

## 2014 Summer Bridge STEM Course Concludes



The 2014 Summer Bridge Program in Environmental and Sustainability Sciences program has come to a conclusion. The four week course was designed to provide high school and incoming college students with the essential skills necessary to succeed in college studies and beyond. The Summer Bridge Program in Science and Technology program was funded by the National Science Foundation with the purpose of attracting high school students to the STEM disciplines of science, technology, engineering and mathematics. The course was offered Mondays through Thursdays, June 30 – July 25, 2014, on UDC's Van Ness campus.

For the month of July, the students, who ranged in the ages of 14 - 18, spent almost 30 hours a week learning: environmental computing, cloud computing, sustainability, water quality, climate change, engineering design and mobile technologies. The interactive program was directed by Dr. Tolessa Deksissa, director of the Water Resources Research Institute, a division of the College of Agriculture, Urban Sustainability and Environmental Sciences (CAUSES) of the University of the District of Columbia. The co-instructors instructors were Drs. Lily Liang, Suzan Harkness, Pradeep Behera and WRRRI lab tech Ycov Assa.

While home base for the program was UDC's Environmental Quality Laboratory, students were also given the experiential learning opportunity to conduct field work in Rock Creek Park, the UDC Van Ness Campus and the Muirkirk Agricultural Research Farm in Beltsville, Maryland.

"Field work gives the students the opportunity to learn by doing. Without knowing the theoretical aspects, field work allows them to measure and collect data first, and then make the connections later back in the lab," explained Dr. Tolessa Deksissa. "This type of experiential learning allows the students to see the bigger picture and interconnectivity of our world."

The students were required to present their capstone project before an audience of their peers, parents, and UDC faculty and staff. The presentations were:



1. Nathnael Eshetu and Heran Tatek: Solar Power for Food, Energy and Water (evaluating the potential benefit of photovoltaic power at Muirkirk Farm.)
2. Lataija Gilmore, Kevon Johnson and Semale Stafford: Orthophosphate Analysis in soil
3. Niles Townsend and Joel Crooms-Porter: Aquaponics System: Nutrient Cycle (water difference in aquaponic tanks)
4. Courtney George, Amen Hailu and Sofia Cisneros: Potomac River vs. Rock Creek River Quality



Once the presentations were completed, the adult facilitators of the program addressed the students, with curiosity being a common theme of their comments.

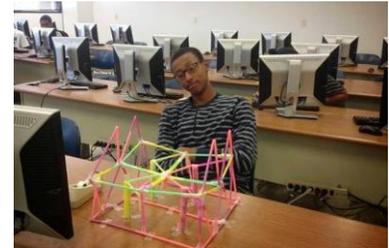
"Always feed your curiosity and continue to ask your questions," Dr. Elgloria Harrison shared with the students after they had presented their capstone projects.

Expanding on the synergy between curiosity and science, CAUSES Dean Sabine O'Hara explained: "Science is ultimately about being curious about how things work. Your mindset as a researcher has to constantly be to ask questions and questioning the answers. That's one of the most important concepts for you to take away from your experience here."

The students got to feed their curiosity while collecting field data and then interpreting the results back in the lab.

"The results easier to relate when the students see firsthand the environmental implications of those measurements," explained Dr. Deksissa.

When asked if they preferred the lab work or being in the field, the students were almost evenly split. Some preferred the sterile, individual environment, while others preferred the collaborative efforts provided from being in the field. One such exercise was a scavenger hunt across UDC's Van Ness campus. Another exercise focused on communication and teamwork.



"We got to **have fun, figure out answers and work together as a team,**" said Nathanael Eahetu.

Other students enjoyed the elements of combining technology with fieldwork.

"I like testing things in the lab," explained Courtney George, who was already interested in science. The course has inspired her to take an environmental studies course in the upcoming school year.

During one outdoor session in the nearby Rock Creek Park after measuring conductivity, dissolved oxygen, salinity and pH, the students determined that the healthy pH average of Rock Creek River was around 8.2. Reframing the data, the students explained that theoretically, water from the river could be drunk in a survival situation, but should not be used for swimming.

The Summer Bridge in STEM Education course also introduced students to the college experience and elements like working with different people from different schools and backgrounds, and gave them the opportunity to work under the guidance of faculty researchers.

One of those researchers was program instructor Dr. Lillie Liang. During the closing event, Dr. Liang relayed a story about how the students had tested a newly installed water filter and stopped her from drinking water unacceptable for consumption because the pH level was greater than 7.0.

Dr. Suzan Harkness, another Summer Bridge instructor, told a touching story about how she wasn't encouraged to pursue science because that was a time when young women were expected to get married and have kids. She used to wander around the science labs at a local college which piqued her curiosity that was then nurtured by professors, ultimately shaping the direction of her life.

"Hope your curiosity has been sparked," she remarked to the students.

Additional photos of the Summer Bridge activities are available on our [Facebook page](#).

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