

Senior Capstone Projects

Senior Capstone Projects represent the culmination of the educational experience, integrating the classroom with real world problems. The students handle open-ended engineering and computational problems whose solutions require a synthesis of engineering knowledge, computational analysis, creativity, market needs, safety and esthetics. Projects supervised by instructors and industry mentors.

Panel of Judges

Representatives from Civil Engineering, Electrical and Computer Engineering, Mechanical Engineering, Computer Science departments faculty and Industrial Advisory Board members.

Supervising Faculty

- Dr. Ahmet Zeytinci, P.E., Professor, Civil Engineering
- Dr. Pradeep Behera, PE, Professor and Chair, Civil Engineering
- Dr. Esther Ososanya, Professor and Acting Chair, Electrical and Computer Engineering
- Dr. Jiajun Xu, Assistant Professor, Mechanical Engineering
- Dr. Pawan Tyagi, Associate Professor, mechanical Engineering
- Dr. Lara Thompson, Associate Professor, Mechanical Engineering
- Dr. Devdas Shetty, P.E., Professor and Dean
- Dr. Li Chen, Associate Professor, Computer Science

Acknowledgements

- Lockheed Martin
- National Science Foundation (NSF)
- National Nuclear Security Administration (NNSA)
- Office of Naval Research (ONR)
- Hung Ha
- Pablo Sanchez Guerrero
- Ann Lankford
- Gebretensae Tzadu



SENIOR CAPSTONE PROJECT PRESENTATIONS

Civil, Electrical, and Mechanical Engineering

Monday, April 30, 2018

9:30am – 4:00pm

Building 42, Room A09

Computer Science and Information Technology

Monday, April 30, 2018

11:00am - 2:00pm

Building 42, Room 114B



COMPUTER SCIENCE AND INFORMATION TECHNOLOGY

Analysis of Computer Network Security Software Systems
Sory I. Keita

Cryptocurrencies and the Design of MyCrypto Marks for All
James Carroll

Self-Driving Cars and Data Analysis
Abdullah Albaddah, Noorah Alayed,

Webpage Design for "myUber Airline Company"
Abdullah Almutairi, Ahmad Ghadi

Cyber-crimes Analysis and Some Protection Methods
Alaa Haddadi

Natural Language Processing using Neural Networks
Khoi Hoang

The Two-factor Authentications for Email Services
Alaa Sameer H. Malki

Stock Market Prediction Using Keras/Tensorflow
Justin Mayer

Mobile Application for Fitness
Steven Otano

Scalar wave energy and Computer Technology
Michael Richardson
PHP/SQL Web Applications for a Construction Company
Alberto Tuesta

Uprising of Streaming Music
Antowine Williams

CIVIL ENGINEERING

Civil Engineering System Analysis and Design CE All Stars 21st Century Latitudes
Khalid Alsahafi, Rashed D. Alotaibi, Naif S. Alotaibi, Nerden A. Alfattani, Stacey L. Lockerman, Douglas Umana Sanchez, Dionna Tunstall, Walid Aloteiby
Advisors: Dr. Pradeep Behera, Dr. Ahmet Zeytinci

Civil Engineering System Analysis and Design CE All Stars 21st Century Longitudes
Rahaf A. Aljouaid, Salman Abdulaziz A. Alsagabi, Mohammed A. Almajed, Meshari S. Alharbi, Mohammed H. Binladen, Brenda V. Perez, Roxy M. Guandique, Ji H Shin
Advisors: Dr. Pradeep Behera, Dr. Ahmet Zeytinci

ELECTRICAL AND COMPUTER ENGINEERING

Portable Harness Ambulatory and Rehabilitation Device for Stroke Victims
Saoud Al Qahtani, Eissa Al Mohandi
Advisors: Dr. Esther T. Ososanya
Internal Interest: Dr. Devdas Shetty, United States Patent Number: 5,189,490

