 |
| CHEM 113C | General Chemistry I – Lab | 1 |
| MATH 115C | Pre-Calculus Intensive - Lecture | 3 |
| MATH 120C | Pre-Calculus Intensive – Lab | 1 |
| BIOL 101C | Biological Sciences I – Lecture | 3 |
| BIOL 103C | Biological Sciences I – Lab | 1 |
| | | **Total 16** |

**Spring Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| IGED 111C | Foundation Writing II | 3 |
| CHEM 112C | General Chemistry II Lecture | 3 |
| CHEM 114C | General Chemistry II Lab | 1 |
| MATH 151C | Calculus I – Lecture | 3 |
| MATH 155C | Calculus I – Lab | 1 |
| BIOL 102C | Biological Sciences II – Lecture | 3 |
| BIOL 104C | Biological Sciences II – Lab | 1 |
| | | **Total 15** |

**Fall Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| IGED 130C | Found. Oral Communications | 3 |
| IGED 210C | Discovery Writing | 3 |
| CHEM 231 | Organic Chemistry I Lecture | 3 |
| CHEM 233 | Experimental Organic Chemistry I Lab | 2 |
| MATH 152C | Calculus II – Lecture | 3 |
| MATH 156C | Calculus II – Lab | 1 |
| | | **Total 15** |

**Spring Semester**

| Course Code | Course Name | Credits |
|---|---|---|
| IGED 140C | Foundation in Ethics and Values | 3 |
| CHEM 232 | Organic Chemistry II Lecture | 3 |
| CHEM 234 | Experimental Organic Chemistry II- Lab | 2 |
| CHEM 225 | Descriptive Inorganic Chemistry | 3 |
| IGED 250C | Effective Use of Technology | 3 |
| | | **Total 14** |
| | | **Program Total 60** |

Upon completion of 60 credit hours, students will have an option to either graduate with an associate degree (A.S. Natural Science--Chemistry), or they can pursue their undergraduate course of study towards a bachelor's in chemistry degree from semester 5 onwards.

## Non-Degree Certificate and Workforce Development Programs

The University of the District of Columbia offers non-degree training and professional development courses to enhance career growth and to support the continuing education of the District workforce. UDC's Continuing and Professional Education, along with its Division of Workforce Development and Lifelong Learning, provide multiple pathways for students to achieve valuable credentials in today's economy.

## Continuing and Professional Education

The Office of Continuing and Professional Education (CPE) provides accessible, high-quality, innovative, career-specific, and professional development education courses for adult learners. Courses are designed to provide skills needed for high-demand and newly emerging industries. We use our wide network of experts and community partners to meet the personal and professional needs of public, private, and government agencies throughout the Washington, DC, Metropolitan area. All courses are non-credit. CPE awards Continuing Education Units (CEUs) and certificates of completion. Over 1,000 online courses are offered for training, knowledge, and preparation for many of today's emerging industry certifications. To find out more information or to register, please visit: https://www.udc/ce

## Workforce Development and Lifelong Learning Division (WDLL)

**WDLL Locations**
Locations & Info Sessions Schedules

3100 Martin Luther King Ave, SE, Washington, D.C. 20032 (Old Congress Heights) | 202.274.7181

5171 South Dakota Avenue NE, Washington, DC 20017 (Bertie Backus Campus)| 202.274.7181 *Limited courses.*

**How to Enroll**
A resident of the District of Columbia can enroll in a WDLL course by completing the following steps:

**First Visit-Any time**
Attend an Information Session- Information sessions are offered at WDLL locations at least once a week. Call your preferred location for times.

Take the CASAS- The CASAS assessment is offered directly after the information session. It measures basic math skills and English language and literacy skills. All courses have a minimum CASAS score requirement.

**On your own – Any time.**
All WDLL students are required to provide documentation of the following by providing at least one document as listed. Some courses may require additional documentation. Attend an Information Session to learn more.

| Requirement | Acceptable Document(s) |
|---|---|
| Identification (Provide 1) | DC Driver's License or DC Non-Driver ID card (valid not expired)<br>Military ID (Active/valid not expired)<br>Passport (US or Other, valid not expired) |
| District of Columbia Residency (Provide 1) | Certified DC Tax Return (current D40)<br>DC Benefits Transcript (SNAP or TANF; Unemployment Benefits or SSI Letter)<br>DC Voter Card or Registration Profile<br>DCPS Transcript Graduated in past 12 months<br>2 Pay Stubs (current) or IRS Form 1040<br>DC Motor Vehicle Registration |
| Educational Status (Provide 1) | High School Diploma; GED; High School Transcript; College Diploma or Transcript |

Subsequent Visits- during Registration Periods scheduled before the beginning of the semester

Attend Intake Advising: Every WDLL student meets with an Advisor before registering for the first time. During advising students discuss their educational and career goals and the Advisor helps the student select the best courses to meet these goals. Bring all the required documentation listed above to the appointment or submit to the admissions team.

Enroll in a course – After advising and completing the required documentation, students are enrolled in the course(s) of their choice, pending course availability.

**Workforce Development and Lifelong Learning Grading Structure**
The following grades will be used to designate levels of achievement and will appear on official transcripts:

IT/ ECE/CON/HOSP Pathways:

| Letter Grade | Level of Achievement |
|---|---|
| A | 90-100 |
| B | 80-89 |
| C | 70-79 |
| F | 69 and below |
| I | Incomplete |
| W | Withdrawal |
| WF | Withdrawal Failing |
| WNA | Withdrawal- Did not attend |

Some Courses (see Syllabus):

| Letter Grade | Level of Achievement |
|---|---|
| P | Pass 70+ |
| F** | Fail -69 |

Healthcare Pathway

| Letter Grade | Level of Achievement |
|---|---|
| A | 92-100 |
| B | 82-91 |
| C | 75-81 |
| F | 74 and below |
| I | Incomplete |
| W | Withdrawal |
| WF | Withdrawal Failing |
| WDNA | Withdrawal- Did not attend |

**INCOMPLETE GRADE**

It is the student's responsibility to complete all coursework within the prescribed time frames. Students may request a grade of "I" or incomplete at the end of a grading period if they are passing the course at that time and if the circumstances which are causing the student to request the Incomplete grade are beyond the student's control and prevent him/her from completing the required coursework by the last scheduled day of class. Students must request an "Incomplete" grade by completing an Incomplete Grade request form. The student's instructor will co-sign the form with the student. The instructor is responsible for turning the form into the Pathway Director.

All incomplete work must be completed and turned in for grading no later than 30 calendar days after the course completion date. At that time, a grade of 0 (zero) will be given for all work still missing and the course grade will be determined in accordance with the criteria published in the course syllabus.

**WITHDRAWAL**
To remain in "Active" status at the Division, students must be enrolled in and actively attending at least one course. If students withdraw from their classes, or cease to actively attend, they will be withdrawn from the College in accordance with the Attendance Policy.
A student who withdraws voluntarily or involuntarily from enrollment in a course is also withdrawn from the institution if the student is only enrolled in one course. However, a student enrolled in multiple courses who withdraws voluntarily or involuntarily from one or more courses may remain actively enrolled. Students may withdraw from all their courses, and therefore from the College, by notifying the College in writing.

Should students be considering withdrawing from a course or from the College, they should meet with the Student Services Academic Advisor, or the Pathway Director, to gain an appreciation for what the
College can do to help them address their problems and to gain a complete understanding of the decision they are about to make.

Students who withdraw from a course or from the College will receive a grade of "W" if they withdraw before or at the time of attending 50% of the scheduled class days for the course. If students withdraw after attending 50% of the scheduled days of the course, they will receive a "WF" grade. The grade will be recorded on their transcript.

**WITHDRAWAL- FAIL**
The grade of "Withdraw-F" or an "WF" is used on the final grade report to indicate that the student stopped attending the course without notification after the 50% mark and a substantial portion of the course work (at least 60%) has not been met satisfactorily by the student. The student made no attempt to return and/or complete the coursework required to complete the course.

**WITHDRAWAL-DID NOT ATTEND**
A Student who is registered for class and does not attend any classes will be unregistered after one week and considered inactive at the College. The course will show a grade of "WNA" withdrawal did not attend.

