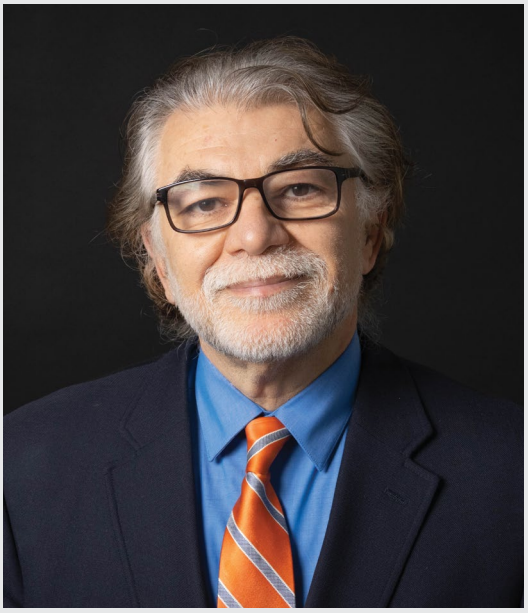
ANNUAL REPORT

engineering.uconn.edu

UCONN | COLLEGE OF ENGINEERING

23 24

MESSAGE FROM THE DEAN



Kazem Kazerounian
DEAN, COLLEGE OF ENGINEERING 2012-2024

Friends, I write to you as I return to faculty after finishing 12 gratifying years as your UConn CoE dean. My last year was filled with institutional growth, increased research capacity, and interpersonal achievements. I return to teaching and research with a refreshed excitement for the future. This moment provides an opportunity to celebrate our collective successes and to acknowledge the hard work and dedication of our faculty, staff, and students who have driven our vision forward.

In 2023-2024 we celebrated the elevation of our school into a college. The mechanical, computer science, and civil and environmental departments are now also recognized as schools. Between these achievements, we remain committed to our students. Our Vergnano Institute for Inclusion continues to make inroads in offering a welcoming environment for incoming and current students. Our industry partners also realize the benefit of a diverse and inclusive university, as evidenced by an additional $3 million donation from Mark and Betsy Vergnano. Within the College, our undergraduate team continues to invest in young engineers, this year with the opening of the new advising center in Engineering II. Our departments are seeing unparalleled growth within the higher education industry. For example, our School of Computing enrollment has more than quadrupled in the last 10 years. In fact, our total undergraduate enrollment has grown over 72 percent since 2012. Enrollment for the Fall 2023 semester totaled 3,664. We have increased partnerships with the School of Business, the College of Liberal Arts and Sciences, the School of Nursing, the School of Fine Arts, and other interdisciplinary units. The impact does not end at commencement; our College educates over half of Connecticut's engineers.

Our research faculty top $80 million in total expenditures this year. The average research expenditure per faculty member is over $.5 million. Top research awards this year included over $8 million for the National Institute for Undersea Vehicle Technology, and nearly $8 million for a U.S. Department of Energy Onsite Energy Technical Analysis and Support Center. New research centers continue to push us forward. As you will see in this report, our research and teaching faculty are innovators and entrepreneurs eager to make change.

This path has not been without obstacles, however, and we still see continued challenges such as a lack of growth in faculty and staff populations. University space is at a premium, and we struggle to match physical space to our necessary research and academics. But despite these challenges, we continue to think outside-the-box and rise triumphantly. I will be forever grateful for the support I felt from our faculty and staff, our advisory board, industry partners and my fellow deans. Throughout the University, our growth would not be possible without the support from our President Radenka Maric, the Provost and her staff, the Board of Trustees, and our talented partners across this institution.

As we reflect on the past year, it is clear that our CoE has continued to thrive and evolve, thanks to the collective efforts of our dedicated faculty, ambitious students, and supportive alumni. Each achievement highlighted in this report underscores our commitment to excellence in engineering education, research, and community engagement.

Looking ahead, we remain focused on our mission to drive Connecticut's innovation and nurture the next generation of leaders in engineering. Our strategic initiatives, from cutting-edge research projects to enhanced industry partnerships, are designed to position our College at the forefront of technological advancement and societal impact. We are excited about the opportunities that lie ahead and confident that our continued collaboration and perseverance will lead to even greater successes. To do so, it is my great pleasure to introduce our new dean, Ji-Cheng "JC" Zhao. JC was previously a department chair at the University of Maryland. His dedication to innovation and education, along with his creativity and collaboration, make him the ideal candidate to lead our College towards new heights of academic excellence and research innovation. He has clear goals to improve the CoE's U.S. News and World Report rankings nationwide, and invest in impactful research. We are in good hands.

Kazem Kazerounian

DEAN

Ji-Cheng "JC" Zhao
DEAN

Ji-Cheng "JC" Zhao is the new CoE Dean, effective August 1, 2024. Zhao joins us from the University of Maryland where he served as the Department Chair of Materials Science and Engineering (MSE) and Clark Distinguished Chair Professor. His pioneering work in computational design of advanced alloys and coatings, and high-throughput materials science methodologies has established him as a distinguished figure in the MSE field and led to the induction to the National Academy of Engineering (NAE) in 2023. Zhao is an inventor on 49 US patents and passionate about both fundamental research and innovations that will impact the wellbeing of people and the environment. Zhao also has served as a Program Director at the US Department of Energy. Zhao will leverage his experience in industry, academia and government to advance the College's mission.

TABLE OF CONTENTS

UCONN COLLEGE OF ENGINEERING ANNUAL REPORT 2023-2024

The University of Connecticut (UConn) College of Engineering (CoE) Annual Report is produced by the Engineering Communications Team based on information provided by the deans, department heads, unit directors, and support staff. Special thanks to the CoE Communications, research development, and administrative team members that helped put the final report together. See page 53 for more information about the Communications team.

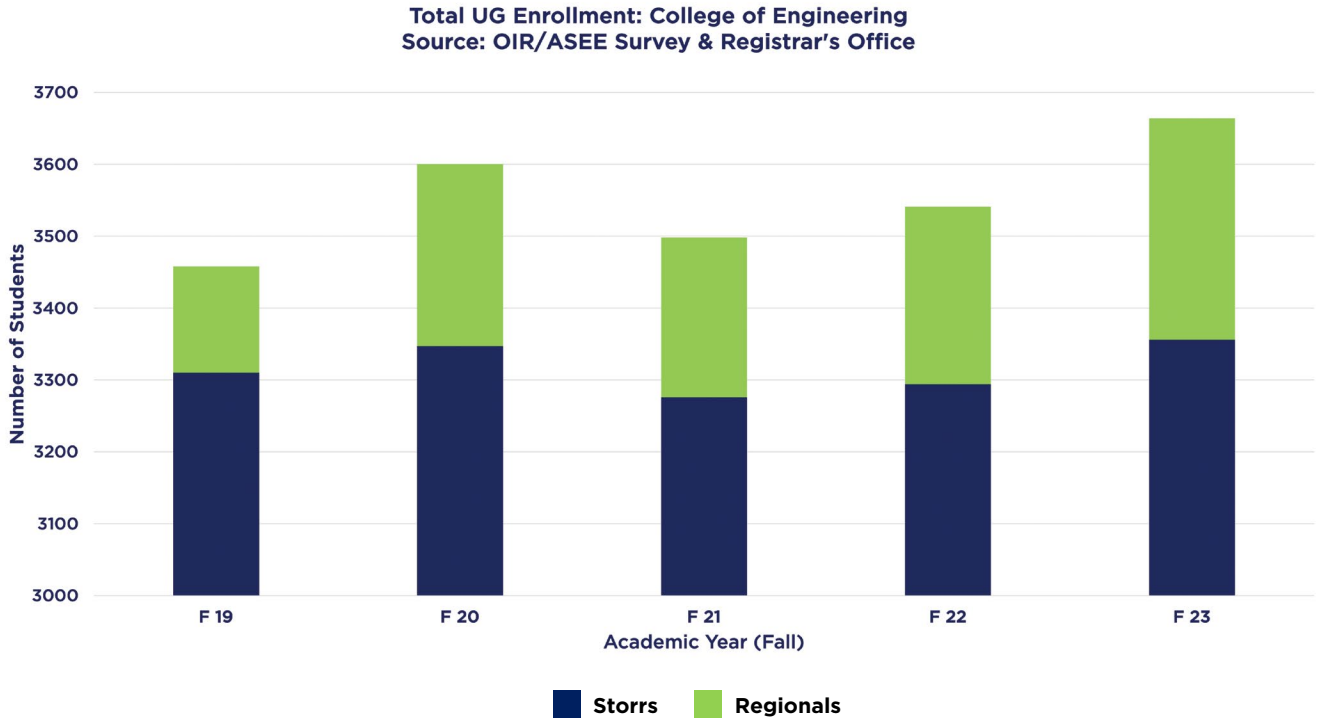
On the cover: UConn College of Engineering students, faculty, and staff gather together wearing fresh attire on the steps of the Francis L. Castleman building to celebrate the new college distinction. Hover your smartphone's camera over the QR code at the left to read the story from *UConn Today*.

UNDERGRADUATE EDUCATION

Enrollment Growth

In a little over a decade, with the help from approved state legislation that provided support for growth, the enrollment has increased by more than 72%. The CoE continues to respond to the needs and demands of both our students as well as the state, adding new majors over the past three years— Multidisciplinary Engineering (MDE) in 2021, Robotics Engineering in 2022, and now, Data Science and Engineering (DSE) in 2023.

Enrollment for the Fall 2023 semester totaled 3,664, with 3,294 of those students at Storrs and 308 students at regional campuses. Admitted incoming freshmen had an average SAT score of 1335. Our School of Computing has seen extraordinary demand and growth in the last five years. Growth across departments has not been uniform and CoE leadership is working to address the challenge of maintaining current enrollment levels and developing services and programs to enhance the student experience. To meet current enrollment demands, the CoE has been reallocating resources and encouraging department heads to collaborate with faculty at regional campuses and leverage opportunities to offer remote courses across campuses.



Experiential Education & Career Readiness

Recognizing the importance of connecting students to employment opportunities, the CoE Office of Experiential Education hosted a two-day Engineering Career Fair in March, attended by more than 1,000 engineering students and 130 engineering employers. An additional 2,550 engineering students attended the various career fairs and employer events hosted by UConn's Center for Career Development throughout the academic year. These employment opportunities provide our undergraduate students with significant exposure to the engineering workplace while helping them achieve career readiness through the enhancement of their career readiness competencies.

Furthermore, in collaboration with the CoE Career Readiness Lead, the Office of Experiential Education hosted a series of career readiness events and workshops with a strong emphasis on understanding, enhancing, and communicating career competencies. Other topics included career exploration, personal branding, and professional networking. In total, 1,222 CoE students attended at least one career-related presentation or workshop during the academic year.

Additional career readiness support was provided through the Cooperative Education (Co-op) and Senior Design programs. Co-ops offer an extended learning experience in industry beyond the traditional summer internship and often result in a job offer after graduation. The Co-op program caters to students who are seeking professional work experience while maintaining affiliation as a UConn student in lieu of taking traditional coursework for a semester or academic year.

Senior Design is a program requiring graduating engineering students to complete a year-long design project, typically performed in teams of three to four students and in collaboration with an industry or government sponsor. This year's Senior Design Demonstration Day was also an opportunity to survey the CoE seniors about their post-graduation plans with regard to employment and graduate studies.

International Engineering Programs

The CoE's International Engineering Programs (IEP) successfully rebranded this past academic year in an effort to continue to grow abroad and dual degree programming, and cultivate a community of international engineers both on and off campus. In the IEP dual degree programs, students participate in an unparalleled experience as they develop into global engineers. By spending a year abroad, students benefit from the combination of a strong engineering program and immersion into a foreign language and culture. This life-changing experience prepares graduates for rewarding and diverse engineering careers around the world. Typically, international engineering students graduate within five years and earn two degrees – a B.S. in an engineering discipline and a B.A. in French (Technopole), German (EuroTech), or Spanish (ESP). For engineers interested in the various abroad experiences offered through the University, CoE students can engage with a variety of offices and resources on campus through the IEP's Engineers Around the World (EAW) program, which is a campus collaborative initiative that assists students with details and logistics of their international experience. EAW is set to be officially rolled out as of Fall 2024, offering programming and scholarship opportunities to the approximately 450 identified international-interested students in the College – of which, 43 are currently enrolled in one of IEP's dual degree programs.

