2022 EDUCATIONAL INNOVATION GRANT AWARDS

1. **Interdisciplinary Building Environmental Technologies Special Topics Course Pilots.** Professors Melody Baglione (ME), Pamela Cabrera (Arch), Tommy Schaperkotter (Arch), and Eric Teitelbaum (Arch). The project will begin by cross-listing the ARCH134A-B "Environmental Technologies" course sequence as ME363-4 "Special Topics in Mechanical Engineering: Building Environmental Technologies" electives for Spring and Fall 2023. Through collaborations existing modules in ARCH134A-B will be enhanced with additional focus on building science and engineering fundamentals, building automation systems, and practical measurement and analysis methods. The course will offer architecture and engineering faculty and students the opportunity to learn about and explore interdisciplinary approaches to reducing greenhouse gas (GHG) emissions from buildings through reducing embodied and operational carbon, integrating renewable resources, and other GHG reducing strategies and will incorporate actual building data and possible climate action pathways for Cooper Union.
2. **Interdisciplinary Generative Machine Learning and Data Science.** Professors Sam Keene (EE), Ben Aranda (Arch), and Aiden Bailey (Art). This grant will provide students enrolled in *Generative Machine Learning for Architecture and Art* and *Data Science and Design Projects for Social Good* funding to support materials for student work that will result in public exhibitions.
3. **Cooper Union Undergraduate Research Symposium.** Sangjoon (Bob) Lee (ChE'23), Xiao Lin (ChE'23), and Wesley Wang (ChE'24). Established in Fall 2022, Cooper Union Undergraduate Research Club was founded with the missions to 1) promote and communicate current research activities at Cooper Union and 2) to provide a platform for undergraduate students to acquire professional academic presentation experiences within Cooper Union. The CU Undergraduate Research Symposium will be held on November 29, 2022 and will showcase five oral presentations and more than 15 poster presentations. Faculty and audience judging will determine "Best Presenter Award" and "Best Poster Award".
4. **Interdisciplinary Senior Capstone Design: Community Building and Showcase**. Professors Melody Baglione (ME), Michelle Rosen (ME), Neveen Shlayan (EE), Carl Sable (EE), Cosmas Tzavelis (CE). In the 2022-2023 academic year, multiple engineering programs are conducting a pilot for interdisciplinary senior capstone projects. These projects provide opportunities not only for students to collaborate across disciplines on complex problems, but also to strengthen ties between departments. This grant will support a *Senior Design Showcase* during the final exam week in the fall and the spring to encourage community among the school and to promote interdisciplinarity. It is also an opportunity for students to present their work to a wider audience including faculty, staff, students, and an external review panel.
5. **Creating an Interdisciplinary Design Space.** Professors Michelle Rosen (ME) and Melody Baglione (ME). The goal of this initiative is to reimagine room 725 and provide a common design space for students. This space will be open to students of all engineering majors and years, especially first-year students enrolled in EID101 and seniors in capstone design. It will be a space for the propagation and development of ideas and will create a closer Cooper community.
6. **Interdisciplinary Mechatronics Skills.** Professors Michelle Rosen (ME), Melody Baglione (ME), Kamau Wright (ME), Neveen Shlayan (EE), Jabeom Koo (EE) Michael Giglia (ME/EE technician and project coordinator), Larry Hausman (EE). This initiative is a collaboration between faculty and students in mechanical engineering and electrical engineering to provide mechanical engineering students with the electrical engineering skills they need to succeed. It supports developing existing and new interdisciplinary electives at the interface of mechanical and electrical power as well as strengthening existing curricula within mechanical and electrical engineering.
7. **Bio-Inspired Robotics Course Projects**. Professor Michelle Rosen (ME). A new elective in bio-inspired robotics is being offered for the first time in the Spring of 2023. The course will be open to mechanical and electrical engineering juniors, seniors, and masters' students. The course will cover various types of locomotion (flying, jumping, climbing), sensing, and controls in both biological and human-made systems. The grant will provide support for student projects in this hands-on, project-based learning experience.
8. **Autonomy Lab Workshops.** Ridwan Hussain (EE'25), Ilona Lameka (EE'25), Azra Rangwala (EE'25), Daniel Mezhiborsky (EE'23), and Jon Lu (EE'23). Students from Autonomy Lab will offer workshops to high school, pre-engineering, undergraduate, and graduate students from NYC focused on autonomous vehicles and robotics projects. Examples of workshops include but are not limited to printed circuit board (PCB) design and soldering, to how to use GitHub, to exploring laser imaging, detection, and ranging (LIDAR) and simultaneous localization and mapping (SLAM) technologies.
9. **Physics-STEM Telescope**. Professors Alice Pisani (Physics), Phil Yecko (Physics), Doug Thornhill (Lab and Lab Tech Manager), and Dr. Elizabeth Waters (STEM Director). This grant will facilitate the purchase of a semi-professional telescope to serve as an instrument for Physics courses, STEM programs and public-facing outreach.