## WDLL Course Descriptions

**Construction and Property Management**
*Credentials*

| Course | Certification(s) |
|---|---|
| Apartment Maintenance | Apartment Maintenance Technician (NAA, CAMT) |
| Construction Craft Skills and Carpentry I-A | NCCER Carpentry I-A |
| Carpentry 1-B | NCCER Carpentry 1 B |
| Construction Craft Skills and Application (CORE) | NCCER Craft Skills Construction Core CPR /OSHA 10 |
| Construction Craft Skills and Electrical I- A | NCCER Electrical I -A |
| Electrical 1- B | NCCER Electrical 1- B |
| Construction Craft Skills and NCCER HVAC Level 1A | CORE |
| NCCER HVAC Level 1 B | NCCER HVAC Level 1B |
| Refrigeration Technician Program-HVAC EPA608 | HVAC/EPA 608 Universal |

**For details on each program and a schedule of classes, please visit the WDLL Website:**
**https://www.udc.edu/cc/workforce-development/**
**Apartment Maintenance**
This certificate for apartment maintenance technicians (CAMT) validates your knowledge, enhances your reputation and credibility, boost your confidence, and earns you respect. Course covers everything from processing work orders correctly in a timely fashion and to residents' satisfaction, electrical services and repairs, HVAC service, painting services, construction services, mechanical services, appliance services, lock and key services and customer service

**Construction Craft Skills and Carpentry I-A**
The combined construction core/carpentry 1A class includes the following: Construction Core from safety to construction mathematics in an accelerated format which will move smoothly into the carpentry 1 content using NCCER curriculum

**Carpentry 1-B**
NCCER Carpentry 1B. Features a highly illustrated and demonstrated design, technical hints and tips from industry experts, review questions for certification level 1 when completed. Key content includes Orientation to the Trade; Building Materials, Fasteners, and Adhesives; Hand and Power Tools; Introduction to Construction Drawings, Specifications, and Layout; Floor Systems; Wall Systems; Ceiling Joist and Roof framing; Basic Stair Layout; Introduction to Building Envelope Systems

**Construction Craft Skills and Application (CORE)**
The construction core NCCER is not in an accelerated format. The course extends from fately, electrical, work ethics to construction mathematics.

**Construction Craft Skills and Electrical I- A**
The combined construction core/electrical 1 class includes the following: construction core from safety to construction mathematics in an accelerated format which will move smoothly into the electrical 1 content, theory, principles, and installation arena using the NCCER curriculum.

**Electrical 1- B**
NCCER Electrical 1B. NCCER's comprehensive, 1B is the second level of the four-level Electrical curriculum it helps trainees prepare for a career in the electrical field. Trainees develop an understanding of electrical systems in structures, follow blueprints and install wiring and other electrical components, such as circuit breaker panels, switches, and light fixtures.

**Construction Craft Skills and NCCER HVAC Level 1A**
The combined construction core/HVAC1 class includes the following: Construction core from safety to construction mathematics in an accelerated format which will move smoothly into the HVAC 1 content, theory, principles, and installation arena

**NCCER HVAC Level 1 B**
Continued from Core and HVAC Level 1 A to complete all the requirements for NCCER HVAC Level 1B Certification

**Refrigeration Technician Program-HVAC EPA608**
EPA 608 is the refrigeration class that explains the uses of different types of refrigeration, handling and when to use each type.

**Healthcare**
*Credentials*

| Course | Certification(s) |
|---|---|
| Advanced Medical Billing (Administration Track) | AAHAM, CRCS (Certified Revenue Cycle Specialist) |
| Dialysis Technician (Direct care Track) | BONENT |
| Direct Support Professional | NA |
| Electrocardiogram Technician | NHA, CET |
| Introduction to Healthcare and Careers | NA |
| Introduction to Medical Billing and Coding | NHA, CBCS |
| Medical Assistant | NHA, CCMA |
| Medical Office Administrative Program | NHA, CMAA |
| Medical Office Administrative Program - Health Information Technology (HIT) | NHA, CMAA |
| Nursing Assistant | Board of Nursing CNA |
| Patient Care Technician | NHA, CPCT/A |
| Pharmacy Technician | NHA, CPhT |
| Phlebotomy Technician | NHA, CPT |

**For details on each program and a schedule of classes, please visit the WDLL site:**
**https://www.udc.edu/cc/workforce-development/**
**Advanced Medical Billing (Administration Track)**
Students will gain a thorough understanding of federal healthcare rules and regulations, insurance plans, CPT, ICD-10-CM, and HCPCS Level II coding guidelines. Additionally, students will learn how to submit claims, follow-up with patients and address claim denials. Upon successful completion of the course and the Certification exam, students will obtain the Certified Revenue Cycle

Specialist (CRCS) credential through American Association of Healthcare Association Management (AAHAM).

**Dialysis Technician (Direct care Track)**
This program is intended for those interested in a career in renal dialysis. The program prepares learners for employment in a hemodialysis unit. This program will cover patient care principles, normal and abnormal renal anatomy and physiology, principles of dialysis, water treatment, and hemodialysis procedures under the supervision of a registered nurse. This program prepares the student for the national Certification examination through the Board of Nephrology Examiners Nursing and Technology (BONENT).

**Direct Support Professional**
This program trains individuals to become Direct Support Professionals (DSP). DSP's work directly with people who have developmental disabilities with the aim of assisting the individual to become integrated into his/her community or the least restrictive environment and serving as an advocate for the individual in communicating their needs, self-expression, and goals. A DSP may provide support to a person with a disability at home, work, school, church, and other community places. We teach the required District of Columbia Developmental Disabilities Administration (DDA) and Department on Disability Services (DDS) training programs curriculum.

**Electrocardiogram Technician**
In the EKG Technician course, participants will learn to operate machines that record electrical activity of a patient's heart. EKG rhythms provide important data for the diagnosis of heart conditions. Certified EKG Technicians may perform some or all the following tasks: set-up and administer EKGs and stress tests; prepare students for Holter monitor or ambulatory monitoring; edit and deliver final test results to physicians for analysis; schedule appointments; transcribe physician's interpretations.

**Introduction to Healthcare and Careers**
Introduction to Healthcare and Careers provides student beginning their healthcare education with the fundamentals they need to develop their personal and professional skills, understand their chosen profession, and succeed in the word of healthcare. The course begins with today's healthcare system, healthcare economics, and law and ethics, providing important context for the personal, professional, and workplace skills that follow. The course moves on to an overview of careers in healthcare and detailed profiles of the most in-demand professions. The course closes with an overview of anatomy and physiology to prepare students for the rest of their healthcare education.

**Introduction to Medical Billing and Coding**
In the Introduction to Medical Billing and Coding course, participants will learn billing procedures so that the health providers receive payment for medical services rendered. The following areas will be covered: medical insurance laws, billing management, medical documentation and coding, health insurance claim form handling, EMR's and EHR's, and government programs and medical ethics. Every medical service is assigned a numeric code to de ne diagnostics, treatments, and procedures. It will be the coder's job to enter this information into a database using this set medical protocol to produce a statement or claim. They will learn how to send paperwork to the appropriate insurance carrier for acceptance or denial and how to investigate rejected claims and update details in the database. They will then bill the patients for medical payments. Medical coders will also be responsible for dealing with collections and insurance fraud.

**Medical Assistant**
The Medical Assistant program is designed to train the student to function in the clinical area of a doctor's office. They will study how to triage a patient, record patient histories, do vital signs and EKGs, prepare, and assist the physician with examinations, and basic skills in phlebotomy and injections. Principles of OSHA, handling laboratory specimens, and urinalysis are included in class instruction. Students will receive an introduction to medical insurance coding, ICD-10, and CPT, which are pertinent to the clinical medical assistant. Vocabulary is emphasized as it is an important tool in learning the language of the medical field. There is emphasis on professionalism in the workplace; HIPAA guidelines as they apply to the medical office setting are discussed. Basic concepts of scheduling and office administration are included in the program.

