



City Tech Receives Major STEM Research Grants for New Center of Additive Manufacturing and Medical Devices

Brooklyn, NY—April 5, 2017—City Tech’s Department of Mechanical Engineering & Industrial Design Technology has recently received STEM research grants from the National Science Foundation (NSF) and the National Aeronautics and Space Administration (NASA), totaling more than \$1.3 million in support. Students will work alongside faculty and collaborators on projects to design and fabricate medical devices as well as participate in space additive manufacturing and electron beam freeform fabrication.

The Department of Mechanical Engineering & Industrial Design Technology at City Tech is one of the fastest growing departments in the College. It is also the only department in New York City that offers a baccalaureate degree in mechanical engineering technology with a manufacturing concentration. In the last five years, the department has experienced historical enrollment that has almost tripled since Fall 2008. The majority of students in the department come from groups underrepresented in STEM.

“These grants provide a wonderful opportunity for City Tech students and faculty to collaborate with other leaders in STEM education and research. They will be the seed for our Center of Additive Manufacturing and Medical Devices, which will promote design and fabrication of medical devices as well as partnerships between academia, industry, and community organizations,” said Dr. Gaffar Gailani, Department of Mechanical Engineering & Industrial Design Technology, principal investigator of both grants.

New Horizons in Space Additive Manufacturing and STEM Education

Through the three-year NASA-funded **New Horizons** program, City Tech will improve the preparation of its growing population of underrepresented students in the engineering program through partnerships with NASA Langley Research Center, North Carolina State University (NCSU), and Goddard Space Flight Center (GSFC) Office of Education New York City Research Initiative program.

Students in the New Horizons program will enhance their skills through hands-on research experiences in space additive manufacturing (AM). Through the use of NASA-relevant research in the curriculum, undergraduate students will be introduced to AM and electron beam freeform fabrication (EBF³), as they progress toward designation as a NASA Student Scholar. The program encompasses hands-on research activities, summer internships, and participation in developing an educational portal for AM.

New Horizons fills a critical gap in the engineering program offerings of the Department of Mechanical Engineering & Industrial Design by making them more relevant to current space industry needs—including those of NASA—and will create curriculum and learning experiences for all participants (pre-college students, their teachers, and university faculty and students). The project will have positive impact on more than 750 students currently enrolled in City Tech’s Department of Mechanical

Engineering & Industrial Design Technology.

City Tech will collaborate with GSFC Office of Education New York City Research Initiative program and will become a NASA research site that will host a team of K-12 educators and students for most of the summer to conduct STEM and NASA-relevant research.

Advanced Design and Fabrication of Prosthetic and Medical Devices (P&MD)

In this three-year National Science Foundation-funded project students will gain hands-on experience in the design and fabrication of **P&MD**, which will expose them to career opportunities in the flourishing medical device industry. City Tech's commitment to STEM education ensures that the heightened research emphasis opens up the scientific/engineering enterprise to students at a very early point in their academic careers, and draws upon the urban infrastructure available in New York City to expand opportunities for students and faculty research and collaboration with the STEM community.

Project partners include Hospital for Special Surgery (HSS), Device Development Division; SUNY Downstate Medical Center, Musculoskeletal Research; and nonprofit organizations such as E-Nable the Future Program (ENFP), an online global community of volunteers who are using technology to create free 3D-printed prosthetic hands for those in need. City Tech students have already worked on many of the existing designs produced by ENFP such as the Cyborg Beast, Talon Hand, and Odysseus Hand, among others. Collaboration will be extended to work with neighboring hospitals and healthcare facilities in New York City.

Medical devices include surgical and medical instruments, surgical appliances and supplies, and dental equipment and supplies. Students will join one of the following teams: Design & Fabrication, Materials, K-12, Mechatronics, or Business and Dentistry. Students will also participate in a 3-week summer intensive training program as well as the Medical Device Conference, which will foster collaboration between City Tech, the medical device industry, and community and nonprofit organizations worldwide.

Co-principal investigators on these grants include Dr. Sidi Berri, chair of the Department of Mechanical Engineering & Industrial Design Technology; Dr. Angran Xiao; Dr. Malek Brahimi; (New Horizons-NASA) Dr. Sidi Berri; Dr. Andy Zhang; Dr. Yu Wang; Professor Renata Budny; Dr. Subrata Saha, SUNY Downstate; Mr. Joseph Lipman, HSS; and Dr. Michael Grieves, Florida Institute of Technology (P&MD-NSF).

For more information about these projects, please contact Dr. Gaffar Gailani at 718-260-5233 or ggailani@citytech.cuny.edu

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About City Tech (New York City College of Technology) City Tech, of The City University of New York, is the largest four-year public college of technology in the Northeast and a national model for technological education. Located in Downtown Brooklyn, City Tech has an enrollment of more than 17,000 students in 29 baccalaureate and 27 associate degree programs and was recently ranked third in the nation in producing the highest paid associate degree-earning graduates (www.payscale.com). City Tech was also ranked fifth out of 369 public colleges and universities in overall economic mobility for its students and ninth among more than 2,000 U.S. institutions (www.equality-of-opportunity.org).

For more information, visit www.citytech.cuny.edu.

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