Engineering House Learning Community

Every year, the CoE invites approximately 100 first-year and 50 second-year (sophomore) students to join the Engineering House Learning Community (EHLC). EHLC is meant to provide a sense of community for students across engineering majors while offering specialized academic and experiential educational opportunities. First-year students engage in group and experiential learning projects, such as engineering and building modified pinewood derby cars, creating an informational interview packet with contacts in industry, and other activities at labs and other relevant sites on and off campus. Additionally, student leaders plan and run events to help students meet friends, navigate the University, and explore their majors. The EHLC student leadership team creates and modifies several ongoing annual events and provides students with regular updates on daily and weekly activities taking place on campus and in the community.

EHLC sophomores participate in a program that introduces them to the year-long Senior Design process. In an observational role, students are paired with current Senior Design teams as interns to gain a better understanding of project design requirements, engineering design-builds, and how to work with industry partners. EHLC sophomores also participate in relevant design-process trainings, networking workshops, and presentations on resources and research methods. This year, EHLC sophomores engaged in a year-long service-learning project through a nationally recognized program titled "Go Baby Go." The project pairs engineering students with families of children who have physical challenges to design a modified toy ride-on car to provide low-tech power mobility for their child. Through the interdisciplinary work of EHLC sophomores and graduate students in UConn's Doctor of Physical Therapy program, the design, build, and fitting of these cars for three local families were displayed at a Go Baby Go event hosted by EHLC in April.

UNDERGRADUATE EDUCATION

Advising

In AY2023-2024, the CoE's academic advising program continued to excel, as recognized in the most recent ABET accreditation evaluation. Faculty and professional staff advisors collaborated to seamlessly provide comprehensive support to students, focusing on orientation, academic and career planning, and holistic development.

Noteworthy awards in 2023 underscored the dedication of engineering's professional advising staff: Shoshana Armington was honored with the UConn Spirit Awards University Citizen Award, Nick Delaney received the Staff Career Advocate of the Year award, and JP Lappen was recognized as the Undergraduate Professional Advisor of the Year.

Key achievements included breaking ground on a new Engineering Undergraduate Center dedicated to advising services, slated to open in Fall 2024. This center will serve as a central hub for advising activities, offering enhanced support and resources to students. Additionally, a first-ever faculty advisor training program, presented by engineering faculty advising fellows, equipped faculty advisors with the necessary skills to advise students more effectively. The launch of a new user-friendly advising website provided students, advisors, and other campus stakeholders with easy access to essential information, tools, and resources, enhancing the overall advising experience.

Throughout the year, Engineering Advising remained committed to advancing the President's student success mission through innovative initiatives, collaborative efforts, and documented best practices. By fostering a supportive and inclusive advising environment, academic advisors empowered students to thrive academically, professionally, and personally.

Multidisciplinary Engineering Degree

The Multidisciplinary Engineering (MDE) program supported its third cohort of students beginning Fall 2023, while also admitting the second group of internal admits to the program. The program saw steady expansion of the Industrial Design specialization with formalized class offerings and increased enrollment in this area. As a highlight, the program had its first graduating class in

ACADEMIC ADVISING

The Engineering Undergraduate Advising team is proudly dedicated to:

- Educating a diverse group of students and stakeholders about University and College policies, procedures, programs, and resources.
- Creating active partnerships to support and empower undergraduate students in making meaningful academic decisions in pursuit of their goals.
- Fostering student growth and development toward becoming engaged members of the university community and contributing members of society.

14 **Professional Staff**

5 **Campuses Served**

1 **New Advising Center**

spring 2024, with one student pursuing the Industrial Design specialization and two students pursuing an Individualized specialization. MDE is a degree path that enables students to work across fields in pursuit of a broadly skilled engineering degree. Grounded in engineering fundamentals from multiple majors, MDE provides students with the flexibility to pair an engineering degree with other interests and majors at the University. Several joint programs with partners from around the University are formalized and fostered, allowing for area elective coursework to be selected by continuing students in a transparent manner.

MDE continues to offer four specializations with University partners: Industrial Design, Entertainment Engineering, Human Rights and Sustainability, and an Individualized specialization. A proposal process and formal faculty advising was established for students pursuing an Individualized specialization, which includes careful planning with a professional advisor and approval by the MDE faculty advisory board, and advisement for upper-level coursework by a faculty member in the student's desired area of impact. This process ensures coursework is selected to promote a deep investigation of an area of study that will be meaningful for future career endeavors. The faculty advisor is versed not only in University and College graduation requirements, but also can provide mentorship and expertise in the student's desired area of study. Additional opportunities for partnerships in MDE are being explored by the CoE with interested parties around the University.

Four-Year Computer Science Program at the Stamford Campus

The four-year Computer Science Program at the Stamford campus, launched in Fall 2017, offers students the ability to complete their entire four-year degree at the Stamford campus. The program continues to make the curriculum widely available to Connecticut's information technology sectors, including finance and insurance. Students have the option to pursue one of the following concentrations: Software Design and Development, Unspecialized, and Software Development for Mobile Computing. Enrollment in the four-year Computer Science program at Stamford in Spring 2024 (121 CS students) exceeded more than half the total enrollment for Stamford engineering (201 total students). CoE funded a temporary staff advisor for AY2023-2024 and Summer 2024 to support first- and second- year students with advising. This staff member

UCONN STAMFORD ENGINEERING

UConn Stamford offers two years of engineering in all 15 engineering majors. Engineering courses and supporting courses are offered by highly qualified faculty. Computer Science students can complete their B.S. degree at the Stamford campus.

121 **Computer Science Students**

201 **Total Students**

supported the 200+ engineering students through group advising, individual advising, curriculum redesign, and faculty advisor training. This position was critical to the success of academic advising at Stamford this year. The Stamford Computer Science faculty (five total) are positioned to begin advising upper-classmen Computer Science students starting Fall 2024 in alignment with ABET criteria as a direct result of the temporary resources invested in professional staff advising. CoE continues to make staffing at the Stamford campus a priority for AY2024-2025, including both faculty and advising resources.

First-Year Engineering Curriculum at Regional Campuses

CoE enrollment across the four regional campuses totaled over 260 this spring. There continues to be a high demand for engineering at all four regional campuses, especially in Stamford, which has the highest regional campus enrollment. The College continues to offer the first-year engineering curriculum at all of UConn's regional campuses. The partnership established with campus stakeholders enables the CoE to offer coursework beyond the first-year curriculum at regional campuses. The second-year engineering coursework available includes a laboratory course and has allowed students to continue at their regional campus through their fourth semester for most majors. College leadership continues to evaluate alignment of engineering programs at regional campuses while balancing the strategic goals and resource costs at those campuses and the CoE. As a highlight, CoE was able to expand its Peer Advising program to the Stamford campus. Students are able to engage with the on-site peer advisor to build meaningful connections and gain knowledge regarding pursuit of an engineering degree beginning at a regional campus. For AY2024-2025, the CoE will collaborate with regional campus partners to redesign the ENGR 1000 curriculum to tailor the future iteration of the course to serve the individualized needs of regional campus students.

Regional Campus Support Network Initiative

Engineering faculty at regional campuses continue to offer flipped classes and online lectures at regional campuses, increasing accessibility to students, and offering additional problem-solving collaborations during classtime. There is even potential to expand the four-year degree offerings at Stamford in the future with this model, should resources be available. At the annual regional campus engineering summit hosted by the CoE in Summer 2023, campus partners met to assess programmatic needs and student outcomes to enhance the regional campus engineering experience. CoE looks to continue the Peer Advisor program at regional campuses for the next academic year and expand the regional campus engineering advising resources available for stakeholders on the new Advising website.

Students attending class at UConn Stamford.

College of Engineering Majors
AY2023-2024

Major	AVYPT	HRTFD	STMFD	STORRS	WTBY	TOTAL	2nd Majors
Biomedical Engineering	1	3	3	370	2	379	
Biomedical Engineering (2nd Major)				**0**		**0**	**0**
Chemical Engineering	1			180	1	182	
Chemical Engineering (2nd Major)				**1**		**1**	**1**
Civil Engineering	3	2	10	250	4	269	
Civil Engineering (2nd Major)				**10**		**10**	**10**
Computer Engineering	1		14	70		85	
Computer Engineering (2nd Major)				**9**		**9**	**9**
Computer Science	2	3	129	793	9	936	
Computer Science (2nd Major)						**0**	
Computer Science and Engineering	1		29	337	4	371	
Comp. Sci. & Engineering (2nd Major)						**0**	
Electrical Engineering	3	4	9	210	9	235	
Electrical Engineering (2nd Major)				**4**		**4**	**4**
Engineering Physics				22		22	
Environmental Engineering	2	1	3	109	1	116	
Management and Engineering for Manufacturing			1	117	2	120	
Materials Science and Engineering			4	76		80	
Materials Sci. & Eng. (2nd Major)						**0**	
Mechanical Engineering	11	5	13	739	10	778	
Mechanical Engineering (2nd Major)				**1**		**1**	**1**
Multidisciplinary Engineering	1		2	49	1	53	
Robotics	1		2	31		34	
Robotics (2nd major)				**3**		**3**	**3**
Undecided			1	3		4	
TOTALS	**27**	**18**	**220**	**3384**	**43**	**3692**	**28**
TOTALS Without 2nd Majors	**27**	**18**	**220**	**3356**	**43**	**3664**	

GRADUATE EDUCATION

Overview

AY2023-2024 has been a remarkable year for our graduate education at the CoE, marked by significant milestones and transformative changes. We have witnessed a tremendous rise in graduate applications, a testament to the stellar reputation and innovative programs of our college. This influx of talented students holds immense promise for the future of cutting-edge research and technological advancements.

Our graduate students come from across the country and world and embody the full range of diversity including racial, ethnic, cultural, neuro, sex, gender, LGBTQ+, and intersectional dimensions. In support of our remarkable graduate students, the CoE continues to invest in a variety of initiatives to grow and improve the number, quality, and diversity of our student population and to enhance the training, support, experience, and outcomes for our graduate students to ensure they will thrive in a variety of settings including academia and industry.

This year also heralds the conclusion of the long-standing GE fellowships program, which has provided vital financial support to our graduate students for many years. Our college recognizes the pivotal role graduate students play in driving innovation, pushing boundaries, and shaping the future, and remains steadfast in its commitment to seeking new avenues to nurture and empower the next generation of scholars and researchers. Leading initiatives for M.S. and Ph.D. students in AY2023-2024 are a team of dedicated faculty and staff including the graduate directors of all the departments and programs as well as Professor and (now former) Associate Dean for Research and Graduate Education Leslie Shor; Associate Professor and Director of Graduate Studies Julia Valla; Director of Graduate Outreach and Diversity Aida Ghiaei; and Program Assistant for Engineering Graduate Programs Jodie LaRosa.

Recruitment Initiatives

In the past few years, we emphasized diversity in our recruiting efforts in part by steadily building our presence at regional and national events hosted by diversity-serving engineering organizations for Black (NSBE), Chicano and Native American (SACNAS), Hispanic (SHPE), female (SWE), and LGBTQ+ (oSTEM) students. In Fall 2023, we participated in recruiting events at the GEM (Getting Ready for Advanced Degrees) consortium annual conference in Philadelphia. GEM consortium is a unique and powerful connection to a national network of universities and

DIRECTOR OF GRADUATE STUDIES

Ioulia (Julia) Valla assumed the role of director of Graduate Studies (DGS) of the CoE in January 2024. Valla is tasked with coordinating course and curriculum actions for the CoE as well as advancing strategic initiatives on behalf of CoE graduate programs and CoE graduate students including supporting faculty applying for collaborative graduate training

grants; developing new collaborative training programs with local industry; working to ensure continuous improvement in graduate students' experience and success including diversity, equity, and inclusion; and in partnership with Engineering Communications, lead marketing and communications efforts to increase our recruitment of high-quality students for our programs. Valla is associate professor in the Chemical and Biomolecular Engineering (CBE) department. She is an NSF CAREER Award and ACS /PRF Young Investigator Award winner and her lab focuses on renewable and sustainable energy and fuels. She currently serves as special advisor to the United States Department of Agriculture. Her previous leadership in graduate education includes her role as associate director of the Center for Clean Energy Engineering and establishing a MEGE and certificate in Process Engineering in CBE.

employers (corporations and national laboratories). GEM connects highly qualified students from underserved groups to STEM graduate programs with much-needed financial support that is often the deciding factor in pursuing graduate education.