## Medical Office Administrative Program

**Medical Office Administrative Program - Health Information Technology (HIT)**
The Medical Office Administrative Assistant Program (MOAP) prepares individuals for employment in medical and other health-care related offices. Course work includes medical terminology; information systems; Office management; medical coding; billing and insurance; legal and ethical issues; and formatting and word processing. Students will learn administrative and support functions and develop skills applicable in medical environments. Employment opportunities are available in medical and dental offices, hospitals, insurance companies, laboratories, medical supply companies, and other health related industries.

**Nursing Assistant**
The Nursing Assistant program provides the theory, laboratory skills, and clinical practice to prepare students to learn how to care for residents in long-term care facilities. A Nurse Assistant assists residents with activities of daily living (ADL) under the supervision of a registered nurse. The clinical practicum is once a week for a full day. Travel may be required. There is a 10-hour mandatory review prior to taking the state board exam.

**Patient Care Technician**
The Patient Care Technician is a 185-clock hour (75-theory, 110-clinical practicum program that prepares students for employment as a Patient Care Technician (PCT). PCT's job description includes assisting patients with many tasks they cannot do for themselves while they are in hospitals, rehabilitation clinics and/or ambulatory care centers. PCT's perform routine tasks, and this program provides the theory and skills necessary to care for complex patients in various health care settings under the supervision of a registered nurse. The clinical practicum is once a week for a full day. Travel may be required.

**Pharmacy Technician**
Pharmacy Technicians help licensed pharmacists dispense prescription medication. They work under the supervision of the pharmacist, who must review all prescriptions before they are given to patients. They work in retail pharmacies and hospitals. Pharmacy Technicians typically perform the following tasks: take from customers or health professionals the information needed to fill a prescription, count tablets and measure amounts of other medications for prescriptions, compound or mix medications, such as preparing ointments, package, and label prescriptions, accept payment for prescriptions and process insurance claims, and do routine pharmacy tasks, such as answering phone calls from customers.

**Phlebotomy Technician**
The Phlebotomy Technician program prepares students for employment in a laboratory environment as a Phlebotomy Technician. Phlebotomy is the act of drawing blood either for testing or transfusion. It is a skill employed by many clinics and/or ambulatory care centers.

**Hospitality and Tourism Management**
*Credentials*

| Course | Certification |
|---|---|
| Customer Service and Sales | Customer Service and Sales (NRF, CSS) |
| Food and Beverage Service | • Certified Restaurant Server (AHLEI)<br>• ServSafe Alcohol Service (NRA)<br>• ServSafe Manager |
| Food Handler | ServSafe Food Handler |
| Foundations of Hospitality and Tourism | Guest Services Professional CGSP®<br>Front Desk (AHLEI)<br>Guest Services Gold Tourism (AHLEI)<br>Certification in Hotel Industry Analytics (HIFIA) |
| Leasing for Property Management | Certified Apartment Leasing Professional |

**For details on each program and a schedule of classes, please visit the WDLL site:**
**https://www.udc.edu/cc/workforce-development/**

**Customer Service and Sales**
In this course you will master customer service and sales skills, including understanding the customer life cycle, developing effective strategies to engage customers, assessing customer needs, and closing sales. You'll also learn best practices for building resumes and navigating job searches.

**Food and Beverage Service**
The Hospitality & Tourism industry offers significant job creation across all regions and has long been an industry with tremendous success for long-term career pathways. Hospitality & Tourism is recognized as a major driver of economic growth and development. Today's successful hospitality employee must have effective guest service skills in today's competitive market. They must be able to engage and connect with their guest/customer to go above and beyond the call of duty. Students can obtain certifications with AHLEI Restaurant Server, SERV Safe Food Protection Manager and SERV Safe Alcohol during this course.

**Food Handler**
The Food Handler course provides students with competency in food safety knowledge and covers five key areas: Basic food safety, Personal hygiene, Cross-contamination & allergens, Time and temperature, Cleaning, and sanitation.

**Foundations of Hospitality and Tourism**
The tourism industry offers significant job creation across all regions and has long been an industry with tremendous success for long-term career pathways. Tourism is recognized as a major driver of economic growth and development. Today's successful hospitality employee must

have effective guest service skills in today's competitive market. They must be able to engage and connect with their guest to go above and beyond the call of duty. Students may earn the AHLEI Certified Guest Service Professional (CGSP®) & Hospitality & Tourism Management Year I credential upon completing this class.

**Leasing for Property Management**
This course is a two-part course that includes a customer service component as well as curriculum developed and maintained by the National Apartment Association (NAA) to prepare students for entry level positions in the residential property management field. Students will learn how to lease apartments in conventional, tax credit and section 8 properties as well as time management, marketing, resident relations, customer service and administrative skills. The course also covers Fair Housing and other legal aspects of rental housing.

**Information Technology and Office Administration**

| Course | Certification |
|---|---|
| AWS Cloud Practitioner | AWS Certified Cloud Practitioner |
| AWS SYS OPS | AWS SYS OPS Administrator |
| Computer Technician - A+ | CompTIA A+ |
| Computer Technician - Network + | CompTIA Network+ |
| Computer Technician - Security + | CompTIA Security+ |
| IOS Application | iOS Developer/Swift |
| Introduction to Information Technology | Certificate from WDLL |
| IT Fundamentals | CompTIA ACAD IT Fundamentals (FC0-U61) |
| Introduction to Python | Certificate from WDLL |
| Microsoft Office: Excel | Certiport: MOS 2016 Excel Expert |
| Microsoft Office: Word & PowerPoint | Certiport: MOS 2016 Word and PowerPoint Expert |
| Microsoft Office: Word, Excel & PowerPoint | Certiport: MOS 2016 Word, Excel, and PowerPoint |
| Cisco Certified Network Associate - Routers and Switches | Implement & Admin Solution (CCNA) |
| Project Management | CAPM |

**For details on each program and a schedule of classes, please visit the WDLL site:**
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**AWS Cloud Practitioner**
This course introduces cloud computing which shifts information systems from on-premises computing infrastructure to highly scalable stable internet base architectures. Students analyze a variety of cloud services (storage, servers, and software applications).
This course provides students with:
• Solid foundation in Cloud Computing
• Understanding needed to evaluate and assess the business
• Technical benefits of cloud computing and cloud applications
The AWS Cloud Computing Fundamentals is intended for students who seek comprehensive understanding of cloud computing concept, independent of specific technical roles of every aspect of cloud computing

**AWS SYS OPS**
AWS Certified SysOps Administrator (Associate) - Associate Level Certification validates your experience in provisioning, operating, and maintaining systems running on Amazon Web Services. It confirms student's ability to identify and gather requirements to define a solution to be built and operated on AWS. AWS SysOps also validates student's ability to provide AWS operations and deployment guidance and recommend best practices throughout the life cycle of a project. This course will prepare students for the AWS SysOps Certification exam.

**Computer Technician - A+**
The A+ Computer technician course will teach students the basics to advanced computer operation, repair and troubleshooting of hardware, software, and network connectivity. This A+ course, students will install, upgrade, repair, configure, optimize, troubleshoot, and perform preventative maintenance on basic personal computer hardware and operating systems. This course is designed for students with basic computer skills who are interested in obtaining a job as a PC technician or desktop support in a professional setting. Possible job environments include mobile or corporate settings with a high level of face-to-face client interaction, remote-based work environment where client interaction, client training, operating systems and connectivity issues are emphasized, or settings with limited customer interaction where hardware and software activities are emphasized. In addition, this course will help prepare students to achieve A+ CompTIA Certification.

**Computer Technician - Network +**
The Network+ course teaches the fundamentals to advanced network support administration and addresses the latest skills needed by technicians, such as basic principles on how to set up a computer network, configure all devices secure a network. The exam covers network technologies, media and topologies, devices, management, tools, and security. The course will prepare students for competency in managing, maintaining, troubleshooting, installing, and configuring basic network infrastructure. Network+ Certification is suited for computer technicians who are searching for a challenging career in the administration and support of complex internetworking environments.

**Computer Technician - Security +**
The Security+ course helps students build knowledge and professional experience with computer hardware, operating systems, and networks as they acquire the specific skills required to implement basic security services on any type of computer network. Participants in this course will understand the field of network security and how it relates to other areas of information technology. This course also provides the broad-based knowledge necessary to prepare for further study in specialized security fields. This course will prepare students for job responsibilities that include securing network services, network devices, and network traffic. This course will prepare students for the CompTIA Security+ Certification exam.