Design and Implementation of Intelligent Green Roof System
Dilnesa Nukuro
Advisors: Dr. Esther T. Ososanya, Dr. Sasan Haghani
Internal Interest: UDC Agricultural Experimental Research

SmartHome: An IOT-based Solution to Control Home Devices
Walid Alotaibi, Hans Thakur, Omar Nafea Alsinani
Advisor: Dr. Esther T. Ososanya
External Interest: Dr. Carolyn Carroll (IEEE Washington Section)

Ankle Foot Orthosis Analysis with Arduino
Diego Pinto Cabrera
Advisors: Dr. Esther Ososanya, Dr. Lara Thompson

Virtual Reality Basketball Training
Alicia Marshall, Ever Guevara
Advisors: Dr. Esther Ososanya, Dr. Nian Zhang

Hyper-Spectral Imaging: Optimizing Spectrometer Efficiency for Precision Agricultural Applications
Warren Abrams, Ajay Bajrachaya
Advisor: Dr. Esther Ososanya

Robotic Hand
Ahmed Alfurshuti, Barghash Alotaibi
Advisor: Dr. Esther Ososanya, Dr. Lara Thompson

MECHANICAL ENGINEERING

Design of a Functional Ankle-Foot Orthosis (AFO)
Murtada Al Saihati, Mehdi Badache, Lonika Behera
Advisor: Dr. Lara Thompson
Sponsor: National Science Foundation

Design of an Adjustable Chairless Chair
Alshammari Abdulaziz, Ahmed Almatar, Nawaf Alshammari, Rashed Alsubaie, Bandar Aldhafeeri
Advisors: Dr. Lara Thompson Dr. Devdas Shetty
Sponsor: National Science Foundation

Upper-limb Prosthetic Design Incorporating a Robotic Hand
Saud Aldraiwiesh, Ahmad Albluwi, Fahad Almahmoud
Advisors: Dr. Lara Thompson Dr. Esther Ososanya
Sponsor: National Science Foundation

Pumpless solar thermal vacuum tube based air heater
Bassam Alshammari, Alasi Alsawayt, Naif Alotaibi, Barjas Alruways
Advisors: Dr. Pawan Tyagi, Dr. Jiajun Xu
Sponsor: National Science Foundation

Robust Coatings on Additively Manufactured Metal Components
Robert Stephenson, Rudolph Knott, Antione Reddick, Nitt Chuenprateep
Advisor: Dr. Pawan Tyagi
Sponsor: National Nuclear Security Administration (NNSA)

Design and Study of Gun Launched, Transformable Hybrid Projectile
Fahad d Almutairi, Henock Argaw, Salah Alsulami, Hussain Saklou, Ahmed Aloudah and Karemoune Welezane-Gazere
Advisors: Dr. Devdas Shetty, Dr. Jiajun Xu, Dr. Esther T. Ososanya
External Interest: Lockheed Martin

Design and Fabrication of a Microchannel Heat Exchanger
Fahad Shumaylan J Almutairi, Majed M. Almutairi, Mohammed K. Altuwayhir
Advisor: Dr. Jiajun Xu
Sponsor: Office of Naval Research (ONR)