In Spring 2024, a team consisting of Aida Ghiaei; Associate Professor in Residence, Co-Director Krenicki Arts and Engineering Institute Jorge Paricio; Ph.D. Candidate in Material Science and Engineering Luis Ortiz; and a Ph.D. Candidate in Civil and Environmental Engineering Leana Santos, had the opportunity to visit several universities and present about the graduate programs and current research positions available at UConn. The visits included the University of Puerto Rico Mayaguez, the University of Puerto Rico Humacao, the University of Ana G. Mendes Gurabo, Inter American University of Puerto Rico, and the Polytechnic University of Puerto Rico. During the trip, the team participated in a job fair held at the University of Puerto Rico Mayaguez, where they had the chance to engage with faculty and students and share information about UConn's graduate programs and research opportunities. The trip was successful in initiating new collaborations among faculty members and increasing awareness among students who applied and/or were accepted for summer and fall positions at UConn. Overall, the trip provided an excellent opportunity to not only promote UConn's graduate programs and research opportunities, but to establish new connections and network with peers at other universities.

Fellowships to Offset the Cost of Graduate Assistantships

In the past few years, we focused on developing philanthropic-based graduate fellowships or training grant fellowships to offset the cost of graduate education for tuition-paying graduate students or for principal investigators. In total, five students earned GE fellowships, two students earned Sikorsky fellowships and three students earned GEM fellowships. (Our students receive many other fellowships directly not reported here.)

Student Transition and Wellness

We continue to improve graduate students' experience and wellness by fostering community building. At the beginning of the Fall 2023 and Spring 2024 semesters, the CoE hosted ice cream socials to welcome new and returning graduate students to campus. Both social events were attended by more than 150 students and have become popular. We again offered a series of webinars, building from our inaugural 2022 series. This summer institute for international students is aimed to ease the transition of international students into American life. A one-credit first-year experience class was taught in Fall 2023 and Spring 2024, open to both international and domestic graduate students, to further facilitate the transition into their graduate life. Fifteen students registered in Fall 2023 and another five students registered in the Spring 2024 session.

GE Fellowships

For the AY2023-2024, we continued to solicit GE Fellowship nominations in the following three categories: the NextGen Scholar, Inclusion and Equity, and Excellence, to expand our outreach for talented prospective Ph.D. candidates and recognize excellence in current graduate students. The goal of the fellowship program is to entice outstanding students, to establish long-term recruiting relationships with underrepresented institutions (HBCUs, HSIs, MSIs, international institutions that are less represented), to recognize exceptional service to the department, school, university, and professional societies, and to prevent premature leave of excellent graduate students without completing their degree. Faculty advisors nominated one student for each of the first two categories and students self-nominate themselves for the last. For AY2024-2025, the committee awarded three NextGen, one Inclusion and Equity, and three Excellence awards.

However, this year marks the conclusion of the long-standing GE Fellowships program, which has provided vital financial support to graduate students for so many years. As CoE bids farewell to this longstanding program, it remains committed to seeking new avenues to nurture and empower the next generation of scholars and researchers. The University recognizes the pivotal role graduate students play in driving innovation, pushing boundaries, and shaping the future. Consequently, it is actively exploring alternative means to provide comprehensive support, ensuring that

financial constraints do not hinder the pursuit of academic excellence. This commitment underscores the CoE's dedication to fostering an environment where talented minds can thrive, collaborate, and contribute to advancing human knowledge across disciplines.

Recruiting Challenges

In May 2022, we implemented a survey to assess the general situation of graduate recruiting in the College. Every CoE department participated in this survey, with their consensus answers provided by their respective graduate directors. The survey indicated that the quality of Ph.D. students as well as funding resources (especially unrestricted funding such as TA lines that can help mitigate recruiting uncertainty) are two critical factors that limit the growth of the research programs within CoE. In particular, the consensus is that the ranking of UConn as a university, followed by the ranking of the individual department and reputation of faculty members, plays an important role in attracting quality graduate students, which urgently needs the leadership's attention and continuous effort. In the short-term, digital marketing is highly recommended by most departments as a remedy to reach the audiences that are not aware of UConn's strong research presence. Word of mouth and maintaining a strong relation with institutions that have a history of sending graduate students to us have also seen success. Lastly, recruiting our own undergraduate students is recommended as an effective recruiting strategy. This recruiting route also helps alleviate our urgent need of domestic students for participating International Traffic in Arms Regulations (ITAR) and export-controlled research.

In AY2022-2023, we gained valuable insights into the diverse needs and priorities of the CoE community regarding graduate recruitment. For instance, we observed a preference for strong international students in scenarios not subject to export control and ITAR regulations, while urgent demand exists for robust domestic candidates in programs related to national security. To address these distinct needs, tailored initiatives are essential.

In AY2023-2024, the Deanery team prioritized digital marketing efforts, partnering with Keystone International Education Group to enhance recruitment for our Ph.D. programs. Additionally, we engaged the services of Makiaris Media to connect with prospective applicants in the New England area. An online graduate open house held in December 2023 attracted over 300 interested applicants, allowing them to interact with graduate program directors and gain insights into admissions, application procedures, and available research projects.

GRADUATE POSTER COMPETITION

Antigoni Konstantinou (left), competition winner from Materials Science, posed with Aida Ghiaei (right) and Julia Valla (middle) during SAGE poster competition in March 2024. Capping off our recruiting season was the CoE visitation event. This year, we combined our graduate visitation event with our annual poster competition where more than 100 posters were presented across engineering disciplines. This provided an incredible opportunity for prospective students to become engaged with current graduate students, ask questions and see the dynamics first-hand. We continued this format from last year, since we received very positive feedback from all attendees and our new visitors.

GRADUATE EDUCATION

To further facilitate recruitment, our CoE Graduate programs offered a limited number of application fee waivers to candidates applying to a Ph.D. program by January 1, 2024, with a GPA of 3.5 or higher. Moreover, we incentivized faculty involvement in recruitment by providing funds for those attending international conferences and actively engaging in recruitment activities. Faculty were equipped with decks of slides and informational flyers to assist in their presentations.

Throughout these efforts, we continue to enhance existing initiatives aimed at our undergraduate students and other diverse student groups.

All these efforts resulted in over 40% increase in the number of submitted applications so far.

Professional Skills

One of the persistent challenges facing our graduating M.S. and Ph.D. students is that they struggle to keep pace with the increasing emphasis placed by employers on leadership, interpersonal, and communication skills. CoE has undertaken major initiatives focused on addressing these challenges.

For AY2023-2024, the Professional Development (PD) course series (led by Fayekah Assanah, assistant professor in residence at the BME department and the director of engineering education for the CoE) offered several courses and workshops to our Engineering Graduate Students. This academic year, the graduate school offered “Select Graduate Teaching Assistantships” to Britney Russel (CBE), Vandana Gupta (CSE), Sachin Tripathi (CEE), Antigoni Konstantinou (IMS), and Ayah Abdallah (ECE) to assist with expanding the curricula for the PD course series. In Fall 2023, 15 students enrolled in the ENGR 5410: Scientific Communications, where students were trained to practice “storytelling” for effective research communication. A cohort of 12 students also enrolled in the ENGR 5420: Engineering Internships and Careers in Industry, where students built networking skills and LinkedIn profiles, learned to write resumes, and practiced interviewing skills.

In ENGR 5450: First Year Experience led by Aida Ghiaei, was approved as a permanent course. Fifteen students enrolled in the course during Fall 2024 to learn about the support and opportunities UConn provides for students to thrive academically and personally. This course was also

JOHN LOF LEADERSHIP ACADEMY

Progress in society hinges on culturally competent visionaries who can communicate, collaborate, and innovate. The John Lof Leadership Academy is dedicated to cultivating these next-generation leaders, empowering them to make an impact in academia, industry, and beyond.

Driven by a "for us, by us" philosophy, John Lof Scholars actively shape their futures through immersive training, targeted workshops, and hands-on learning experiences that extend far beyond the UConn campus.

offered in the Spring, and five students registered for this class. A new course, ENGR 5300-006: Practicum in College Teaching, was also added to the PD course series and was offered both in the Fall and in the Spring of 2024. A total of four students enrolled. In the Spring 2024 semester, six students enrolled in the ENGR 5430: Teaching Engineering-Communication and Pedagogy. In this class, students learned the skills to design and develop a course. They also offered two workshops: 1) the Negotiation Workshop and 2) the 3MT Workshop to offer hands-on practice for students to compete in the 3MT Competition. They also submitted an evidence-based paper to ASEE highlighting the educational benefits of the PD courses. This paper was presented at the ASEE 2024 Conference in Portland, OR. Our Professional Development webpage on grad.engr.uconn.edu details the courses and offers registration options for students.

New Ph.D. Program in CoE

The Ph.D. in Engineering Education was approved by the Board of Trustees at their December 2023 meeting, and will welcome its first cohort of seven students in the fall of 2024. Core faculty include Professors Daniel Burkey and Desen Özkan from CBE and Professors Arash Zaghi and Lexi Hain from CEE. As a discipline, Engineering Education focuses on the intersection between engineering and the social sciences, and UConn's unique contributions to this space include work in socio-technical complexities of engineering, human rights and sustainability, neurodiversity and inclusive learning, AI and machine learning, and engineering ethics. With the creation of this degree, UConn joins many other prominent engineering colleges offering Engineering Education degrees, including Purdue, Ohio State, Virginia Tech, Michigan, and Arizona State.

Student Demographics

930 Graduate students
254 Female

Degrees Conferred AY2023-2024

70 MENG
145 M.S.
84 Ph.D.

Student Support

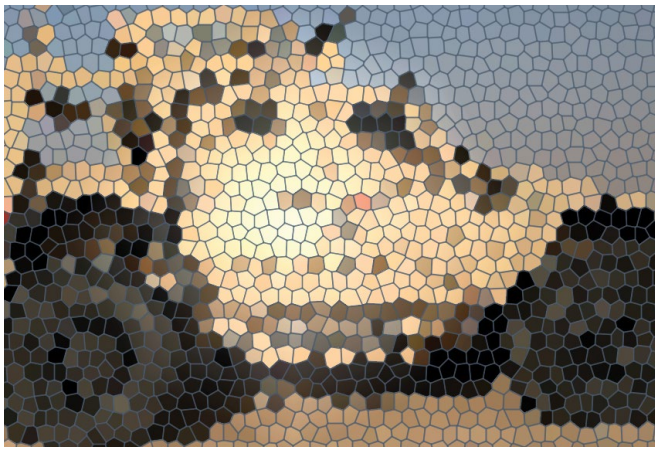
349 Research Assistantships (RA)
85 Teaching Assistantships (TA)
124 Other

School of Civil and Environmental Engineering (SoCEE)

- The School has transitioned from a department, responding to global challenges with a vision for sustainable civil and infrastructure solutions and a commitment to educational excellence. Marked by growth from 150 to 390 undergraduates since 2003, significant rises in research expenditures ($5.3M to $12M) and graduate offerings, the SoCEE aspires to meet an increasing workforce demand highlighted by a projected job increase due to the Infrastructure Investment and Jobs Act.

School of Mechanical, Aerospace, and Manufacturing Engineering (SoMAM)

- A newly revised and updated undergraduate ME curriculum will be launched in Fall 2024.
- The graduate program was ranked 50th in the country by *U.S. News and World Report*.
- The school launched the new D2REAM research center in collaboration with U.S. Army DEVCOM Ground Vehicle Systems Center.
- The department has transitioned into a School to reflect the current breadth of undergraduate and graduate programs being offered, as well as the opportunities to develop a new undergraduate degree in aerospace engineering.
- Research funding and expenditures have continued due to large NIH RO1 grants.
- Faculty have continued to receive significant recognition from their research communities. For example, Chih-Jen (Jackie) Sung received the Prestigious 2024 AIAA Energy Systems Award; Thanh Nguyen was named to the National Academy of Inventors; Osama Bilal received the 2023 Phononics Young Investigator Award; and David Pierce was elected to the Connecticut Academy of Science and Engineering.
- The FSAE team placed fourth overall at the 2024 International FSAE competition in Michigan. This is a significant achievement and the best placement ever for the team.



Digital Design Research, Analysis, and Manufacturing Center

The Digital Design Research, Analysis, and Manufacturing Center (D2REAM) at UConn is an academic-government-industry partnership aimed at enabling the development of groundbreaking Modeling and Simulation (M&S) capabilities to support advanced structural digital design and manufacturing and discovery of metamaterials for the next generation of Army ground vehicle systems. Furthermore, the center will use the strong research ecosystems at UConn to build a strong partnership between academia, government, and industry and train a talented workforce and thought leaders for government and industry.