**IOS Application**
This course introduces the development of iOS applications and Apple applications using Swift programming language. Emphasis is placed on syntax, object-oriented principles, memory management, and functional concepts of Swift programming. Upon completion, students should be able to develop fully functional iOS and Apple applications using Swift programming language. Certification is iOS Developer Certificate. You can also take an *Apple Certified* Support Professional (ACSP) *certification.*

**Introduction to Information Technology**
Introduction to Information Technology is a survey course in evolving information technology and its relevance to individuals and society. The societal issues stressed in this course include privacy, security, copyright act, freedom of information act, ethics in information technology (IT), ergonomics, Mission: To reduce unemployment and underemployment in the District of Columbia by enhancing the skills of its residents. (*) This syllabus is intended to give the student guidance in what may be covered during the semester and will be followed as closely as possible. However, the professor reserves the right to modify, supplement and make changes as the course needs arise. Page 2 of 7 accessibility, intellectual property, pervasive computing, and other timely topics such as new laws impacting computer use. Becoming fluent in necessary technological applications is integrated into the course. It may include word processing, e-mail and Web browsers, spreadsheets, course management systems, and others. Students with little or no computer experience should consider taking the Introduction to Personal Computers course before enrolling in this class. Students with little or no computer experience should consider taking basic computer class, using a Personal Computer, to get the necessary prerequisite skills.

**IT Fundamentals**
The CompTIA IT Fundamentals Certification course is Face-To-Face, expert led, instruction designed to teach students fundamentals of computers and other portable devices. At the completion of this course, students will be able to identify and explain basic computer components, set up a basic workstation, conduct basic software installation, establish basic network connectivity, identify compatibility issues, and identify/prevent basic security risks. Other topics covered in this course include laptops and portable devices, wireless connectivity, security, safety and environmental issues, network configuration and basic troubleshooting skills, and communication skills. Students will be taught and tested on their knowledge in the areas of safety and preventative maintenance of computers. This test (**FCO-U51)** is intended for students considering a career in IT fields, careers that use computers to facilitate performance, or students who may later decide to take a CompTIA A+ or similar certification course.

**Introduction to Python**
Python is a popular programming language created by Guido van Rossum and released in 1991. Python is easy to learn and use and can be used on a server to create web applications. It can be used alongside other software to create workflows, as well as connect to database systems. Python can also read and modify files. Python can be used to handle big data and perform complex mathematical calculations. Most importantly, Python can be used for rapid prototyping, or for production-ready software development. Python runs on an interpreter system, meaning that code can be executed as soon as it is written. Python can be treated in a procedural way, an object-oriented way, or a functional way. Python works on different platforms (Windows, Mac, Linux, Raspberry Pi, etc.). Python has a simple syntax similar to the English language, and its syntax allows developers to write programs with fewer lines than some other programming languages

**Microsoft Office: Excel**
In the Excel course students will learn to create and manage worksheets, organize data, create tables, charts and make

forecasting predictions. During the course students will learn the basic and complex mathematical functions, create formulas and more.

**Microsoft Office: Word & PowerPoint**
Our Microsoft Office training covers a wide range of software titles including Excel, Word, and PowerPoint. Students learn the essentials of Microsoft Office Suite applications: Word, PowerPoint, and Excel. This course gives you a basic introduction to MS Office Suite and prepares you for in-depth learning for the more advanced elements of Word, PowerPoint & Excel. ***Microsoft Word: The*** Word courses will teach the basics – creating, saving, and sharing documents – to more advanced tasks, like tracking changes, line spacing, automating a table of contents, and more. ***Microsoft PowerPoint: In*** this course students will learn how to create presentations, use themes and layouts, add audio visual components to your presentation, and add animations, print, reuse, and copy slides plus more.

**Microsoft Office: Word, Excel & PowerPoint**
Our Microsoft Office training covers a wide range of software titles including Excel, Word, and PowerPoint. Students learn the essentials of Microsoft Office Suite applications: Word, PowerPoint, and Excel. This course gives you a basic introduction to MS Office Suite and prepares you for in-depth learning for the more advanced elements of Word, PowerPoint & Excel. ***Microsoft Word: The*** Word courses will teach the basics – creating, saving, and sharing documents – to more advanced tasks, like tracking changes, line spacing, automating a table of contents, and more. ***Microsoft PowerPoint: In*** this course students will learn how to create presentations, use themes and layouts, add audio visual components to your presentation, and add animations, print, reuse, and copy slides plus more. ***Microsoft Excel: In*** the Excel course students will learn to create and manage worksheets, organize data, create tables, and make forecasting predictions. During the course students will learn the basic and complex mathematical functions, create and formulas and more.

**Cisco Certified Network Associate - Routers and Switches**
The implementing and Administering Cisco Solutions (CCNA) course is the initial step into Cisco Networking. The course main objective is to provide students with the skills such as networking fundamentals and access, IP connectivity and services, security fundamentals, and more Crucial elements of this course include the following: coverage of IPV$ subnetting, IPV, ACLs, VLANs, as well as static and dynamic routing, and manage network device security. This course is meant for support technicians involved in the basic installation, operation, and verification of LAN networks, entry-level network engineers, network administrators, network support technicians, and help desk technicians

**Project Management**
The Certified Associate in Project Management Certification course illustrates the use of key PMBOK guide tools and techniques through performing numerous actual in-class exercises such as financial evaluation, project selection, charter development, CPM scheduling, earned value, etc. This course provides students the opportunity to learn the basics of project management: how to plan, execute, control and complete projects. Specifically, students will learn how to prepare project schedules, develop project measures and approaches to project control, and how to develop, lead and motivate project teams. Certification: Project Management Institute (PMI) Certified Associate in Project Management (CAPM)

**Early Childhood Education**
*Credentials*

| Course | Certification |
|---|---|
| CDA I | N/A |
| CDA II | The Council for Professional Recognition CDA |
| CDA Intensive | The Council for Professional Recognition CDA |

**For details on each program and a schedule of classes, please visit the WDLL site:**
**https://www.udc.edu/cc/workforce-development/**

**CDA I**
CDA 1 is the first course in a series designed to meet the training hours for the CDA Certificate. The course provides hours in physical and motor development, cognitive development, communication, creativity, professionalism, principles of development, and observation.

**CDA II**
This course introduces students to best practices in nutrition, health, and safety for young children, prenatal through age eight. Students will explore equipment and environment safety, prevention of infectious diseases and injuries, nutrition planning and preparation, physical and mental health issues, and available community resources.

**CDA Intensive**
CDA Intensive is a course designed to enhance and help a student complete the necessary course work and

documentation needed to be able to submit the necessary required written documentation.

**General Education**

*Credentials*

| Course | Certification |
|---|---|
| Introduction to Personal Computers for Seniors - Beginners | NONE |
| Language Arts Skills and Applications | NONE |
| Mathematics Skills and Language Arts Applications | NONE |
| Mathematics Skills and Applications | NONE |
| Spanish in the Workplace | NONE |
| Career Preparation 101 | ACT, Inc - National Career Readiness Certification |
| Micro-Entrepreneurship 101 | None |

**For details on each program and a schedule of classes, please visit the WDLL site:**
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**Introduction to Personal Computers for Seniors - Beginners**
IT for Seniors is perfect for anyone getting behind a computer for the first time.

**Language Arts Skills and Applications**
This class is for the CASAS taker who did not achieve the benchmark language arts score, or scores needed to join the pathway of their choice. Each course offers a 50-hour enrichment in the desired area that needs enrichment and upon completion an instructor evaluation, either the student can retest or is required to continue in remediation.

**Mathematics Skills and Language Arts Applications**
This class is for the CASAS taker who did not achieve the score, or scores needed to join the pathway of their choice. Each course offers a 50-hour enrichment in the desired area that needs enrichment and upon completion an instructor evaluation, either the student can retest or is required to continue in remediation.

