

-newsletter jan 2025



Boston University College of Engineering

BTEC PROJECT HIGHLIGHT

OrganiSense



Zhiwen Liu (MechE, '26), Jessica Qiu (EE, '27), Nikhil Lahiri (BME, '25), Nick Lin (MechE, '26), Eitan Rapalino (BME, '26), Nicholas Gerasev (MechE, '26), and team members not pictured

OrganiSense is the BU Mars Rover Club's rapid total organic carbon (TOC) analysis system for use onboard their Mars rover. Designed for extraterrestrial soil analysis, all processes are automated through the use of a serial-microcontroller interface. The system features a precision pipetting system, custom-built agitation devices, and an airtight reaction vessel to facilitate a controlled wet oxidation reaction. The release of carbon dioxide during the breakdown of organic matter is measured in realtime using near dispersive infrared (NDIR) spectroscopy. The rover will sample soil which the OrganiSense will analyze for the presence of life through the detection of carbon. BTEC has been a vital resource for the project's development, providing a controlled laboratory environment for system testing and guidance through the design process.





upcoming events

From Stars to Start-up

Feb 19 at 3:30, RKC-101



Anna Barnacka, Ph.D.

MindMics

CEO

Lutron Lighting Innovation Competition Feb 22 at 12, SILab



Cell Culture Workshop Mar, BTEC

Dean's Imagineering Competition Apr 17 and 18, SILab

BTEC x BMES Design Competition Apr 26 at 12, LSE B03

BTEC INNOVATION EXCELLENCE

Green Machine by Abigail Hassan (PolySci '25) and Jonathan Miller (MS ECE '25)

Team Green Machine **won a \$10,000 grant** from the BU Campus Climate Lab for their algae based microbial fuel cell that efficiently generates power by coupling photosynthesis to electrodes! This award will allow the team to take their innovation to the next level and install a 150-gallon algae fuel cell reactor at 25 Haws Street. The team, which began their project in BTEC in September 2023, received ESIF funding and were the 2024 winners of the Dean's Imagineering Competition.





SILAB PROJECT HIGHLIGHT

Fully Wooden Watch Box by Catherine Wang (MechE '25)

Catherine designed and built a custom watch box in SILab. Using a bandsaw, miter saw, NC mill, and wooden dowels, removable watch display cylinders and display platform were fabricated. The base box, which includes a drawer, is held together with dado, box, dowel, groove, and rabbet joints, resulting in a fully wooden construction with no nails or screws. The box was hand-sanded with five different grits of sandpaper before being finished with oil and varnish.



SILAB ADVISOR HIGHLIGHT

Winita Wangsrikhun (BME '25)



Winita began working at SILab in Summer 2023, where she developed her machine operation and fabrication skills while training and assisting other students with their projects. She contributed to the development of the Engineering Fabric Workshop and the annual SolidWorks & 3D Printing Workshop. Her experience at SILab provided her with a strong foundation in engineering skills while also honing her abilities as a mentor. To help students explore SILab, Winita created a beginner project guide titled "Embroidery Picture Frame," through which students can familiarize themselves with various tools. Winita also was a member of the Fabrication team in the Nia Lab, where she applied her fabrication skills to lung mechanics research.

ENGINEERING STUDENT INNOVATION FUND

For information on how to apply for funding scan the QR code to the right.

PAST EVENT HIGHLIGHTS

BTEC x BMES Design Competition

The 3rd annual BTEC x BMES design competition focuses on increasing access to healthcare technologies and incorporating diversity in design to improve outcomes. In December, Questrom student Johnny Koo presented on commercialization followed by 10 teams pitching their ideas to a standing room only crowd that included several graduate student mentors. The competition final will take place in April with **prizes sponsored by Merck**.

SWE at BTEC and SILab

The Society of Women Engineers (SWE) gathered in BTEC and SILab, respectively, to take the required safety trainings and to learn more about the cutting-edge technologies available.

BTEC x GWISE Career Mentoring Reception

BTEC and GWISE partnered to host a career mentoring reception with representatives from 10 companies. Over 80 graduate students attended.

BTEC x Society for Biomaterials Workshop

BTEC hosted a workshop with the BU Society for Biomaterials on the use of hydrogels and 3D bioprinting.

SILab Catapult Challenge

The annual SILab Catapult Challenge took place on a brisk Saturday afternoon in November on Nickerson Field. The previous weekend, 14 teams had just seven hours and limited resources to design and build their $3 \times 3 \times 2$ ft³ catapults. The winning catapult, by Layton Sahler (ECE '28) and Dillon Smith (MechE '28), launched a golf ball over 170 feet!

LEAP Into the Future of Engineering (LIFE)

During a 4-day hands-on workshop, LEAP master's students learned the fundamentals of cell culture, fluorescence microscopy, spectroscopic assays, and 3D bioprinting to prepare them for internships in Biotech.

Diane Joseph-McCarthy, Executive Director BTEC Kavon Karrobi, BTEC Manager Katie Kelso, SILab Manager For more information, email: **btec@bu.edu**