School of Computing (SoC)

- Undergraduate student enrollment in SoC continued to grow, reaching a record 1,324 majors and 278 minors in Spring 2024.
- The computing curriculum was expanded with new courses, including Blockchain Technology, Introduction to Cloud Computing, Computer Vision and Machine Learning for Image Analysis, and Introduction to Data Science and Engineering.
- The new School has put in place a Ph.D.-qualifying exam; the first round of student examinees took the test in Spring 2024. It is a "research readiness" exam that asks students to read, understand, and present a collection of papers from top-tier venues.
- Faculty members have been highly successful in procuring external grants. Some examples are: Song Han: $143K; Derek Aguiar: $950K; Yuan Hong: $470K; Bing Wang: $500K; Suining He: $200K; Amir Herzberg: $300K; Sheida Nabavi: $650K; Pavel Skums: $300K; Qian Yang: $950K; Dongjin Song: $665K; Minmei Wang: $300K; Philip Bradford: $238K; Ben Fuller: $770K; Laurent Michel: $770K; Alex Russell: $400K; and Caiwen Ding: $1M.
- Three faculty members have won the prestigious NSF CAREER Award: Suining He, Caiwen Ding, and Dongjin Song.
- Notable Awards received by the faculty include: Ben Fuller: Castleman Term Professorship; Yuan Hong: Collins Aerospace Professorship in Engineering Innovation; Qian Yang: CETL University Teaching Fellow Award; and Dongjin Song: Frontiers of Science Award.
- DEI Activities: Hasan Baig and Sanguthevar Rajasekaran finalized the BPC Plan; Olga Glebova, Jake Scoggin, and Ben Fuller successfully applied for Cultural Competence in Computing Fellows; Shiri Dori-Hacohen started an initiative for Disabled in Computing; Jake Scoggin led a book club; Lina Kloub successfully implemented neuroinclusive best practices in CSE3500; Faculty participated in DEI conferences (RESPECT, Tapia); and BEACH continued its success with faculty-hosted brown-bag lunches, career panel (Yufeng Wu), stress relief workshops (Lina Kloub), etc.

DATA SCIENCE AND ENGINEERING

The new Data Science and Engineering major has been designed to meet the skyrocketing demand for data scientists and engineers in today's information technology-driven economy. The program produces graduates with strong computing, engineering, and analytics competencies that will design and build systems for collecting, storing, and analyzing data at scale. The curriculum provides students with the knowledge and skills required throughout the data science lifecycle, including the principles of data acquisition, management, integration, predictive modeling, and visualization. Required courses provide rigorous training in computer programming, algorithms, data structures, databases, statistical inference, predictive modeling, big data analytics, and machine learning as well as data security, privacy, and ethics. Elective courses provide students the opportunity to acquire advanced competencies in areas such as artificial intelligence, data mining, software engineering, numerical computing, and stochastic modeling and to become familiar with various data-intensive scientific and engineering domains. All Data Science and Engineering majors complete a year-long Senior Design project where they apply their skills to design and implement solutions to real-world data-intensive problems.

Biomedical Engineering (BME)

- Professor Syam Nukavarapu has been appointed as the department head. Throughout his career, he has made significant contributions to the field of biomaterials science and engineering. His research interests span biomaterials, bioprinting, and tissue engineering with an emphasis on tissue-tissue interface engineering. He made seminal contributions to the development of engineered grafts and understanding biomaterial/graft interactions with cells and tissues. He worked closely with the leadership, faculty, and students at both UConn and UConn Health campuses with the goal of one BME department, which is critical for a cross-campus department to thrive and be successful.

- New collaborative course between BME, Engineering and Dramatic Arts: This is a hands-on undergraduate-level course that teaches students how to seamlessly combine elements of biomedical engineering, industrial design, and fine arts to build wearable health care monitoring sensors that are integrated into fabrics to form smart apparel.

- Modernizing undergraduate labs: Integration of a wearable wireless motion capture system for analyzing human movement into our bioinstrumentation-based courses. Students collect real-time kinematic data using the system and incorporate it into their signal processing and wearable sensors laboratory activities, thus enriching their learning experience.

- Senior Design lab with state-of-the-art technology: Delsys Biofeedback system with application to the Trigno Avanti Delsys sensors, and the Galileo Sensor with the Neuroscience Map. This technology will help advance biomechanics-related senior design projects.

Senior Design Competition Winners:

- **Team 24:** Joint-on-a-chip Osteoarthritis Disease Modeling for Evaluating Anti-inflammatory Drug Performance (first place).

- **Team 7:** 3D Printed Prosthetics for Single Mastectomy Patients (second place).

- **Team 3:** Circuit and Sensor Design for Smartphone-based Electroretinography (tied for third place).

- **Team 4:** In Vitro Model for the Study of Traumatic Brain Injury (tied for third place).

ONE DEPARTMENT COMBINING THE BEST OF THE ENGINEERING AND HEALTH CENTER CAMPUSES

The Biomedical Engineering Department seeks to provide students with the fundamental knowledge and skills needed to excel in the integration of science, engineering, and medicine to improve the quality of life and to become leaders in biomedical engineering.

14 ROI Grants

52% Female Students

19% Multicultural Students

Electrical and Computer Engineering (ECE)

Student Achievements

- Frost Robotics club was awarded a $2,500 grant from Automated Building Systems, Inc.
- Senior Design team 2301, including Abram Rosario (EE), Alfred Lee (ECE), Uilliam Kutrolli (EE) and Dawid Karpiej (EE) received an Educational Progress Award from the IEEE International Future Energy Challenge.
- Undergraduate students Malik Francis (CMPE) and Paul Zambrzycki (EE) competed at the Clean Energy Summit.
- Graduate student Bendong Tan received the IEEE PES CT chapter Outstanding Young Engineer Award, as well as a best-paper award from the *International Journal of Electrical Power and Energy Systems.*
- Poster winners from the Connecticut Microelectronics & Optoelectronics Consortium Symposium include undergraduate (EE) students Chengluo Lin, Kevin Medeiros, Devon Rojas, and Steison Ruiz; and graduate students Abdulmajeed Almalki and William Stark.
- Graduate student Qian Yang received a best-paper award from the IEEE Transportation Electrification Conference.
- Incoming graduate student Yingyi Tang was selected as a GE NextGen Scholar.
- Graduate students Niranjan Raghunathan, Soroush Vahedi, Ketian Ye, and Bendong Tan were selected to present at the best-paper session at the IEEE PES General Meeting.

Faculty Achievements:

- Krishna Pattipati, with his grad student Adam Bienkowski, had their TMPLAR project selected as a Future Navy Capability.
- Marten van Dijk was awarded the "Test of Time" award at the ACM Conference on Computer and Communications Security.

ZONGJIE WANG

Zongjie Wang will be joining the Eversource Energy Center's leadership team as associate director for DEI and Workforce Training to lead diversity, equity, and inclusion initiatives as well as industry workforce training and development.

Zongjie Wang is an assistant professor in the Department of Electrical and Computer Engineering and has a joint appointment as core faculty in the Eversource Energy Center. She is recognized for her innovation in optimizing hybrid T&D operations and for her impactful research on DER behaviors and market dynamic integration. She has been PI of multiple projects in the center funded by the DOE, NSF, Eversource Energy, national labs, ISO-NE, and MISO, with an overarching aim of enhancing the power grid's reliability and resilience.

- Junbo Zhao earned a number of awards including outstanding editor awards from the *Journal of Modern Power Systems and Clean Energy*, IEEE *Transactions on Power Systems*, and CSEE *Journal of Power and Energy Systems*, and two best-paper awards from the *International Journal of Electrical Power and Energy Systems*.

- Zongjie Wang, with the group Equipe LPS/H2O, won the Hydrogen Optimization Prize from the Department of Energy.

Appointments:

- Necmi Biyikili as Collins Aerospace Professor of Engineering Innovation, Bahram Javidi as SNET Professor of Communications and Information Technologies, Liang Zhang as Pratt & Whitney Associate Professor in Advanced Systems Engineering, and Junbo Zhao as Castleman Professor of Engineering Innovation.

- Scholar GPS Rankings: Bahram Javidi and Yaakov Bar-Shalom are ranked #55 and #95 globally respectively in Electrical and Computer Engineering. Yaakov Bar-Shalom is ranked #1 in sensor fusion, Bahram Javidi is ranked #2 in digital imaging, #5 in 3D reconstruction, #6 in optical engineering. Shengli Zhou is #2 in underwater acoustics, Peter Willett is #8 in underwater acoustics, and Junbo Zhao is #9 in state observer.

Outreach:

- Promotional lab videos in development, see Professor Yang Cao's lab - youtu.be/oBVkS7eNoD8

- Robotics outreach has included hosting Husky Robotics Invitational and FIRST Tech Challenge CT state championship on campus, as well as sending flyers about new robotics program to First Tech Robotics clubs throughout New England and tri-state area.

CYBERCARED CENTER

Researchers at UConn are answering the call for the development of innovative technologies and defense systems, as well as education and training programs for the energy-sector workforce, through a new regional collaborative that brings together universities and industry partners to tackle the cybersecurity infrastructure needs of the northeast corridor.

The new Northeast University Cybersecurity Center for Advanced and Resilient Energy Delivery, or CyberCARED, formally launched in April 2024 following a commitment from the U.S. Department of Energy (DOE) of $2.5 million over the next two years to support the project.

DEPARTMENTS AND SCHOOLS

Chemical and Biomolecular Engineering (CBE)

Professor Radenka Maric, Board of Trustees Distinguished Professor and a member of both CBE and MSE, was formally inaugurated as the University's 17th president in October 2023. The department also welcomed two new faculty members, Professor Desen Özkan, whose research expertise involves engineering education and experiential learning, and Professor Xiao-Dong Zhou, who brings his expertise in clean energy innovations and also serves as the Nicholas E. Madonna Endowed Chair in Sustainability and the Director of the UConn Center for Clean Energy Engineering (C2E2).

Faculty have been honored with external awards, including a Fulbright Scholar Award to George Bollas; the inaugural North American Membrane Society (NAMS) Permeance Prize awarded to Jeffrey McCutcheon; the David Himmelblau Award for Innovations in Computer-Based Chemical Engineering Education from AIChE awarded to Daniel Burkey; and the 2024 Kathryn C. Hach Award for Entrepreneurial Success, the Inventor of the Year by the Intellectual Property Owners Education Foundation, and an induction into the Plastics Hall of Fame for Cato Laurencin. Our faculty have entered new roles outside our department, including Leslie Shor as dean of the Graduate School, George Bollas as associate dean of research for CoE, and Julia Valla as a special advisor panel manager for USDA-NIFA. Internal to UConn, Daniel Burkey was honored with the Distinguished Faculty Instructor Award, and Matthew Stuber was awarded the Pratt & Whitney Associate Professor in Advanced Systems Engineering position.

In May 2024, the Department graduated 81 undergraduate students. Austin Gelinas ('25) worked with Pranavi Rebala ('25 CLAS) to win the Clean Energy & Sustainability Innovation Challenge to reduce New England's reliance on natural gas. Ava Tobin ('25) and Alana Marquis ('25) have presented an innovative solution to decarbonization and will showcase their work at the 2024 Sustainable Clean Energy Summit in September. Graduate students have been recognized for excellence in research and innovation, with Dorian Thompson winning third place in the Graduate Student Competition in Sensors at the AIChE Annual Meeting, Alanna Gado awarded the NASA Connecticut Space grant consortium graduate student fellowship, and Wei Ruan winning first in department and third overall at the CoE poster session. The department is proud to report a new inductee, alumnus Rashi Akki ('90 MS), into the CoE's Academy of Distinguished Engineers.

Advanced Systems Engineering (ASE) Program

- Faculty supported five senior design projects with 27 students and four companies.
- The Pratt & Whitney Institute for Advanced Systems Engineering offered seven courses in Fall 2023 with 53 students enrolled; and offered four courses in Spring 2024 with 38 students.
- The Institute initiated a new non-credit training program with Sikorsky Lockheed Martin to train cohorts of Sikorsky engineers on Systems Engineering fundamentals.

Materials Science and Engineering (MSE)

The MSE Department prepares students for engaging careers in academia, industry, and the public sector. The MSE program stands out for its strong collaborations with industry, extensive research and design opportunities, an evolving curriculum that covers both engineering fundamentals and emerging technologies, and strong representation among university leadership and within the broader materials community.

STUDENT AWARDS: The MSE department took home two of three award categories in the ASM international student competition.

CERAMICS AWARDS: Professor Cato Laurencin and Department Head Bryan Huey were recognized by the American Ceramics Society. Huey is a fellow, and Laurencin earned the BioCeramic's Division's Larry Hench Lifetime Achievement Award.

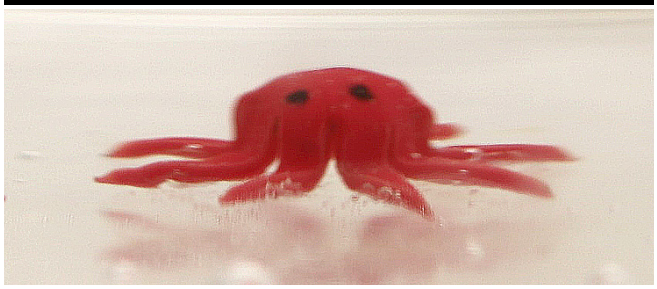
IPO EDUCATION FOUNDATION AWARDS: Laurencin was named the 2023 Inventor of the Year. Undergraduate student Audrey Larson earned the 2023 Inspiration Award.