**Spanish in the Workplace**
An intro course into the everyday terms used in basic and general Spanish in the workplace.

**Career Preparation 101**
Career preparation is the most intense level of career and technical educations services available to students. Career preparation programs provide students with rigorous academic and technical training and deep preparation for entry into postsecondary education, training programs and/or careers.

**Micro-Entrepreneurship 101**
The term micro-enterprise is used for a small business that appoints a very limited number of individuals as employees. To be more precise, these businesses usually have less than ten people working for them. This makes the very basic definition of a micro-entrepreneur pretty simple; he or she is a person who runs or sets up a micro-enterprise.

## UDC-Community College Course Descriptions

Below are descriptions of each academic course offered by Subject Area. Course numbers and titles are followed by the number of credits indicated in parenthesis. Prerequisite and co-requisite courses are in the description, if applicable.

### BIOLOGOY COURSES

**BIOL-101C Biological Sciences I (3)**
Introduces the concepts of modern biological principles, with emphasis on the physical and chemical basis of life processes. Co-requisites: BIOL 103C.

**BIOL-102C Biological Sciences II (3)**
Presents the structural and functional features of animal and plant systems, including interactions existing between major groups of organisms. Pre-requisites: BIOL 101C, BIOL 103C. Co-requisites: BIOL 104C.

**BIOL-103C Biological Sciences I Laboratory (3)**
Focuses on the experimental principles of the physical and chemical processes of life. Co-requisites: BIOL 101C.

**BIOL-104C Biological Sciences II Laboratory (3)**
Examines unifying relationships between living organisms. Also emphasizes energy, respiration, structure, and function of organs, organ systems, and the total organism. Pre-requisites: BIOL 101C, BIOL 103C. Co-requisites: BIOL 102C.

**BIOL-105C Introduction to Nanotechnology (3)**
This course provides a broad overview of nanotechnology, discussing the fundamental its applications to engineering, biomedical, and environmental fields. The course provides a background of the understanding, motivation, implementation, impact, future, and implications of nanotechnology. Co-requisites: BIOL 106C.

**BIOL-106C Introduction to Nanotechnology Laboratory (1)**
This course will introduce students to the hands on applications Nanotechnology so that they can better understand how different fields of science merge to service mankind. Co-requisites: BIOL 105C.

**BIOL-111C Fundamentals of Human Anatomy and Physiology I (3)**
Focuses on the human body as it relates to function, organization, and interrelationship of body structures as they form an integrated functional organism. Co-requisites: BIOL-113C

**BIOL-112C Fundamentals of Human Anatomy and Physiology II (3)**
Details a continuation of Fundamentals of Human Anatomy and Physiology I. Emphasizes body systems and how they contribute to homeostasis. Prerequisites: BIOL-111C and BIOL-113C. Co-requisites: BIOL-114C

**BIOL-113C Fundamentals of Human Anatomy and Physiology I Laboratory (1)**
Examines the cellular, tissue, and organ levels of the organization of the human body and how these units coordinate activities and function in the living organism. Co-requisites: BIOL- 111C

**BIOL-114C Fundamentals of Human Anatomy and Physiology II Laboratory (1)**
Focuses on detailed examination of the structure and function of the body systems with emphasis on balanced coordination of the living organism. Prerequisites: BIOL-111C and BIOL-113C Co-requisites: BIOL-112C

**BIOL-244C Clinical Microbiology Laboratory (1)**
Focuses on exercises that involve the use of microbiological techniques in culturing select groups of microorganisms.. Prerequisites: BIOL 111C and BIOL 113C or BIOL 101C and BIOL 103C. Co-requisites: BIOL-245C.

**BIOL-245C Clinical Microbiology (3)**
Emphasizes the structure, function, and pathogenic nature of various microorganisms as they relate to infection, body resistance, and diagnostic testing. Prerequisites: BIOL 111C and BIOL 113C or BIOL 101C and BIOL 103C. Co-requisites: BIOL-244C

## CHEMISTRY COURSES

**CHEM 105C Fundamentals Of Chemistry (3)**
Introduces the essential concepts of inorganic chemistry and physical chemistry. This courses focuses on the applications of chemistry in health care and beyond. Co-requisites: CHEM 106C

**CHEM-106C Fundamentals of Chemistry Lab (1)**
Introduces basic laboratory techniques through a collection of experiments designed for students who have little or no laboratory experience. Introduces basic laboratory techniques. Co-requisites: CHEM 105C

**CHEM-111C General Chemistry I (3)**
Examines atomic structure, stoichiometry, periodic table, chemical bonding, molecular structure, properties of gases, liquids and solids, acids and bases, and oxidation-reduction reactions. Prerequisites: CHEM 105C and CHEM 106C. Co-requisites: CHEM 113C.

**CHEM-112C General Chemistry II (3)**
Examines chemical thermodynamics, chemical kinetics, chemical equilibria, electrochemical reactions, nuclear chemistry, and coordination complexes. Prerequisites: CHEM 111C and CHEM 113C. Co-requisites: CHEM 114C.

**CHEM-113C General Chemistry I Laboratory (1)**
Concentrates on the principles of chemistry with emphasis on statistical treatment of experimental data. Prerequisites: CHEM 105C and CHEM 106C. Co-requisites: CHEM 111C.

**CHEM-114C General Chemistry II Laboratory (1)**
Emphasizes the experimental principles of solution chemistry Prerequisites: CHEM 111C and CHEM 113C. Co-requisites: CHEM 112C.

## ENGLISH, ESL COURSES

**ENGL 015C English Fundamentals (3)**
Introduces the basics of the writing process that provide a foundation for clear and effective written expression by emphasizing grammatical correctness, sentence clarity, and paragraph effectiveness.

**ENGL 113C Technical Writing (3)**
Introduces the general concepts of technical writing, idea development, and physical layout applicable to different career fields. Also emphasizes proofreading and editing.

**English as a Second Language (ESL)**
Examines the areas of grammar, reading, writing, speaking, and listening using four different levels: Basic English I and II, Intermediate English I and II, Advanced English I, and Advanced English II. Placement of newly admitted students is determined by TOEFL scores. The ESL program does not satisfy degree requirements.

**ESL Basic English I (3)**
Introduces English structures to students with little knowledge of the language. Emphasizes correct oral and

written production of Basic English patterns. To be taken concurrently with ESL Basic English II.

**ESL Basic English II (3)**
Focuses on perfecting simple sentence constructions and exploring more complex ones. Reinforces knowledge of the structures studied in Basic English I. Emphasizes Basic English patterns, simple tenses, noun phrases, and common sentence structures.

**ENSL 007AC Intermediate ESL Listening/Speaking I (3)**
Intermediate ESL Listening/Speaking I is designed for students who have mastered the competencies of basic level English. Students who enroll in this course seek to further develop communicative abilities for both formal and informal settings. Activities include listening, speaking, and communicative exercises for pairs and small groups, as well as three major individual presentations. (The credits earned upon completion of this course count toward the student's cumulative credits, not toward the student's grade point average. This course does not satisfy degree requirements.)

**ENSL 007BC Intermediate ESL Writing/Grammar I (3)**
Intermediate ESL Writing/Grammar I is the next course for ELL students who have mastered the basic level writing and grammar skills. Emphasis is placed on appropriate use of a variety of sentence structures, complex verb forms, modifiers, and punctuation, and on the writing of sentences in context. This course is designed to provide practice in these skills to help bridge the gap between the study of English as a second language and the effective use of English in the college classroom. (The credits earned upon completion of this course count toward the student's cumulative credits, not toward the student's grade point average. This course does not satisfy degree requirements.)

**ENSL 008AC Intermediate ESL Listening/Speaking II (3)**
Intermediate ESL Listening/Speaking II is a continuation of Intermediate ESL Listening/Speaking I designed for students who have previously studied English and have basic knowledge of grammar and vocabulary, but need to further develop communicative abilities for both formal and informal settings. Activities include listening, speaking, and communicative exercises for pairs and small groups as well as three major individual presentations. (The credits earned upon completion of this course count toward the student's cumulative credits, not toward the student's grade point average. This course does not satisfy degree requirements.)

