NO SWEAT: NYU SCHOOL OF ENGINEERING ‘SUMMER OF STEM’ MAKES SCIENCE AND TECH COOL FOR KIDS, TEACHERS

BROOKLYN, New York—The third annual Summer of STEM is emerging as the most ambitious by far for the New York University Polytechnic School of Engineering: Reaching some 1,100 K-12 students and teachers as well as college instructors, it is offering the skills and excitement of science, technology, engineering and mathematics through 20 different programs.

On Thursday morning, July 9, 2015, hundreds of participants and community leaders will mark this week’s start of the Summer of STEM in a ceremony keynoted by NYU School of Engineering President and Dean Katepalli R. Sreenivasan, New York City Department of Education Schools Chancellor Carmen Fariña, and Director of the National Science Foundation (NSF) Division of Undergraduate Education Susan Singer.

“This year’s Summer of STEM reflects an important change in focus in the School of Engineering’s longstanding leadership in providing access to high-quality STEM education to students—particularly those from diverse and economically challenged communities,” Dean Sreenivasan said. “While we will continue to offer engaging and effective programs for K-12 students that will encourage them to pursue STEM subjects in college, we are greatly expanding our outreach to teachers because we know that each and every one of them has the potential to inspire and educate hundreds of young people during the course of a career. With their help, we will prepare a new generation of students capable of meeting the vast technical challenges of New York and society as a whole.”

The NYU School of Engineering’s Center for K12 STEM Education already runs one of New York City’s most in-depth teacher professional development program, and its Summer of STEM is the largest free summertime technology and engineering program for K-12 students in the city.
This year’s programs will reach three times the number of students and teachers as in 2014. And there will be more to come: During the Summer of STEM celebration this Thursday, Dean Sreenivasan will announce a major expansion—made possible by a seed gift from philanthropists and venture capitalists Joanne and Fred Wilson and a grant from the NSF—that will help fulfill the school’s pledge to the White House to help America lead the world in college attainment.

Responding to the nationwide need to engage young women early in order to bring equity to STEM fields, over half of the students who attend summer camps at the NYU School of Engineering are female.

Highlights of this year’s Summer of STEM include

- **Discovery Research for Teachers:** Four teachers—from P.S./I.S. 109 The Glenwood Academy of Science & Technology and Park Place Community Middle School 266, both in Brooklyn—will spend three weeks at the NYU School of Engineering as part of a comprehensive year-round STEM development program. Ultimately, 44 teachers from 22 New York City middle schools will participate in the new program, funded by a $2.5 million grant from the NSF DR K-12 program. NYU will field a team of interdisciplinary experts in robotics, engineering, education, curriculum design, and assessment to make robotics central to and sustainable in the city’s science and math classrooms.

- **NYC Summer STEM 2015:** In this major new initiative, the New York City Department of Education selected the NYU School of Engineering’s Center for K12 STEM Education to train 31 teachers along with 53 graduate and undergraduate student-teachers who will ultimately teach 600 middle and high school students in summer courses in robotics and the NYU-developed curriculum called Science of Smart Cities. The initiative includes support from public funds and from Microsoft secured through the Fund for Public Schools by a gift from Microsoft Foundation.

- **Science and Mechatronics Aided Research for Teachers with an Entrepreneurship experience (SMARTER):** This program pairs middle and high school teachers in the NYU School of Engineering laboratories with faculty and graduate students for two weeks of advanced STEM workshops and four weeks of research. Starting with the premise that kids cannot resist STEM subjects when robots are involved, SMARTER adds the excitement of entrepreneurial explorations. Twelve teachers engage in high-level research projects and curriculum development, then return to their schools capable of establishing engineering programs and facilities. SMARTER is funded by the NSF Research Experience for Teachers (RET) Site program.

- **Cybersecurity for Teachers RET:** Home of one of the oldest and most recognized cybersecurity programs in the country, the NYU School of Engineering hosts training and research opportunities for 10 high school teachers, particularly those from schools with socially diverse, economically disadvantaged, and under-represented student bodies. The program aims to engage students in hardware and software security and digital forensics, thereby opening high-demand career paths. Sponsored by the NSF RET Site program, the summer programs send teachers back to their own schools with the knowledge, curriculum, and hands-on demonstrations to launch programs there. Teachers will also prepare their students to participate in the NYU School of Engineering’s annual Cyber Security Awareness Week (CSAW)—the world’s biggest set of student challenges in hacking, protection, and digital forensics.
Cybersecurity for College Instructors RET: A similar NSF-funded camp educates 10 college instructors and prepares them to develop information security programs for their community colleges and four-year institutions.