GRANTS: UConn received $10.5 million from the Air Force Research Laboratory for research on high-temperature materials and manufacturing processes. Faculty members from MSE, SoMAM, and Chemistry will participate. Assistant Professor Xuiju "Sophie" Wang earned $750K through the ONR Young Investigator Program to explore heavy metals along the ocean floor.

NEW FACULTY: Assistant Professor Alex Dupuy joined MSE and established a powder processing and spark plasma sintering lab. Courtesy appointments were also granted to Professor Xiao-Dong Zhou and Dean and Materials Engineer JC Zhao.

PUBLICATIONS AND ARTICLES: MSE faculty published nearly 100 papers this year, including the cover for the Journal of Applied Physics. There was also extensive press for Professor Seok-Woo Lee's research on "A New Material Five Times Lighter and Four Times Stronger Than Steel," as well as Huey's "World's Smallest Basketball" celebrating the UConn Men's Basketball Team's second consecutive National Championship.

ENGAGEMENT: 30% of our undergraduates conducted research in faculty labs this year, including eight earning Summer Undergraduate Materials Research Fellowships thanks to generous alumni support.



Above: Besides basketball and logos, the technology used by Professor Bryan Huey's group for their pioneering Tomographic AFM work—studying future semiconductors, solar cells, and even metal alloys—provides unprecedented nano-volumetric resolution patterning.

Below: Associate Professor Xueju Wang's soft robotics feature thermally induced shape-morphing and color-changing.

Center for Advanced Engineering Education

The Center for Advanced Engineering Education (CAEE) continues to grow steadily and implement diverse programmatic offerings.

Delivering credit and non-credit programs, CAEE encompasses interactive and flexible programming offered in a variety of delivery modalities, providing a balance that makes it possible for working professionals to achieve career goals. Depending on what educational advancement path a student is on, they have the option to be online synchronous, asynchronous or in person. Taught by CoE faculty and key industry experts, CAEE programs are designed to help individuals and industry partners gain the knowledge and skills to master technical and business challenges.

Community Demographics

Our student base consists of individuals seeking educational advancement (credit or non-credit options available) or industry partnerships designed to deliver customized educational advancement (credit or non-credit options available) to a designated group of employees.

Given the variety of programming and flexible delivery modalities, we support a diverse student demographic:

- Graduate students seeking a Master of Engineering (MENG) degree or Graduate Engineering Certificate
- Industry students and corporate partners who wish to expand their knowledge base to benefit their careers and businesses
- Non-degree-seeking students interested in advancing their knowledge of specific engineering subjects and/or wanting to get a sense of a graduate course load before applying can take a course
- International students interested in the flexibility of virtual learning that enables them to keep working full or part time
- Industry partners with specific employee educational and knowledge-based needs
- Professionals seeking non-credit opportunities looking to upskill, apply knowledge at work and advance their careers

Strategy & Highlights

Throughout the AY2023-2024, the CAEE team actively pursued strategic activities to bolster the center's growth and revenue-generation trajectory. These initiatives include:

- Conducting bi-annual advisory board meetings with representatives from the following companies: Carrier Engineering University, Eversource Energy, GE Vernova Steam Power Americas, General Dynamics Electric Boat, Langan Engineering & Environmental Services, Lockheed Martin, Medtronic, Mitsui Seiki, Pfizer, Pratt & Whitney, and Unilever
- Enhancing our digital footprint by optimizing search engine visibility and leveraging social media platforms
- Increasing marketing initiatives which include a range of efforts such as: webinars, email campaigns, active engagement on LinkedIn, publications, participation in career fairs, virtual and in-person networking sessions, open house activities, and both virtual and in-person information sessions. These activities are designed to grow student enrollment and industry partnerships
- Ensuring curriculum excellence through partnership with the Center for Excellence in Teaching and Learning (CETL) in developing and supporting new and ongoing programs
- Ongoing collaboration directly with the CoE departments, career services, development team, alumni relations, the senior design director, the Innovation Partnership Building business development manager, as well as UConn colleagues in other schools and colleges, to build industry partnerships
- Continuously expanding industry partnership initiatives for the Center's Excellence in Engineering Communication Program (EEC)
- Center Director Nora Sutton and Assistant Dean Kylene Perras attended the International Association for Continuing Engineering Education conference in Spain in May 2024. Perras earned a special recognition award and Sutton was a panelist.

CENTER FOR ADVANCED ENGINEERING EDUCATION

Non-credit Programs

- Industry Programs and Trainings
- Bootcamps through UConn/EdX partnership
- EEC Program

Credit-based Programs

- MENG Degree
- Advanced Graduate Engineering Certificates
- Graduate Courses (Non-Degree)

MENG Concentrations

- Advanced Manufacturing for Energy Systems
- Advanced Systems Engineering
- Biomedical Engineering
  (Clinical Engineering & Biomechanics Engineering)
- Chemical Engineering
- Civil Engineering (Structural Engineering)
- Computer Science & Engineering
- Data Science
- Digital Design & Manufacturing
- Electrical & Computer Engineering
- Environmental Engineering
- Manufacturing Engineering
- Materials Science & Engineering
- Mechanical Engineering
  (Systems & Mechanical and Thermal & Fluid Sciences)
- Multidisciplinary Engineering
  (Formerly General Engineering)

Advanced Graduate Engineering Certificates

- Advanced Materials Characterization
- Advanced Systems Engineering
- Bridge Engineering
- Composites Engineering
- Contaminated Site Remediation
- Engineering Data Science
- Oceanographic Science & Technology
- Power Engineering
- Power Grid Modernization
- Process Engineering

EXCELLENCE IN ENGINEERING COMMUNICATION

One of a kind, the Excellence in Engineering Communication Program (EEC) is designed to support engineering industries by providing customized comprehensive communication. This program provides organizations access to contemporary training and development programs that will have a direct influence on the success of their organization as a byproduct of the efficiency and effectiveness of their employees' communication and leadership. The program is led by Director Rory McGloin, Ph.D., who is an award-winning business communication professor at UConn. His career in higher education spans 17+ years, and he holds positions with the School of Business, College of Liberal Arts and Sciences, and the CoE.

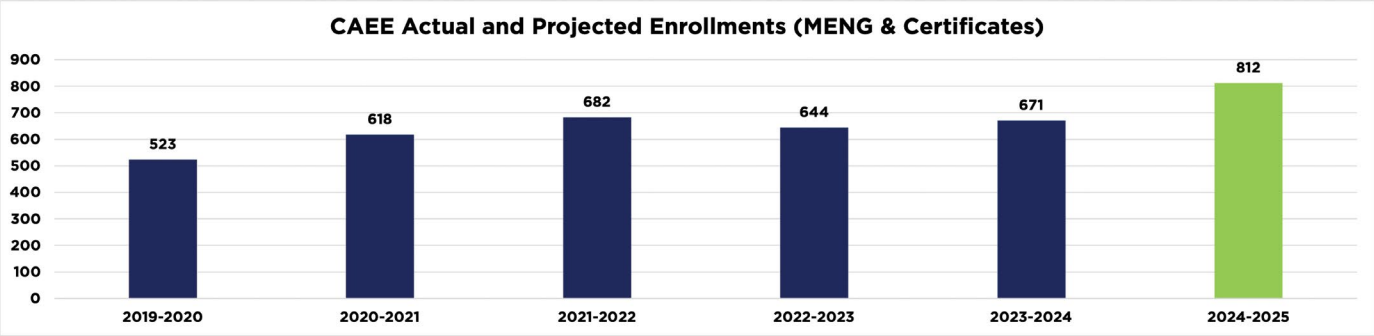
Program Objectives:

- Deliver customized training and development programming within a range of professional communication topics and skills.
- Collaborate with industry partners to develop industry-specific communication programs to provide engineers with practical, real-world experience in technical communication.
- Leverage existing platforms that offer resources, templates, guidelines, and interactive tools to assist engineers in developing effective communications.
- Conduct research on communication training and development to garner insights into contemporary trends and to move the field forward in innovative ways.
- Coordinate thought-leadership symposiums featuring renowned communicators, industry experts, and organizational leaders to provide insights into emerging trends and share their experiences.

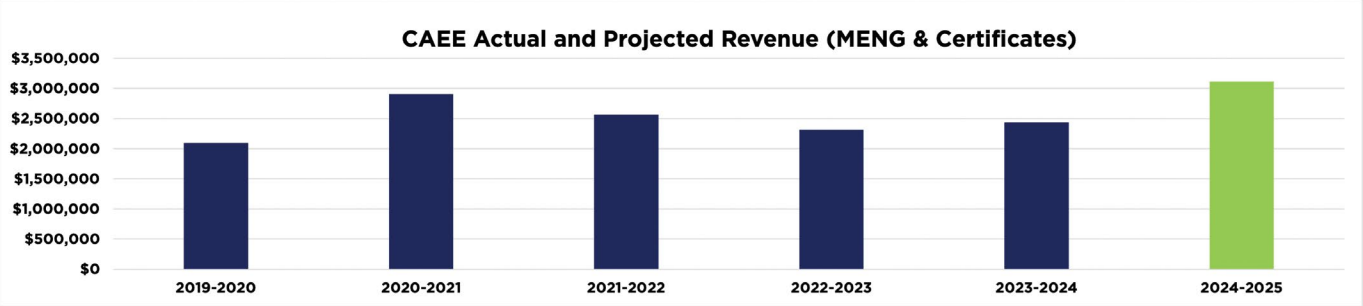
CENTER FOR ADVANCED ENGINEERING EDUCATION

Enrollment and Revenue for MENG and Advanced Graduate Engineering Certificates (Credit Programs)

As a result of these efforts and according to preliminary registration data, enrollment for the CAEE is projected to increase continuously during AY2024-2025, as follows:



Revenues for the CAEE are expected to continuously increase during AY2024-2025, as follows:



International Partnerships (Credit-based Programs)

In partnership with UConn's Office of Global Affairs and Anglo Educational Services (AES), CAEE offers a MENG and Advanced Graduate Certificate program. These programs allow students worldwide to select a concentration in Data Science or Advanced Systems Engineering. Students can pursue their degree online and engage in a London-based paid internship tailored to their specialization with an industry partner. This program launched in Summer 2023.

UConn & EdX Partnership Boot Camps (Non-Credit Program)

In partnership with EdX, CAEE currently offers virtual boot camps in Cybersecurity and Coding. A third boot camp, Artificial Intelligence, launched in summer 2024. These 24-week programs equip learners with essential knowledge, skills, and capabilities to excel in these areas. The curriculum integrates a combination of theory and practical application labs to achieve proficiency in industry-standard tools and techniques.

CENTER FOR ADVANCED ENGINEERING EDUCATION

Since the program's 2019 inception, the college has received a total of $1,726,262 in revenue. Out of this revenue, $345,252 has gone back to the University for Central Cost Recovery and $1,381,010 has stayed with the CoE.

Revenue generated for the college in AY2023-2024 was $554,482. Out of this revenue, $110,896 has gone back to the University for Central Cost Recovery and $443,586 has stayed with the CoE.

Customized Training & Development (Non-Credit Programs)

The CAEE team is ready to collaborate with industry and faculty throughout the discovery and design phase, aiming to develop and deliver state-of-the-art training and educational opportunities for industry. These partnerships aim to offer a range of workforce-development solutions to address the evolving technology challenges facing the engineering sector. Tailored for working professionals and aligned with industry requirements, our programs prioritize flexibility and convenience by offering various delivery options.

The services offered by these partnerships vary. Currently they support a leading aerospace and defense company in Connecticut. Faculty from the Pratt & Whitney Institute for Advanced Systems Engineering, alongside industry leaders, have teamed up to create a non-credit, technical short course. Course delivery began in Fall 2024 with the successful completion of the first cohort.

In the surgical device field, faculty are collaborating with a leading medical device company to design and implement advanced training for medical device sales representatives, aiming to enhance the safety and accuracy of spine surgical fusion surgeries.

CAEE is actively engaged with industry designing programing anticipated to be launched in AY2024-2025.

AI BOOT CAMP STARTS OCTOBER 21, 2024

This boot camp offered by the CAEE is an introduction for those just entering tech and builds on that foundation with specialized AI skills for those looking to upskill and set themselves and their resumes apart.