**ENSL 008BC Intermed. ESL Writing/Grammar II (3)**
Intermediate ESL Writing/Grammar II is the continuation of Intermediate ESL Writing/Grammar I. Emphasis is placed on appropriate use of a variety of sentence structures, complex verb forms, modifiers, and punctuation, and on the writing of sentences in context. This course is designed to provide practice in these skills to help bridge the gap between the study of English as a second language and the effective use of English in the college classroom. (The credits earned upon completion of this course count toward the student's cumulative credits, not toward the student's grade point average. This course does not satisfy degree requirements.)

**ENSL 012AC Adv. ESL Listening/Speaking I (3)**
Advanced ESL Listening/Speaking I is designed to improve listening, note taking, and pronunciation skills for non-native speakers of English beyond the Intermediate skills level. (The credits earned upon completion of this course count toward the student's cumulative credits, not toward the student's grade point average. This course does not satisfy degree requirements.)

**ENSL 012BC Advanced ESL Writing/Grammar I (3)**
Advanced ESL Writing/Grammar I includes integrated units of study in grammar and writing for the advanced level non-native speakers and writers of English. Emphasis is placed on appropriate use of a variety of sentence structures, complex verb forms, modifiers, and punctuation, and on the writing of sentences in context. This course is designed to bridge the gap between the study of English as a second language and the effective use of English in the college classroom. (The credits earned upon completion of this course count toward the student's cumulative credits, not toward the student's grade point average. This course does not satisfy degree requirements.)

**ENSL 013AC Advanced ESL Listening/Speaking II(3)**
Examines all language skills using a comprehensive, interactive approach. Provides opportunities for critical thinking and in-depth practice of r vocabulary, grammar, writing and comprehension skills. Enhances conversational skills acquired through advanced reading and writing exercises. Equips with the reading, writing, and thinking skills that are critically necessary to succeed in subsequent English, general education, liberal arts, and technical /occupational courses. (*Note: Students at this level should have a very good command of the English language and be prepared to learn the more complex nuances of the language.)*

**ENSL 013BC Advanced ESL Writing/Grammar II (3)**
Advanced ESL Listening/Speaking II a continuation of Advanced ESL Listening/Speaking I. It is designed to improve listening, note taking, and pronunciation skills for non-native speakers of English at an advanced level. (The

credits earned upon completion of this course count toward the student's cumulative credits, not toward the student's grade point average. This course does not satisfy degree requirements.)

## ENVIRONMENTAL SCIENCE COURSES

**ENSC-105C Food Health and Wellness (3)**
This course is concerned primarily with sound health knowledge, attitudes, and behavior as they apply to the individual. Content covers the spectrum of health problems of concern to the individual from childhood through the senior years with special attention given to the urban environment.

**ENSC-107C Integrated Science I (3)**
Emphasizes the usefulness of science by presenting specific scientific information concerning the urban environment. Includes interdisciplinary topics, such as plants, soil formation, basic chemistry, soil chemistry, measurements, human functions, nutrition, environmental diseases, and the history of African Americans in the development of science. Co-requisites: ENSC 109C.

**ENSC-109C Integrated Science I Laboratory (1)**
Offers a general overview of science, including measurements, plants, chemistry, nutrition, soil science, energy, air pollution, water pollution, and environmental disease. Co-requisites: ENSC 107C.

## FOOD SCIENCE COURSES

**FDSC-103C Introduction to Food Science Lab (1)**
Focuses on basic laboratory exercises that highlight the characteristics of raw materials, food development, preparation, and preservation. Co-requisite: FDSC 105C.

**FDSC-104C Introduction to Nutrition Laboratory (1)**
Emphasizes laboratory exercises on analyzing the nutrients of the food consumed in a day by using computer software and skills to conduct basic nutrition assessment. Co-requisite: FDSC 106C.

**FDSC-105C Introduction to Food Science (3)**
Explores food science and technology, the early history of food, the development of the industry with emphasis on general characteristics of raw materials, harvesting, processing, and the methods of food preparation to preserve the color, flavor, and nutrient content of food. Co-requisite: FDSC 106C.

**FDSC-106C Introduction to Nutrition (3)**
This course offers a general overview of nutrients, how these are ingested, digested absorbed, transported, and metabolized. It also examines how nutrition relates scientifically to the well-being of the human body. Co-requisite: FDSC 104C.

## FIRST YEAR SEMINAR AND IGED COURSES

**FSEM 101C Freshman Seminar (1)**
The First Year Seminar is a unique transition course designed to facilitate students' integration into the learning community of the community college. The course enhances students' skills for academic success, develops students' understanding of community college culture, provides individualized academic advising, and fosters students' meaningful educational engagement. The course also encourages students to participate actively in the community college and to reflect upon their experiences. Pre-req: English 015C or required score on placement test.

**IGED-110C Foundation Writing I (3)**
The Foundation Writing sequence consists of two 3-credit Interdisciplinary General Education courses that focus on improving students' critical reading and writing skills while exploring a given academic theme. The goal of these courses is to teach students how to read and write with skill and ease. Students learn to express ideas and thoughts using a range of written forms that consider content, audience, and professional standards. They study a variety of graphic and textual material using multiple approaches to reading, interpretation, and comprehension.

**IGED-111C Foundation Writing in the Natural and Social Science (3)**
The Foundation Writing sequence consists of two 3-credit Interdisciplinary General Education courses that focus on improving students' critical reading and writing skills while exploring a given academic theme. The goal of these courses is to teach students how to read and write with skill and ease. Students learn to express ideas and thoughts using a range of written forms that consider content, audience, and professional standards. They study a variety of graphic and textual material using multiple approaches to reading, interpretation, and comprehension.

**IGED-120C Foundation Quantitative Reasoning (3)**
Foundation Quantitative Reasoning seminars are Interdisciplinary General Education courses that focus on improving students' quantitative reasoning skills while exploring a given academic theme. The goal of these courses is to teach students how to reason using the language and strategies of mathematics. Students analyze data, find connections among and between quantitative relationships, and communicate their findings using a variety of formats within different settings and to diverse audiences. By using a variety of strategies, students solve problems in a variety of real-world contexts.

## MATHEMATICS COURSES

**MATH 005C Basic Mathematics (3)**
Equips beginning college students with basic mathematics skills. Introduces the decimal numeration system, including an examination of the arithmetic of whole numbers, rational numbers as common fractions and as decimals, percent's, ratios and proportions, arithmetic of integers, properties of order;, and geometric formulas. Lec. 3 hrs.

**MATH 015C Introductory Algebra (3)**
Equips students with the basic algebraic skills for students who have not demonstrated competency in algebra. Examines properties of whole numbers, integers, rational numbers, and real numbers graphing. Covers the solution of equations and inequalities, exponents, polynomials and factoring. Also examines rational expressions, scientific notation, roots and radicals. Lec. 3 hrs, Prereq: 005C or appropriate scores on the Mathematics Placement Test.

**MATH 113C Pre-calculus with Trigonometry I (3)**
Designed primarily for students preparing to take calculus, this course examines algebraic notation and symbolism, exponents and radicals, algebraic functions, solutions of linear and quadratic equations and inequalities, relations and functions, rational functions and their graphs, conic sections, exponential and logarithmic functions and the appropriate graphs. Lec. 3 hrs., Prereq: 105C. Important note: credit will be given for only one of the following courses: MATH 112C, MATH 114C, or MATH 115C.

**MATH 114C Pre-calculus with Trigonometry II (3)**
Examines trigonometric functions, identities, and the appropriate applications. Also explores the solution of trigonometric equations, systems of equations and inequalities, operations with complex numbers, polynomials, and mathematical induction. Lec. 3 hrs. Prereq: MATH 113C.

**MATH 116C Finite Mathematics (3)**
Investigates systems of linear equations, matrices and linear programming; elementary functions, especially logarithmic and exponential functions; and applications to business situations. Lec. 3 hrs, Prereq: MATH 105C or appropriate scores on the Mathematics Placement Test.

**MATH 151C Calculus I (3)**
Examines concepts and skills for limits and continuity, derivatives and their applications, integrals, the Fundamental Theorem of Calculus, and elementary transcendental functions. Includes computer laboratory as an integral part of the course. Lec. 3 hrs, Co-req: MATH 155C; Prereq: MATH 439114C or permission of the Department of Mathematics.

