STEM Programming at the NYU Polytechnic School of Engineering

The New York University Polytechnic School of Engineering is committed to being a resource for furthering the research and application of Science, Technology Engineering, and Mathematics (STEM) subjects in elementary, middle and high schools. Through our expert faculty, quality students and research centers, we have capacity to analyze the teaching of STEM education, to research the best curriculum used in these subjects, to develop innovative teaching methods for these subjects, and to interact directly with teachers and students through hands on learning.

The Center for K12 STEM Education works to educate students in STEM through the field of engineering. Powered by the concept of engineering as the application of science and technology is a powerful lens for young people through which to view -- and truly appreciate -- the rules of today’s innovative world.

In the K-12 STEM education programs, the School of Engineering faculty, students and administrators align our work in classrooms with articulated science and math learning standards, the new Common Core standards, and emerging standards in engineering, technology and other disciplines. We engage teachers directly in programs and remain attentive to the learning objectives of the schools and students that participate in our initiatives.

In addition to the programs that run throughout the academic year, the School of Engineering also runs an extensive summer STEM program, which was consolidated and created partially in response to President Barack Obama’s call for “an all hands on deck approach to STEM.” The programs have a successful track record: from 2009 to 2012, 70 percent of the 3,200 participating students increased their STEM grades by a half or full-letter grade.

In classes ranging from Cybersecurity for High School Young Women to Summer Research Internship Programs and Applying Mechatronics to Promote Science to Research Experience for Teachers, the School of Engineering’s #STEMNOW summer programs served over 500 students and teachers and involved 19 separate classes.

Science of Smart Cities program includes hands-on and team-based activities with building water turbines, designing wireless communication applications, and building model cities. The students learned and developed presentation and public speaking skills from weekly workshops.

To find more information regarding all the STEM Programs offered at the NYU Polytechnic School of Engineering, please go to: www.engineering.nyu.edu/k12stem
Highlights of NYU STEM Education Programming:

Central Brooklyn STEM Initiative (CBSI): The Central Brooklyn STEM Initiative pairs teachers from Brooklyn public schools with graduate student fellows from NYU’s engineering, chemical and biological science programs to design dynamic, hands-on classroom lessons in a variety of STEM disciplines. Graduate fellows co-teach in 17 schools in Brooklyn and coach robotics teams, spending about 10 hours a week in schools throughout the academic year.

Science of Smart Cities: The Science of Smart Cities program introduces middle school students to engineering, science and technology that make cities more livable, efficient, sustainable and safer. Hands-on activities, demonstrations and experiments integrate STEM concepts, showing how those are applied through engineering and technology to the systems and infrastructure in cities today, and how they might be applied in cities in the future.

Applied Research Innovations in Science and Engineering (ARISE): This selective program is for academically strong, current 10th and 11th grade New York City students with a demonstrated interest in STEM. This seven week program includes: college level coursework, a high level research experience in one of several the School of Engineering faculty labs, and mentoring in that placement by a graduate or postdoctoral student.

Creativity in Engineering, Science, and Technology (CrEST): CrEST is an innovative 60-hour course for high school students on applying physical computing, mechanical systems and electronics to design and build interactive devices. The program emphasizes hands-on, lab-based demonstrations, experiments, and projects that offer important learning experiences related to circuitry, electronics, mechanical systems, physical computing, robotics and other STEM disciplines.

Cybersecurity: With one of the oldest and most recognized cybersecurity programs in the country, NYU-Poly will host three bootcamps for high school girls, high school teachers, and college teachers this summer under sponsorships from the NSF and the National Security Agency. All will prepare students to participate in the School of Engineering’s annual Cyber Security Awareness Week – the biggest set of student challenges in hacking, protection and digital forensics. The demand for cybersecurity experts is growing at more than 10 times the overall job market, making it one of the most highly sought-after fields in the country, according to one recent report.

Tech Kids Unlimited: Technology can be a great equalizer for those with learning difficulties, and these workshops aim to provide special-needs students, age 9 to 17, with the 21st-century technology tools they require for success. The summer workshop on sound, special effects, and audio engineering will help participants become producers of tech culture, rather than just passive consumers.

NYC FIRST: With this national organization, the NYU School of Engineering supports its robotics competitions throughout the five boroughs serving thousands of students and the mentors and teachers that work with young people on their teams.

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