- Work one-on-one with a tutor on any problems or assignments.
- Learn the foundation of AI, machine learning, and automation.
- Develop the AI skills employers are seeking.
- Build a portfolio as proof of your new skills in AI.
- Lead AI conversations — and initiatives — to bring about key results.

FACULTY

Faculty Recruitment

The number of tenured and tenure track (T/TT) faculty in the CoE has increased modestly in the past several years. A total of 16 T/TT faculty positions have been added since 2015, bringing the total to 155. To address the significant growth in undergraduate enrollment, we have assembled a dedicated team of passionate faculty members, including assistant, associate, and full professors in residence, who are primarily focused on teaching. These positions, although non-tenure track, become permanent after a seven-year probationary period. Faculty in these roles are typically recruited through national searches and are required to participate in ongoing professional development with UConn's Center of Excellence in Teaching and Learning (CETL) to continuously enhance their teaching skills. Additionally, CoE has established rigorous standards for annual evaluations and promotions to ensure the highest quality of instruction among teaching faculty.

Challenges

Over the past several years, the primary challenges in supporting and retaining faculty have been due to salary compression and the stagnation of growth in the tenure/tenure-track (T/TT) faculty lines.

The faculty compensation has consistently fallen below national averages, prompting some of our senior faculty to seriously consider competitive offers from other institutions. These competitor institutions have become increasingly aggressive with their offers, and as these offers continue to grow, CoE's ability to retain the most talented faculty members will be increasingly compromised.

During the implementation of the Next Generation CT initiative under former Governor Malloy, the College was tasked with significantly increasing our student population. However, this growth has not been matched by a corresponding increase in faculty, leading to considerable strain on our current faculty, schools and departments. This is especially concerning given the university's heightened focus on research initiatives, as evidenced by FY2023 research expenditures surpassing $75 million. Without additional faculty, the burden on our current staff - who are already submitting grant proposals at an exceptional rate - becomes unsustainable.

To support the University's mission and ensure continued success, we must prioritize increasing faculty lines, developing a competitive compensation structure, and adopting a more strategic approach to faculty retention.

Faculty Data Fall 2024

DEPT.	T/TT	TEACHING
BME	12	3
CBE	20	2
CEE	23	4
CSE	31	12
ECE	26	0
INTD	0	4
ME	27	9
MSE	16	1
TOTAL	155	35

FACULTY

Faculty Retention

Engineering is a highly competitive field where faculty turnover is a common challenge. CoE's efforts have been centered on cultivating a positive environment and providing robust support for faculty in both research and teaching development. The table on the right illustrates the trend in faculty attrition within the CoE (excluding retirements) over the past nine years. Notably, Fall 2022 and Fall 2023 each saw a minimal change, with only two T/TT faculty departures.

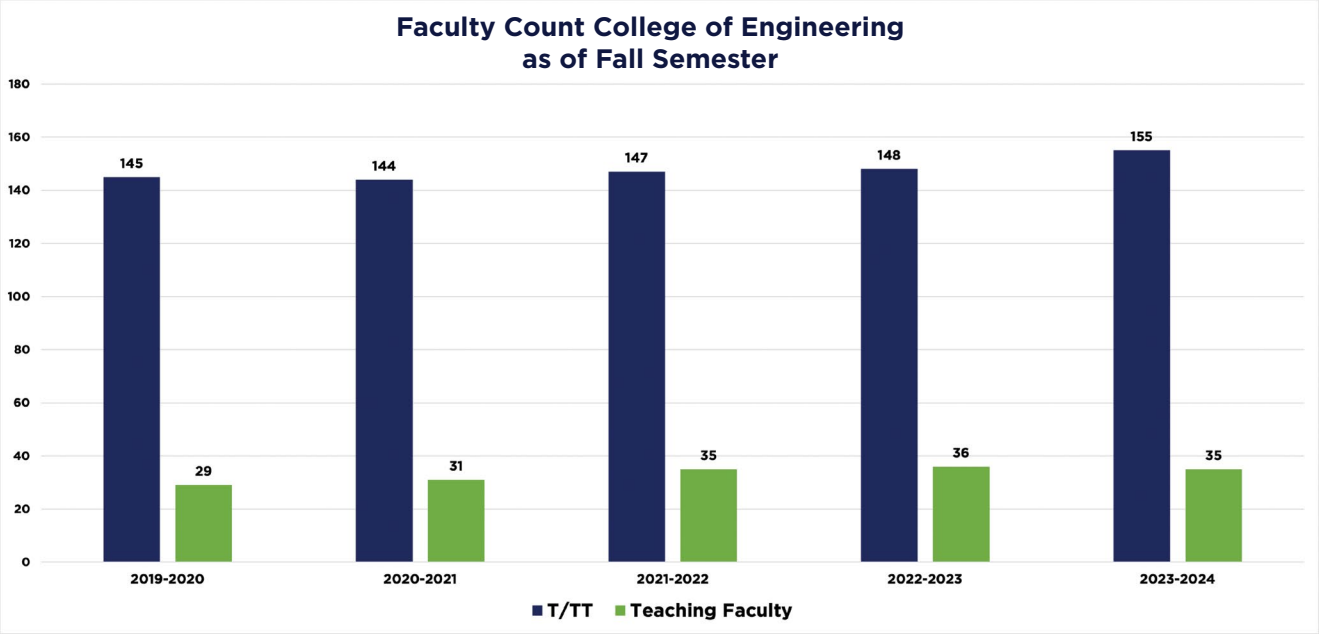
Selected Faculty Achievements

Faculty in the CoE are frequently recognized for their exceptional achievements in research, teaching, and significant contributions to their disciplines. The College prioritizes scholarship by focusing on the recruitment and retention of the highest-caliber faculty. We are committed to celebrating our faculty's accomplishments by systematically nominating them for prestigious honors and awards that highlight the profound impact of their work on science and society. The faculty members advanced knowledge across a wide array of fields and elevate UConn's visibility through their numerous professional activities and appointments, as detailed on the next page. The College's commitment to excellence is strong and the faculty's role in raising the institution's profile.

Funded Professorships

21 Term Professorships
6 Named Professorships
19 Endowed Professorships

Year	Fall Attrition T/TT Faculty
2019	6
2020	5
2021	2
2022	2
2023	2



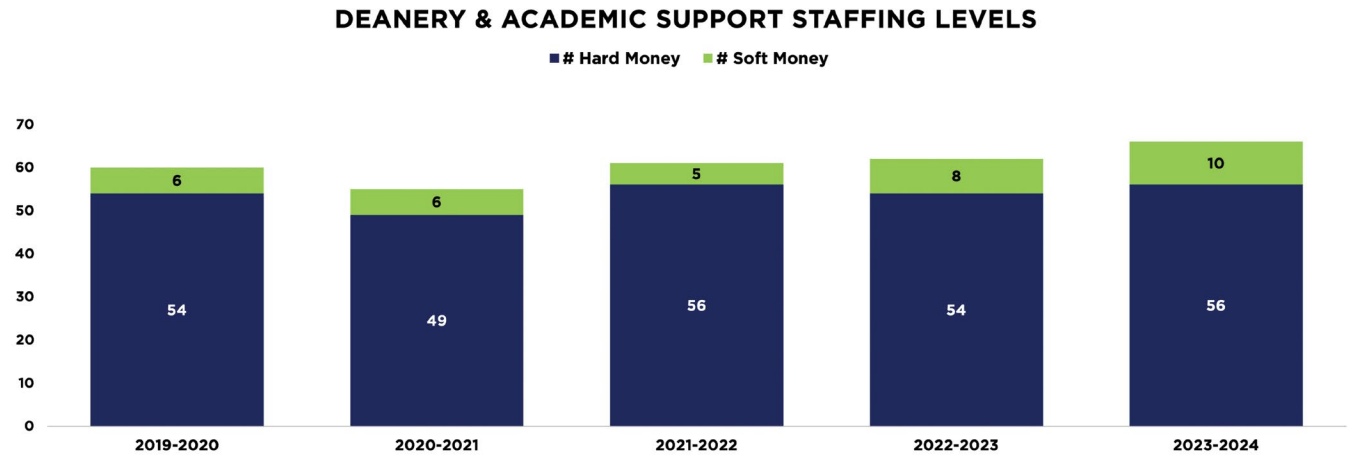
STAFFING

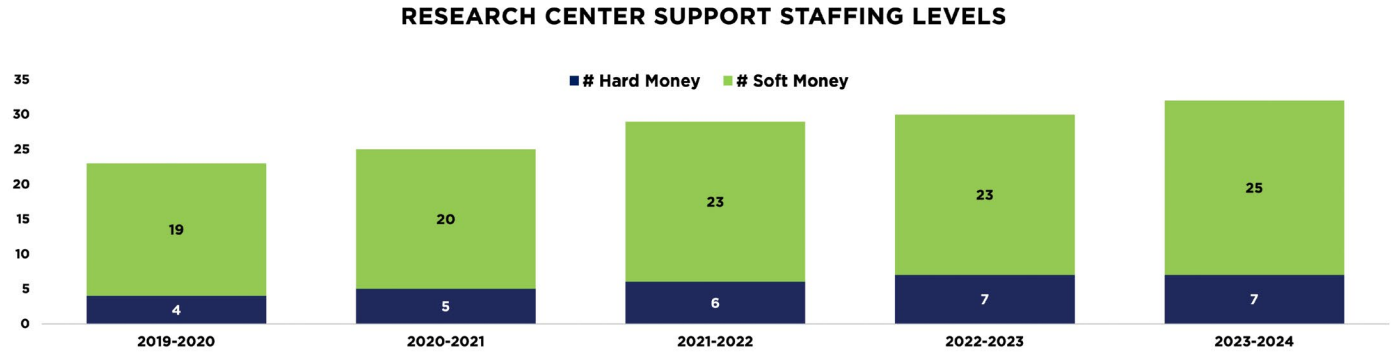
Staffing Levels

The CoE is facing significant challenges with staffing due to budget constraints. Despite growth in student enrollment and research activities, the support staff remains inadequate to meet the needs of the College. The previous addition of undergraduate advisors in response to an external review shows a willingness to address deficiencies, but the overall staff size remains dreadfully lean.

Having a "Research 1" designation, the reliance on external grants to support research staff suggests a precarious situation, as these positions are often project-specific and may not provide stable long-term support. This could hinder the College's ability to sustain its research, industry engagement, and educational missions.

Given the importance of support staff in facilitating various activities within the College, it is necessary to advocate for increased support from the state and seek alternative sources of funding to address the staffing shortage. Staff are key contributors to whether the CoE can meet our strategic objectives, which range from: improving outcomes for students and increasing the diversity of student and faculty bodies, to creating a more inclusive culture, and expanding research impact.





STAFFING

Staffing Contributes to Key Deliverables for the CoE

Teaching and Learning Support: Staffing ensures that faculty members have necessary support to focus on teaching effectively, creating a positive learning environment for students. Staff members assist in administrative tasks and provide resources for instructional purposes.

Accreditation Compliance: Staffing is critical for helping with the accreditation processes, compiling data, and ensuring compliance with accreditation standards. Without sufficient staffing, the workload increases and potentially impacts the quality of accreditation submission and review.

Research Support: Staff members play a vital role in facilitating research activities within the CoE. They assist faculty in grant applications, manage research budgets, coordinate collaboration, and provide administrative support, enabling faculty members to focus on their research projects effectively.

Industry Engagement and Outreach: Staffing contributes to organizing industry partnerships, alumni relations, and outreach activities and events. These efforts enhance the college's visibility, promote collaboration with external stakeholders, and provide opportunities for students to engage with industry professionals.

National Recognition: Communication staff members play an important role in improving the visibility and reputation of the CoE regionally and nationally. Marketing and communication efforts drive recruitment and development initiatives, as well as promote the vital research conducted. The full-time Communications Team has not grown in 20+ years.

Operational Efficiency: Adequate staffing ensures smooth functioning of daily operations within the College, including administrative tasks, facilities management, and IT support. This is essential for maintaining a conducive environment for teaching, research, and outreach activities.

The College's staffing is integral to the achievement of key deliverables in the CoE. Investing in staffing resources is essential for sustaining the College's growth and fulfilling the mission effectively.

INNOVATION SHOP

The CoE Innovation Shop (iShop) comprises four individuals spanning backgrounds in engineering, healthcare, accounting, architecture, military-specification machining, electronics, and more. Students can gain skills in varied fields on their way to a complete engineering education.

The iShop is composed of a 6,000-square-foot space with key manufacturing equipment like CNC mills, 3D printers, and welding tools. Students and iShop employees proceed through the space from ideation, prototyping, and finally creation.