**MATH 152C Calculus I (3)**
Continues MATH 151C. Explores further applications of the integral and techniques of integration. Also,, examines topics in the calculus of one variable, analytic geometry, and sequences and infinite series. Includes computer laboratory as an integral part of the course. Lec. 3 hrs., Co-req.: MATH 156C. Prereq.: MATH 151C or permission of the cluster Coordinator.

**MATH 115C Calculus I Lab (1)**
Explores theoretical concepts and applications of Calculus I in and experimental environment. Designed to employ symbolic, numerical, and graphics capabilities of a computer algebra system. Lab 2 hrs, Co-req: MATH 151C.

**MATH 156C Calculus II Lab (1)**
Explores theoretical concepts and applications of Calculus II (152C) in an experimental environment designed to employ symbolic, numerical, and graphic capabilities of a computer algebra system. Lab 1 hr., Co-req. MATH 152C.

**MATH 185C Introductory Statistics (3)**
The first of a two-course sequence which Introduces concepts and techniques of probability and statistics. Includes measures of central tendency and dispersion, probability and probability distributions, and correlation and regression. Also introduces statistical inference and computer applications using Minitab or equivalent computer based system. Lec. Pre-req. MATH 105C.

**MATH 215C Calculus for Business, Economics, the Social and Life Sciences (4)**
Explores concepts and skills on limits and continuity. Covers, differential and integral calculus with applications from business, economics, and the social and biological sciences. Lec. 4 hrs., Prereq MATH 113C, MATH 116C or equivalent.

## PHYSICS COURSES

**PHYS-101C College Physics I (3)**
Introduces laws of motion and the concept of energy, thermal and elastic properties of matter, and theories of waves and sound. Fulfills physics requirement for biology, pre medicine, and other science majors. Includes one additional hour per week for problem solving. Co-requisite: PHYS 103C

**PHYS-102C College Physics II (3)**
Continues Introduction to College Physics I Lecture. Includes the study of electricity and magnetism, electronics, geometrical and physical optics, and a description of atomic and nuclear structure. Fulfills physics requirement for

biology, premed, and other science majors. Prerequisite: PHYS 101C and PHYS 103C. Co-requisite: PHYS 104C.

**PHYS-103C College Physics I Laboratory (1)**
Accompanies Introduction to College Physics I Lecture and must be taken concurrently with the lecture course. Co-requisite: PHYS 101C

**PHYS-104C College Physics II Laboratory (1)**
Accompanies Introduction to College Physics II Lecture and must be taken concurrently with the lecture course. Prerequisite: PHYS 101C and PHYS 103C. Co-requisite: PHYS 102C.

## WORLD LANGUAGES COURSES

**SPAN 101/101C Beginning Spanish I (3)**
Teaches the basic skills of comprehension, speaking, reading, writing, and knowledge of the culture of the Spanish-speaking world. Provides extensive practice through situational drills for students who have no previous knowledge of the language. Offers the first course of a two-semester sequence. Requires completion of the Language Laboratory experience.

**SPAN 102/102C Beginning Spanish II (3)**
Provides further practice in the basic skills of listening, speaking, reading, writing, and cultural knowledge. Offers the second course within a two-semester sequence. Requires completion of the Language Laboratory experience.

**FREN 101C Beginning French I (3)**
Teaches the four basic language skills of comprehension, speaking, reading, and writing, as well as culture. Provides practice in conversation for students who have no previous knowledge of the language. Gives first level course of a two-semester required sequence. Requires completion of the Language Laboratory experience.

**FREN 102C Beginning French II (3)**
Expands the acquisition of the four basic language skills of comprehension, speaking, reading, and writing, as well as culture. Provides practice in conversation. Requires placement examination. Provides the second level course of a two-semester sequence. Requires completion of the Language Laboratory experience.

## OTHER UDC-CC COURSES

**ECON 201C Principles of Macroeconomics (3)**
Introduces supply and demand, income and employment theories. Analyzes the causes of inflation and unemployment, and the policy alternatives for affecting macroeconomic change. Discusses the institutional arrangements of a market economy.

**ECON 202C Principles of Microeconomics (3)**
Analyzes theories of consumer behavior, production costs, and decision making by individuals and firms. Looks at price and output determination under different market conditions. Discusses factor markets and income distribution.

**BSEF 220C Business Statistics (3)**
Analyzes graphical and tabular methods of representing data. Also examines measures of location and variation, elementary probability concepts;, probability distributions, and the uses of index numbers.

**GEOG105C World Cultural Geography (3)**
Investigates the spatial organization of human beings and their societies. Explores world distributions and patterns of population, cultural elements, settlements, livelihoods, and political orders as these are spatially related to the physical environment and to one another. This perspective examines where and why people occupy and utilize some portions of the earth's surface in preference to others.

**IPTC 101C Computer Keyboarding I (3)**
Introduces the concept of keyboarding. Examines proper techniques, speed, and accuracy, tabulation, and centering skills. Emphasizes correct formatting for letters, memos, and related business correspondence. Minimum typing speed for completion of the course is 40 wpm.

**IPTC 102C Computer Keyboarding II (3)**
Emphasizes advanced typewriting skills. Introduces WordPerfect software. Minimum typing speed for completion of course is 50 wpm. Prereq.: IPCT 101C or 40 wpm.

**APCT 104C Introduction to Applications of Computer Lecture (2)**
Identifies computer equipment. Also examines the functions of the components of a computer, including the binary, octal, and hexadecimal number systems. Also describes the various programming languages, and computer applications. Includes hands-on introduction in word processing, spreadsheets, database managers, and microcomputer operating systems. Lec. 2 hrs.

**IPTC 211C Word I (3)**
Introduces the basics of word processing using Microsoft Word software. Demonstrates how to get started, create, save, edit, and print documents, and how to use automatic text features.

Also demonstrates how to enhance the appearance of documents through formatting, and use proofing tools to correct spelling and grammatical errors.

**IPTC 212C Word II (3)**
Covers intermediate to advanced word processing concepts and skills using Microsoft Word software. Demonstrates how to create and format letters, envelopes, tables, and labels. Also demonstrates how to use templates, work with columns, and use graphic elements in documents.

**OADM 120C Computer Applications in Business (3)**
Introduces Office Suite applications for the business environment. Particular emphasis on integrating applications within the Suite. Examines fundamental Internet concepts including World Wide Web browsing, searching, publishing, and advanced Internet productivity tools. Includes laboratory.

**OADM 208C Business Communications (3)**
Covers the essential principles involved in preparing standard types of business communications, such as business letters, reports, and memoranda.
Provides a review of basic English principles as applied to management in all aspects of business communication. Students gain expertise in both oral and written communications.

**BLPC 318C Commercial Law (3)**
Studies contracts, agency, negotiable instruments and sales. Includes the legal variable encountered in business and commercial transactions and its application to practical problems.

**PSYC 201C Principles of Psychology I (3)**
Introduces the history, methods, major theoretical viewpoints, and concepts of scientific psychology.
Provides non-majors with an overview of the field of psychology; majors gain a foundation for further study.