SEAS Senior Capstone Project Presentation Order
Engineering Capstone Projects

Monday, April 30, 2018
Building 42 – A09

#	Major	Project Title	Student Names	Faculty Advisors	Total Time (Minutes)	Presentation Time
1	EE	Portable Harness Ambulatory and Rehabilitation Device for Stroke Victims	Saoud Al Qahtani, Eissa Al Mohandi	Dr. Esther T. Ososanya	20	9:30 AM - 9:50AM
2	ME	Design of a Functional Ankle-Foot Orthosis (AFO)	Murtada Al Saihati, Mehdi Badache, Lonika Behera	Dr. Lara Thompson	20	9:50 AM- 10:10 AM
3	CE	Civil Engineering System Analysis and Design by CE All Stars 21st Century Latitudes	Khalid Alsahafi, Rashed D. Alotaibi, Naif S. Alotaibi, Nerden A. Alfattani, Stacey L. Lockerman, Douglas Umana Sanchez, Dionna Tunstall, Walid Aloteiby	Dr. Pradeep Behera, Dr. Ahmet Zeytinci,	40	10:10 AM-10:50 AM
4	EE	Design and Implementation of Intelligent Green Roof System	Dilnesa Nukuro	Dr. Esther T. Ososanya, Dr. Sasan Haghani	15	10:55 AM-11:10 AM
5	EE	SmartHome: An IOT-based Solution to Control Home Devices	Walid Alotaibi, Hans Thakur, Omar Nafea Alsinani	Dr. Esther T. Ososanya	20	11:10 AM-11:30 AM
LUNCH BREAK 11:30am to 1:00pm Building 42 – A09A						
6	ME	Design of an Adjustable Chairless Chair	Alshammari Abdulaziz, Ahmed Almatar, Nawaf Alshammari, Rashed Alsubaie, Bandar Aldhafeeri	Dr. Lara Thompson Dr. Devdas Shetty	20	1:00 PM – 1:20 PM
6	EE	SmartHome: An IOT-based Solution to Control Home Devices	Walid Alotaibi, Hans Thakur, Omar Nafea Alsinani	Dr. Esther T. Ososanya	20	1:00 PM - 1:20 PM
7	ME	Upper-limb Prosthetic Design Incorporating a Robotic Hand	Saud Aldraiwiesh, Ahmad Albluwi, Fahad Almahmoud	Dr. Lara Thompson Dr. Esther Ososanya	20	1:20 PM - 1:40 PM
8	CE	Civil Engineering System Analysis and Design by CE All Stars 21st Century Longitudes	Rahaf A. Aljouaid, Salman Abdulaziz A. Alsagabi, Mohammed A. Almajed, Meshari S. Alharbi, Mohammed H. Binladen, Brenda V. Perez, Roxy M. Guandique, Ji H Shin	Dr. Pradeep Behera, Dr. Ahmet Zeytinci,	40	1:40 PM – 2:20 PM
9	EE	Ankle Foot Orthosis Analysis with Arduino	Diego Pinto Cabrera	Dr. Esther Ososanya, Dr. Lara Thompson	15	2:25 PM – 2:40 PM
10	ME	Pumpless solar thermal vacuum tube based air heater	Bassam Alshammari, Alasi Alsawayt, Naif Alotaibi, Barjas Alruways	Dr. Pawan Tyagi, Dr. Jiajun Xu	20	2:40 PM – 3:00 PM
11	EE	Virtual Reality Basketball Training	Alicia Marshall, Ever Guevara	Dr. Esther Ososanya, Dr. Nian Zhang	20	3:00 PM – 3:20 PM
12	ME	Robust Coatings on Additively Manufactured Metal Components	Robert Stephenson, Rudolph Knott, Antione Reddick, Nitt Chuenprateep	Dr. Pawan Tyagi	20	3:20 PM – 3:40 PM
13	ME	Design and Study of Gun Launched, Transformable Hybrid Projectile	Fahad d Almutairi, Henock Argaw, Salah Alsulami, Hussain Saklou	Dr. Devdas Shetty, Dr. Jiajun Xu, Dr. Esther Ososanya	20	3:40 PM – 4:00 PM
14	ME	Design and Fabrication of a Microchannel Heat Exchanger	Fahad Shumaylan J Almutairi, Majed M. Almutairi, Mohammed K. Altuwayhir	Dr. Jiajun Xu	20	4:00 PM – 4:20 PM
15	EE	Hyper-Spectral Imaging: Optimizing Spectrometer Efficiency for Precision Agricultural Applications	Warren Abrams, Ajay Bajrachaya	Dr. Esther Ososanya	20	4:20 PM – 4:40 PM