AMPS/CBSI: Applying Mechatronics to Promote Science, which is funded by the NSF, and the Central Brooklyn STEM Initiative, which is funded by corporate and private philanthropy, provide one of the most compelling examples of the power of the school's STEM programs. Together, they send NYU School of Engineering students into Brooklyn elementary, middle, and high schools throughout the year to challenge students to design, build, and operate robotic devices, teach science, math, and engineering, and provide training to advance teachers' understanding of STEM subjects. The results are significant: from 2009 to 2012, 70.8 percent of the more than 3,000 participating students increased their STEM grades by a half or full letter grade. This summer, up to six elementary, middle, and high school teachers are training alongside NYU School of Engineering graduate fellows and preparing to take STEM knowledge back to their schools.

Science of Smart Cities: A project of the School of Engineering’s Center for K12 STEM Education, this program introduces 54 middle school students directly to the engineering, science, and technology that make cities more livable, efficient, sustainable, and safer through hands-on activities, demonstrations, and experiments. NYU School of Engineering students teach students—most from underserved Central Brooklyn—energy, urban infrastructure, transportation, and wireless communications. Irondale Theater Ensemble provides performance arts skills that enable students to communicate their ideas and inspire confidence. Teachers participating in the Department of Education’s NYC Summer STEM 2015 also learn the curriculum to pass along to their summer students.

GenCyber: Computer Science for Cybersecurity: With an extra session added this year, the program introduces 75 high school girls to role models, programming, virtuous hacking, and digital forensics during three intensive and supportive two-week-long programs designed to encourage them to pursue educational opportunities in cybersecurity—a field that is growing at more than 10 times the overall job market but is notoriously bereft of female professionals. GenCyber also prepares young women to participate in the popular NYU School of Engineering CSAW High School Digital Forensics Contest.

Tech Kids Unlimited: Technology can be a great equalizer for those with learning difficulties, and seven workshops by Tech Kids Unlimited aim to provide special-needs students, ages 7 to 18, with the 21st-century technology tools they require for success. Modules include Video Editing, Coding with MinecraftEDU, Web Design and Work Bootcamp, Website Design, 3D Printing and Skateboarding, Sound Mixing for Podcasts, and Stop Motion Animation. School of Engineering Adjunct Professor Beth Rosenberg founded the program after realizing that her son, who learns differently, loved technology but wasn’t being exposed to it during the school day.

Applied Research Innovations in Science and Engineering (ARISE): Designed for tenth and eleventh grade students with little or no access to high-quality STEM education experiences, students of color, and those from low-income backgrounds, this tuition-free seven-week program features challenging college-level coursework and lab research in such fields as civil and urban engineering, composite materials, mechanics, molecular design, robotics, sensors, and protein engineering. The faculty biology laboratories of the NYU School of Arts and Sciences join the School of Engineering to offer research opportunities to high school students. Thirty-eight
students are mentored nearly one-on-one by graduate students, post-doctoral fellows, and faculty members.

- **Summer Research Opportunities for High School Students:** Another eight students from New York area high schools are working alongside six professors and an equal number of graduate students to conduct advanced research in areas such as chemical and biomolecular engineering, mechanical engineering, and electrical engineering. Throughout the school, professors are welcoming high school students to work beside undergrads and graduate students in their laboratories.

- **CrEST (Creativity in Engineering, Science, and Technology) Mobile:** Fifteen high school students who completed the intensive CrEST program last term are fanning out to community-based organizations where they teach what they learned in circuitry, electronics, mechanical systems, physical computing, robotics, and other STEM disciplines to hundreds of middle school students in publicly funded summer camps throughout New York City. The CrEST program was designed by the School of Engineering's Center for K-12 STEM Education.

- **College Credit Courses:** High school students who want to get a jump on college-credit courses or simply explore hot fields of study can enroll in a variety of subjects. These tuition courses include Web Design, Introduction to Engineering and Design, Introduction to Science and Technology Studies, Pre-Calculus, and Calculus.


For more information on the Summer of STEM, visit [http://engineering.nyu.edu/k12stem](http://engineering.nyu.edu/k12stem).

The NYU Polytechnic School of Engineering dates to 1854, when the NYU School of Civil Engineering and Architecture as well as the Brooklyn Collegiate and Polytechnic Institute (widely known as Brooklyn Poly) were founded. Their successor institutions merged in January 2014 to create a comprehensive school of education and research in engineering and applied sciences, rooted in a tradition of invention, innovation and entrepreneurship. In addition to programs at its main campus in downtown Brooklyn, it is closely connected to engineering programs in NYU Abu Dhabi and NYU Shanghai, and it operates business incubators in downtown Manhattan and Brooklyn. For more information, visit [http://engineering.nyu.edu](http://engineering.nyu.edu).

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