Anthony Beatty

Peter Glaude

Joseph Luciani

Kenneth Premo

VERGNANO INSTITUTE FOR INCLUSION

The Vergnano Institute for Inclusion (VII) is a proactive and adaptive organization with distributed governance that nurtures and sustains an anti-racist and anti-discriminatory culture. VII is a resource for the CoE and the communities it serves to empower people from all backgrounds. Inspired by the strength of diversity and inclusion, VII is an equity-minded community where engineers innovate and change the world for the better.

Our Community

- Undergraduate students
- Graduate students
- K-12 students & teachers
- UConn faculty & staff
- Community partners (alumni, industry, donors, etc.)

Programs

VII is committed to investing in the success of the community by providing support, accessibility, leadership and professional skills, academic guidance, financial assistance, mental wellness outlets, and communication expertise, through programming and organizations.

- **UConn Students:** VII awarded approximately $90,000 in equity-focused summer scholarships towards (1) Summer courses, (2) Internship housing or travel support, (3) Mental health diagnosis or treatment, or (4) Neurodiversity evaluation or understanding.

- **K-12 Students & Teachers:**
  - SPARK and Explore Engineering summer camps hosted 130+ K-12 students in residential STEM programs, and the daVinci Program hosted nine teachers.

  - Organized exciting and impactful one-day conferences that accommodated 470+ students. Multiply Your Options, worked with nearly 300 eighth-grade students Engineering Your Future (EYF) and Sisters in STEM (SIS) aim to engage Black, Hispanic, or Indigenous students in Engineering. EYF and SIS engaged 118 eighth-grade boys, and 60 high-school girls, respectively, with a majority of Black (44%) and Hispanic (35%) students. In addition, we proudly held the LGBTQIA+ high-school students (Queer Science). Systematic assessment results support that our outreach programs advance student understanding of the importance of engineering, expand their knowledge of engineering disciplines, and foster positive attitude towards STEM.

SISTERS IN STEM (SIS)

Traditionally, SIS is a one-day conference for underrepresented, tenth-grade high school female students to show the allure of science, technology, engineering, and mathematics (STEM) fields. Representative role models lead laboratory tours, engaging experiments, and self-development workshops.

Research suggests that it is beneficial for students to see themselves represented in science and engineering fields to better the chances of them pursuing STEM careers. Underrepresented women are the minority of the minority in these fields. The SIS conference provides students the opportunity to develop a stronger sense of self in being supported by UConn graduate, undergraduate students, and professionals in STEM.

To learn more about the program visit
inclusion.engr.uconn.edu/sis

VERGNANO INSTITUTE FOR INCLUSION

  - New Engineering Your Options hybrid outreach event in partnership with Blended Learning Center in Nigeria hosted 700 Nigerian eighth-grade students.

  - Engineering Ambassadors engaged with around 1,300 K-12 students with presentations, hands-on activities, special activity booths and demos, and tours.

- **UConn Faculty & Staff:** VII engaged five faculty in the yearlong Inclusive Excellence Program for Justice, Equity, and Transformation. As a collective action project, the group investigated equitable questions and responses in the Student Evaluation of Teaching (SET) survey, and how it relates to promotion and tenure.

- **Staffing:** VII celebrated the retirement of Kevin McLaughlin, our Emeritus Director, who dedicated 22 years to VII. The VII team has grown to have: full-time Connie Atkins as administrative program support; Lara Chiaverini as director of Inclusive Excellence in STEM Teaching and Learning; Andri Christodoulidou as director of Impact Assessment; Durga Nyame as director of Undergraduate Equitable Success; Jerri Robinson as director of K-12 Initiatives; and Stephany Santos as executive director. VII also collaborates with Aida Ghiaei as director of Graduate Outreach and Diversity; and Randi Mendes as VII's community liaison and graduate student support.

INTERDISCIPLINARY INITIATIVES

Technical Assistance for Brownfields Program (TAB) and Environmental Justice Thriving Communities Technical Assistance Center (EJTCTAC)

In July 2024, the U.S. Environmental Protection Agency announced that UConn would be one of the 17 newly established Environmental Justice Technical Assistance Centers (EJTCTACs) across the country. According to the EPA, "each of the technical assistance centers will receive at least $10M to remove barriers and improve accessibility for communities with environmental justice concerns." The UConn center will serve Region 1, including the six New England states. The team, led by former civil and environmental engineering department head Marisa Chrysochoou, and program manager Randi Mendes involves faculty members from the College of Engineering, College of Liberal Arts and Science and School of Social Work, in addition to six academic and community partners across the region.

The EJTCTAC will be a sister program to the existing UConn TAB program. In May 2023, EPA announced an additional $5M award to UConn to expand the scope of TAB services in the region. First awarded in 2021, the mission of the UConn TAB is to assist municipalities, regional planning organization and non-profit organizations across the six New England states with the investigation, cleanup and redevelopment of abandoned, polluted sites, also known as brownfields. It also provides continuing education, networking and community engagement support to stakeholders and communities. This is accomplished through direct assistance from TAB personnel, but also through service learning by engaging UConn students across a wide range of disciplines.

Collectively, the two programs will serve communities to promote civic and environmental justice, pursue renewable energy and clean water and air projects, foster workforce development and help fulfill UConn's critical mission as a land grant university.

Neurodiversity Initiatives in Engineering and STEM

The Include Program, funded through a $2M NSF grant aims to make lasting structural and cultural change, supporting and empowering neurodiverse students through their undergraduate studies and as they prepare to join the engineering workforce.

In AY2023-2024, the Include program focused on efforts to promote the adoption of neuroinclusive teaching practices at UConn and beyond through the following activities:

- Winter Institute for STEM Faculty: Twenty UConn faculty representing mechanical engineering, chemistry, mathematics, computer science and engineering, physics, chemical and biomolecular engineering, civil and environmental engineering, and biomedical engineering attended the winter institute and were named Neuroinclusive Teaching Fellows.

- Building Neuroinclusive Learning Environments Mini-Course: Presented through the CIRTL (Center for the Integration of Research, Teaching and Learning) Network, this four-week course was attended by 29 graduate teaching assistants and/or STEM faculty from across the United States and Canada.

- Neuroinclusive Teaching Summer Institute (NTSI): The Include program welcomed 48 STEM faculty from the United States, Canada, and the Caribbean to the Storrs campus for a 1.5-day workshop focused on redesigning courses through the adoption of neuroinclusive teaching practices.

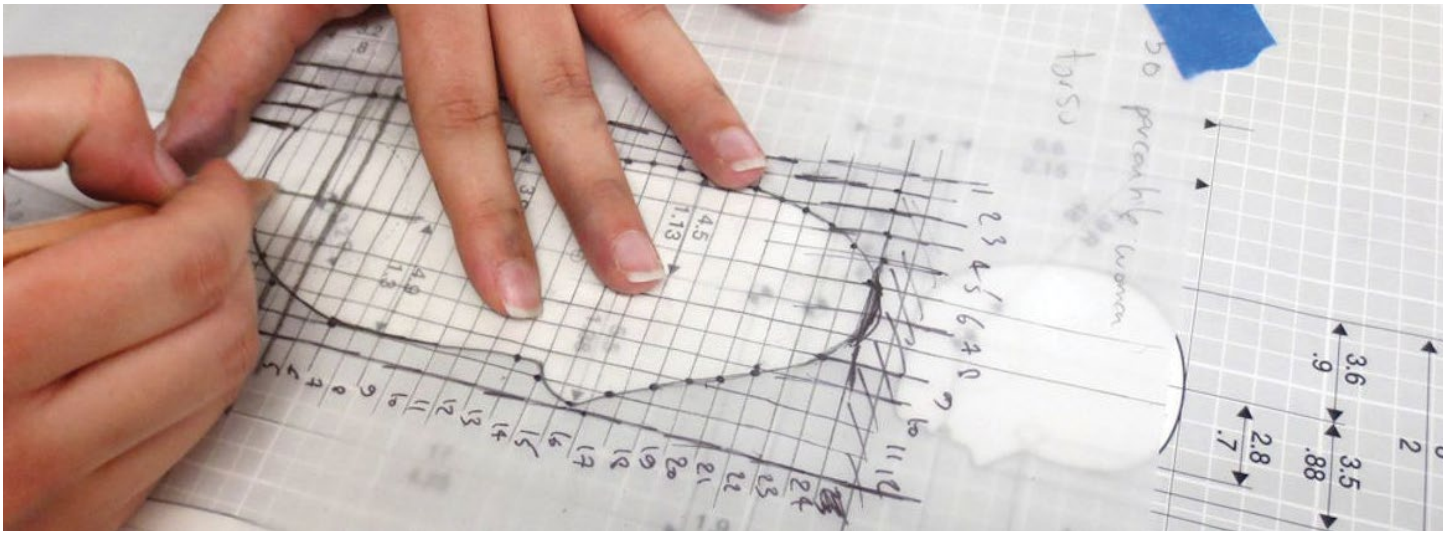
INTERDISCIPLINARY INITIATIVES

The Krenicki Arts and Engineering Institute

The Krenicki Arts and Engineering Institute is a creative nexus that bridges talent, resources, educational programs, and funding opportunities in the arts and engineering. The Institute offers areas of study that combine creativity, innovation, and technical knowledge to nurture novel educational experiences for students. The Institute supports research opportunities for students and faculty, sponsors guest speakers, seminars, and events that connect these disciplines.

Highlights:

- Facilitated research on incorporating traditional Tholpavakoothu shadow puppetry with machine learning, by Rahul Koonathara and Gokul Krishnan.
- Offered the Krenicki Arts and Engineering Scholarships to four students, two from the School of Fine Arts and two from the CoE.
- Hosted an event by the Industrial Designers Society of America (IDSA): Designing with AI. Offered memberships to IDSA to interested faculty and industrial design students. Invited one graduating student to participate in the International Design Conference (IDC) in September 2024.
- Hosted events: the Spacesuit Challenge, Portfolio Nights, the Shelter Building Showdown, and Abstract Painting Party.
- Exhibited at The United States Institute for Theatre Technology (USITT). Invited two graduating students to participate.
- Mentored and promoted student clubs, by offering to host meetings and the use of our lab equipment, for the Underwater Robotics Club and the Sci-Art Club.
- Facilitated lecture series, such as Intersections: Chemical Engineering and Oil Painting; Industrial Design and Aviation; Design in Ambiguity by Robert Irwin; Design of Sneakers by Greg Coyne.
- Offered the student research grant proposal, to fund between $500 and $1,000.
- Offered the Krenicki Institute Lightning Grant Proposal, to promote faculty research with one PI from CoE and one from the School of Fine Arts, and between $15,000 and $30,000.
- Provided mentorship to various Senior Design teams in the School of Mechanical, Aerospace, and Manufacturing Engineering.



INTERDISCIPLINARY INITIATIVES

Engineering for Human Rights Initiative (EHRI)

EHRI is a joint venture between the CoE and the Gladstein Family Human Rights Institute. The Initiative has over 60 faculty members from various disciplines working together in different clusters on research and curricular offerings in engineering to promote the integration of human rights and environmental and social sustainability in engineering decision-making. The Initiative focuses on six research areas: Water, Health & Food Security; Product Design, Manufacturing, and Supply Chain Management; Community Planning, Resilience, and Justice for a Changing Environment; Engineering Education and Accessibility Rights; Engineering Substances and Process Sustainability; and Cybersecurity, Privacy, and Human Vulnerability. This year's activities have been centered around research, outreach, and teaching efforts.

Regarding core research work, Engineering for Human Rights faculty are collaborating on two New England Transportation University Center (NEUTC) projects focused on understanding how the built infrastructure affects safety inequities and unequal access to public transportation in Connecticut. Both projects, once completed, will shed light on some inequities in access to safe mobility in a sample of Connecticut towns that could also serve in discussions related to green energy transitions. Lastly, it is worth mentioning that the co-directors of the Initiative secured funding for three Ph.D. students and two undergraduate students in AY2023-2024.

The Engineering for Human Rights faculty organized two discussion panels at the Dodd Center for Human Rights. The first focused on the Emancipatory Role of Artificial Intelligence in STEM education. The second panel, organized in collaboration with UConn's Business & Human Rights Initiative and the Economic & Social Rights Program, hosted Grace Farms Foundation to discuss how ethically sourced supply chains can help eliminate forced and child labor. The Initiative also hosted two key speakers, one with Professor Wendy Wong (University of British Columbia) and one with our new faculty affiliate, Professor Desen Özkan. Desen Özkan focused on how engineering students' experiences are shaped through sociotechnical curricula and case studies focused on the social, economic, and political contexts of engineering decision-making. She showcased the application of this process through a case study of an offshore wind project in Connecticut.