# Faculty Listing

## School of Business and Public Administration

### Department of Accounting and Finance

**Suzan Abed,** B.A., M.A., Yarmouk University (Jordan); PhD, University of Aberdeen (United Kingdom), Associate Professor
**Botao Chen,** B.A. Beijing University of Aeronautics and Astronautics (China); M.S., Peking University (China); M.S., Jackson State University; PhD., Jackson State University; Associate Professor
**Debra Robinson-Foster**, B.B.A., The University of the District of Columbia; M.B.A., Southeastern University, CPA (MD); Instructor
**Aigbe Akhigbe**, B.S., University of Ibadan (Nigeria); M.S., University of SW Louisiana; M.B.A., Ph.D. University of Houston; Professor
**Yiyi Bai**, B.A., Jilin University (China); M.S., Shanghai University of Finance and Economics (China); Ph.D., Tillburg University (Netherlands); Visiting Assistant Professor
**Tih Koon Tan**, B.A., M.A., M.A., Washington State University; Ph.D., University of Central Florida; Associate Professor

### Department of Business Management

**Amit Arora,** B.S., Aligarh University (India); M.S., Indian Institute of Technology (India); Ph.D., Georgia Southern University; Associate Professor
**Anshu Arora,** B.S., Central Government University (India); M.B.A., FORE School of Management (India); Ph.D., Indian Institute of Technology (India); Associate Professor
**Paul Bachman**, B.S., Wilkes College; M.B.A., University of Scranton; M.A., Saint Francis College; D.B.A., The George Washington University; Professor
**Brown-Gaston, Raquel,** B.A., Boston University; JD, University of Miami School of Law; Associate Professor
**Donovan Y. Collier,** B.S., Southeast Missouri State University; M.S., University of Memphis; Ph.D., Auburn University; Associate Professor
**Jian Hua**, B.E., Southeast University (China); M.E., Ph.D., Morgan State University; Professor
**Sergey Ivanov**, B.B.A, M.S., Ph.D., The George Washington University; Professor
**Michael B. Tannen**, B.B.A., M.B.A., City College of New York; Ph.D., Brown University; Professor
**Dazhong Wu,** B.Eng., Tsinghua University (China); M.S., Peking University (China); Ph.D., University of Texas at Austin; Associate Professor
**Feng Xu,** B.E., Sichuan University (China); M.S., South Dakota State University; MBA, Ph.D., The George Washington University, Associate Professor
**Julius Ndumbe Anyu,** B.A., M.U.R.P., University of the District of Columbia; Ph.D., Howard University; Associate Professor
**Yolandra A. Plummer**, B.A., Howard University, M.P.A., University of the District of Columbia, Ph.D. Howard University; Associate Professor
**Blaine J. Branchik**, B.A., The George Washington University, MBA, The George Washington University
Ph.D. Business Administration – Marketing Concentration, Florida Atlantic University, Visiting Associate Professor.

## College of Agriculture Urban Sustainability and Environmental Science

## Architecture and Community Planning

### Department of Architecture and Urban Sustainability

### Urban Architecture and Community Planning

**Kathy Dixon**, B.ARCH., Howard University; Masters Urban Planning, University of California; Associate Professor
**Anna Franz**, M.ARCH, University of Texas at Austin, Ph.D., Engineering Management and Systems Engineering George Washington University, Chair and Associate Professor

### Urban Leadership and Entrepreneurship

**Dwane Jones,** B.S., East Carolina University, M.S., East Carolina University, Ph.D., North Carolina State University; Dean
**Sabine O'Hara,** B.S., M.S. Ph.D., University of Göttingen, Germany, PhD Program Director

### Professional Science Masters

**Tolessa Deksissa**, B.S., Crop Science, Alemaya University, M.S., Environmental Sciences, Ghent University, Ph.D., Environmental Technology, Ghent University, Program Specialist

### Urban Sustainability

**Ricardo A. Brown,** BS, Oakwood University, Professor, PhD, Howard University; Interim Co-Director
**Anna Franz**, M.ARCH, University of Texas at Austin, Ph.D., Engineering Management and Systems Engineering, George Washington University, Associate Professor, Interim Co-Director

**Department of Health Nursing and Nutrition**
**Health Education**
**Ricardo A. Brown,** BS, Oakwood University, PhD, Howard University; Professor
**Phronie Jackson,** B.A., Spelman College, MPH, PhD, Walden University; Assistant Professor
**Bessie Stockard,** B.S., Tuskegee Institute; M.A., The American University; M.A., University of the District of Columbia; Associate Professor

**Nursing**
**Elmira Asongwed,** R.N., B.S., Tuskegee Institute; M.S., University of Maryland; Associate Professor

**Nutrition and Dietetics**
**B. Michelle Harris,** B.A., College of the Holy Cross; M.S., Framingham State College; M.P.H., Harvard University; Ph.D., University of Maryland; Associate Professor
**Tia D. Jeffery,** B. S., Oakwood University; M.S., Ohio State University; Ph.D., Walden University; Assistant Professor

**Land-Grant Programs**
**Center for Urban Agriculture and Gardening Education**
**Mamatha Hanumappa,** B.S./M.S., University of Agricultural Sciences, Bangalore; Ph.D., University of Maryland, College Park
**Matthew Richardson,** B.A. & B.S., University of Delaware, M.S., University of Illinois-Urbana-Champaign, Ph.D., University of Illinois-Urbana-Champaign

**Center for Nutrition Diet and Health**
**Tiffany Johnson-Largent,** RD, B.S., M.S., Ph.D. Howard University
**Lillie Monroe Lord,** RD, B.S., Southern University at Baton Rouge, M.S., Howard University, Ph.D., Howard University
**Amy Schweitzer,** RD, BS, Ph.D, University of Maryland

**Center for Sustainable Development & Resilience**
**Harris Trobman,** B.S., Delaware Valley University, M.L.A., University of Maryland

**Water Resource Institute**
**Tolessa Deksissa**, B.S., Crop Science, Alemaya University, M.S., Environmental Sciences, Ghent University, Ph.D., Environmental Technology, Ghent University

## College of Arts and Sciences

**Division of Arts and Humanities**
**Bagus P. Himawan**, B.A., Trisakti University (Jakarta); M.S., The George Washington University; M.A., American University; Assistant Professor
**Rukman Niyangoda,** B.A., University of the District of Columbia; M.F.A, Marywood University; Assistant Professor and Program Coordinator.
**Davide Prete,** B.S. Universita Iuav Di Venezia, Venice, M.A. and M.F.A. Fontbonne University; Assistant Professor.
**Daniel Venne,** B.A., Virginia Commonwealth University; M.F.A., Goddard College; Professor
**Yeoyeon Kim**, B.F.A., Sung Kyun Kwan University, Seoul, Republic of Korea, M.F.A., William Paterson University, Wayne, NJ; Visiting Assistant Professor
**Digital Media**
**William A. Hanff, Jr**., B.A., George Washington University; M.S., Boston University; Ph.D., The European Graduate School (Switzerland); Assistant Professor
**Whitney Christopher,** B.A and M.A., University of Maryland, College Park; Assistant Professor
**Olive Vassell**, B.A., Westminster University; M.A., City University (United Kingdom); Associate Professor and Program Coordinator

**Zoe Davidson,** B.A. Oberlin College; M.F.A. Howard University; Assistant Professor

**English**

**Ada Vilageliu-Diaz,** M.Phil. Universidad de La Laguna, Canary Islands; Ph.D., Howard University; Assistant Professor.
**Alexander Howe,** B.A., University of Minnesota; M.A., Ph.D., Binghamton University; Professor, Professor and Division Chair.
**Helene Krauthamer**, B.A., New York University; M.A., Ph.D., State University of New York at Buffalo; Professor, English Program Coordinator
**Naseem A. Sahibzada**, M.A., University of Peshawar (Pakistan); M.A., The Catholic University of America; Ph.D., University of Maryland; Professor
**Cherie Turpin**, B.A., University of the District of Columbia; M.A., University of Vermont; Ph.D., University of Connecticut; Associate Professor
**Elsie Williams,** B.A., North Carolina Central University; M.A., North Carolina Central University; Ph.D., University of Maryland at College Park; Professor
**Wynn Yarbrough,** B.A., University of Mary Washington; M.A., Virginia Commonwealth; M.F.A., Goddard College; Ph.D., University of Louisiana at Lafayette; University Education Certificate, Western Oregon University; Professor, English
**Aparajita De**, B.A. and M.A., University of Calcutta; Graduate Certificate in Women's and Gender Studies and Ph.D., West Virginia University; Associate Professor
**Lawrence T. Potter, Jr.,** B.A., English, Religion & Philosophy (triple major), Stillman College; M.A., English; Ph.D., English, University of Missouri-Columbia; Professor and currently Chief Academic Officer
**Scott Krawczyk,** B.S., West Point; M.A., English, University of Rhode Island; Ph.D., English, University of Pennsylvania; Professor and currently Associate Chief Academic Officer
**Craig Wynne**, B.A., Communications: Mass Media, State University of New York at Plattsburgh; M.A.T., English, State University of New York at New Paltz; Ph.D. in Rhetoric and Composition University of Texas at El Paso, Assistant Professor

**Music**

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