Regarding educational efforts, faculty redesigned a graduate class focused on "Sustainable Transportation" and continued to offer our flagship class Engineering for Human Rights. The outcomes of this educational work will be presented at the 2024 Annual Conference & Exposition of the American Society for Engineering Education in Portland, Oregon. Lastly, the initiative continues to collaborate with the CoE's new Multidisciplinary Engineering bachelor's degree, specifically in the Human Rights and Sustainability specialization.

SPONSORED RESEARCH

CoE Research Development Strategy

The CoE research enterprise encompasses an expanding federal research portfolio, state-funded research and service initiatives, and major industrial partnerships across its 20+ engineering centers and institutes, including many at the UConn Tech Park in the Innovation Partnership Building. Many projects are interdisciplinary and engage students and faculty across the university. The CoE's scholarship, education, and outreach missions all depend on a vibrant research portfolio.

Research Development Support for Faculty

In FY24, the CoE research enterprise was led by the College's three associate deans and assistant dean and supported by the Research Development (RD) team:

Emmanouil Anagnostou, associate dean supported research development for manufacturing, energy, electronics, data/information via mission driven agencies like the DOD, DOE, Army, Navy, Air Force, and NASA, and leads many of these efforts through his roles at the Eversource Energy Center and the Connecticut Institute for Resilience and Climate Adaptation. He also supports industry-related projects such as IUCRC, INTERN supplements and small business programs (SBIR/STTR, CTSBDC).

Daniel Burkey, associate dean supports research operations through the Engineering Education Center. He supports pedagogy and diversity, equity and inclusion proposal management and research strategies for agencies like NSF, and focuses on programs for undergrad education, e.g., LSAMP, SSTEM, and REU/RET. He also oversees the undergraduate advisement team.

Kylene Perras, assistant dean focused on Transportation and Research Infrastructure via agencies like the DOT and NSF. She oversaw activities under NIUVT, CT Brownfields, CT Transportation Institute, manufacturing, facilities, Engineering Technical Services, infrastructure, and communications. Kylene supports any research proposals that required equipment, instrumentation, or space.

Tina Ryan, research development officer focused on creating and managing systems that connect research leadership and faculty with information and resources to bolster the CoE Research Enterprise. RD provides funding, collaboration, and training and development opportunities, as well as metrics and strategic reports. Tina also led the RD Proposal Team which provided support services such as team science, project management, consultation, and editing. These RD activities ensure that the research teams have the support they need to maximize their chances of bringing in major new awards.

(Outgoing) **Leslie Shor,** associate dean focused on research strategy for biotech; healthcare; environment and sustainability; innovation and entrepreneurship; and DEI. She supported faculty in their research with agencies like NSF, NIH, DOE, USDA, EPA, CTDEEP, and the Department of Education, while overseeing CoE Graduate Education programs, including NRT, GAANN, Innovation & Entrepreneurship (CI/CTNext/eHub), and the Nursing and Engineering Innovation Center.

(Incoming) **George Bollas,** associate dean will focus on research strategy in advanced systems engineering, chemical engineering, and more. He leads research in the Pratt & Whitney Institute for Advanced Systems Engineering.

SPONSORED RESEARCH

CoE Research Development Strategy

To expand the research opportunities available to our faculty, the CoE research enterprise leadership focused on the following strategic priorities in FY24:

Selectively Pursue and Support Major Funding Initiatives: New major funding programs are always being released, but faculty at our peer institutions are also keen to win these major awards, resulting in fierce competition. New faculty are often accomplished researchers and authors, they have not always had deep experience in the skills required for winning research grants and only seldom do mid-career faculty member with their deep but often narrow expertise have the time, vision, and commitment needed to recognize a major multi-disciplinary opportunity, form the right team, and create a winning program on time without dedicated support.

The CoE Research Development and leadership team provides support to all research faculty by providing training and development, identifying key funding opportunities, catalyzing team formation, monitoring progress through project management, and bringing in external support to enhance the probability of a winning outcome. Strategically building collaborative interdisciplinary teams is especially important in pursuit of large funding through mission driven federal sponsors as they are increasingly focused on convergence and community-engaged research, and integrating research with workforce development opportunities. In addition to supporting our research programs, these efforts align with the CoE's unique capabilities and the State of Connecticut's priorities to help enhance the economy and jobs across the state.

Research Partnerships with Industry: Research has the greatest impact when it connects with industry and society. The CoE works closely with industry partners to build a robust applied research portfolio and capabilities for the benefit of our students and research programs, as well as local industry, economy, and the high-tech job market in the state. A portfolio of diverse interaction opportunities, including capstone design projects, reduced- overhead exploratory grants, and major research projects help to establish confidence and form long-term strategic industry partnerships. These partnerships also position UConn to win major national awards created to support industry-relevant research. CoE's efforts in this area proceed primarily through the Tech Park's centers and institutes as a gateway for industry engagement throughout UConn.

FY24 Highlights and Successes

Convergence & Community-engaged Research Initiatives: Convergence research is increasingly expected from funding agencies, including Justice40 principals required for any Infrastructure-related funding. CoE RD actively engaged with the newly formed UConn Office of Outreach and Engagement (OOE) to teach and empower faculty to build more authentic and effective proposal development partnerships for convergence research. In March and April 2024, CoE researchers attended multiple training sessions on Building Authentic Partnerships led by the OOE, who also provided training to the CoE NSF CAREER cohort about Impact Identity. The CoE RD Proposal Team and VII also led proposal collaborations to build DOE Community Benefits Plan competencies which resulted in awards, and in collaboration with OVPR RD are working to build a training series focused on these high impact topics in research.

PFMC Cohort (Preplanning Fellowships for Development of Major Center Concepts): Spring 2024 teaching release and in-person workshop series to help PIs structure, narrow down their Center ideas and differentiators, and learn how to build authentic interdisciplinary and community partnerships and prepare to lead a center in three to five years. External speakers and panelists included: Rosa Raudales and Briana Huett (OOE), Kim Rollins (CAHNR Department Head of Agricultural & Resource Economics), Jeff McCutcheon (CoE CBE Professor), and Office of the Vice President for Research (OVPR) RD (Lindsay DiStefano, Matt Mroz, and Anna Gault-Galjan). Nine PFMC Fellowship Winners were chosen from their center quad chart applications.

NSF CAREER Support Cohort: CoE faculty are provided special training and support through proposal development workshops. This full-year program provides new faculty with a step-by-step roadmap and support for learning through doing as they develop their application for the NSF CAREER award, the most prestigious grant program for young faculty recognized by all schools of engineering nationwide.

In 2024, CoE Research Development helped support faculty in the CAREER submissions process through:

- 10+ CAREER related workshops and trainings shared in FY24
- Access to best practices reference information and previous winner proposals
- Coordinating Proposal Team and consultant proposal reviews and feedback, including streamlining proposal support requests and proofreading schedules in collaboration with OVPR RD
- Collaborating with the OVPR RD to host five CAREER workshops, including Hanover Research Online Grants Learning Center CAREER modules walkthrough in Hanover webinar and follow up Office Hours session, and the NSF Past Winner Q&A Panel

The CoE CAREER Support Cohort efforts in 2023 resulted in two CoE faculty being awarded CAREER awards in 2024.

- Dongjin Song "CAREER: Towards Continual Learning on Evolving Graphs: from Memorization to Generalization"
- Caiwen Ding "CAREER: CEGL: Algorithm-Hardware Co-design of Efficient Large Graph Machine Learning for EDA"

CENTER FOR BIOMEDICAL AND BIOENGINEERING INNOVATION (CBBI)

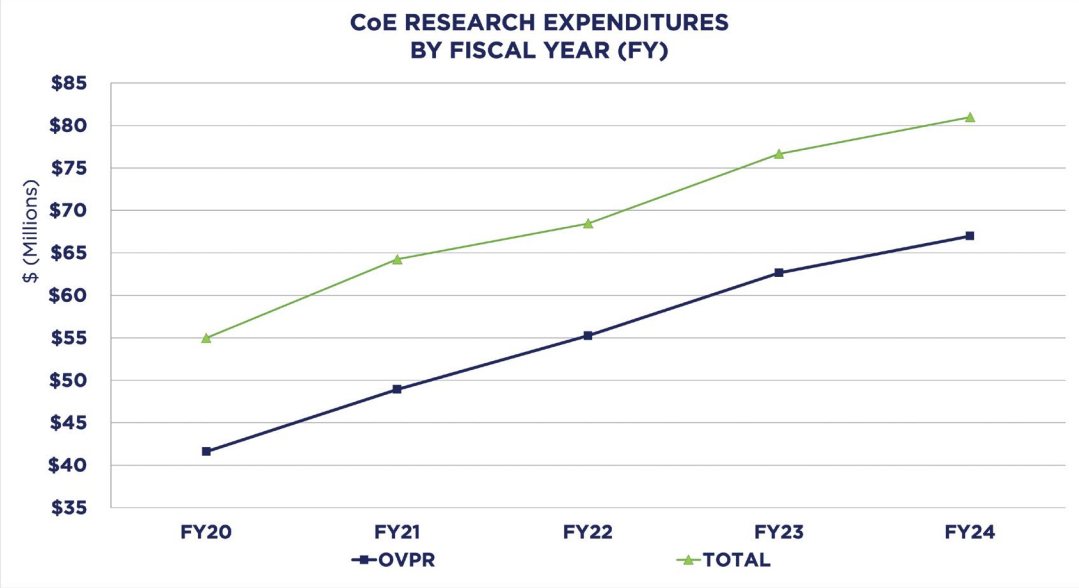
CBBI was launched as a center in Spring 2024, after operating for over a year as a collaborative. CBBI fills a space at UConn to connect researchers from different fields to work together to invent, improve, and use new and existing technologies to answer important questions in healthcare and biology. The Center aims to bridge the gap between researchers focusing on biomedical studies and those tackling other biological problems by sharing emerging technologies across different research domains. This approach will enhance the value of these technologies and accelerate discoveries in multiple fields.

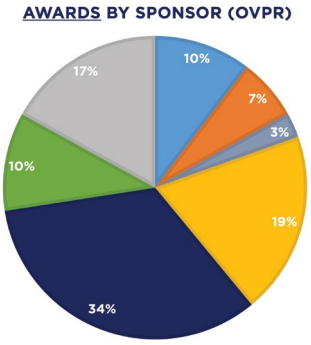
Building on this foundation, CBBI is committed to fostering innovations applicable across a wide range of areas, including bio-devices, bio-systems, and bio-computation. The Center's goals encompass advancing the development and adoption of bio-based technologies through collaborative research, stimulating economic growth in Connecticut by creating new bio-based technology products and businesses, training the workforce for high-demand biotech jobs, and establishing UConn as a global leader in bio-based technology innovation. By launching CBBI, the CoE has strategically positioned itself to attract more research funding, boost the University's reputation, and strengthen the connection between the UConn Health and Storrs campuses.

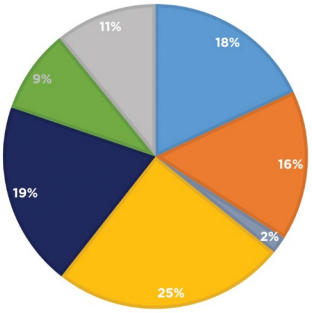
SPONSORED RESEARCH

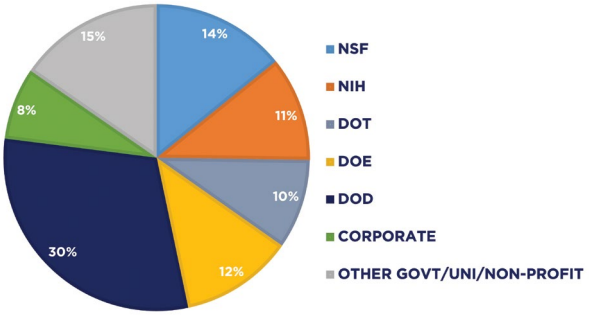
Sponsored Research Trends

Research expenditures have consistently increased over the past five years. Expenditures are based on the OVPR preliminary fiscal year reports in addition to estimated research funds administered through the UConn Foundation and the UConn Health Center. The average research expenditure per faculty aligns with many top-50 schools of engineering. Estimates are accurate as of August 15, 2024.









Research Funding: The three pie charts show FY24 data on expenditures and proposals submitted (OVPR only) by funding agency. The charts show a healthy diversity of different agencies, including organizations that primarily support basic research e.g., the National Science Foundation (NSF) and the National Institutes of Health (NIH) as well as mission-driven agencies, e.g., the Department of Defense (DOD), corporate sponsors, the Department of Transportation (DOT), and the Department of Energy (DOE).

SPONSORED RESEARCH

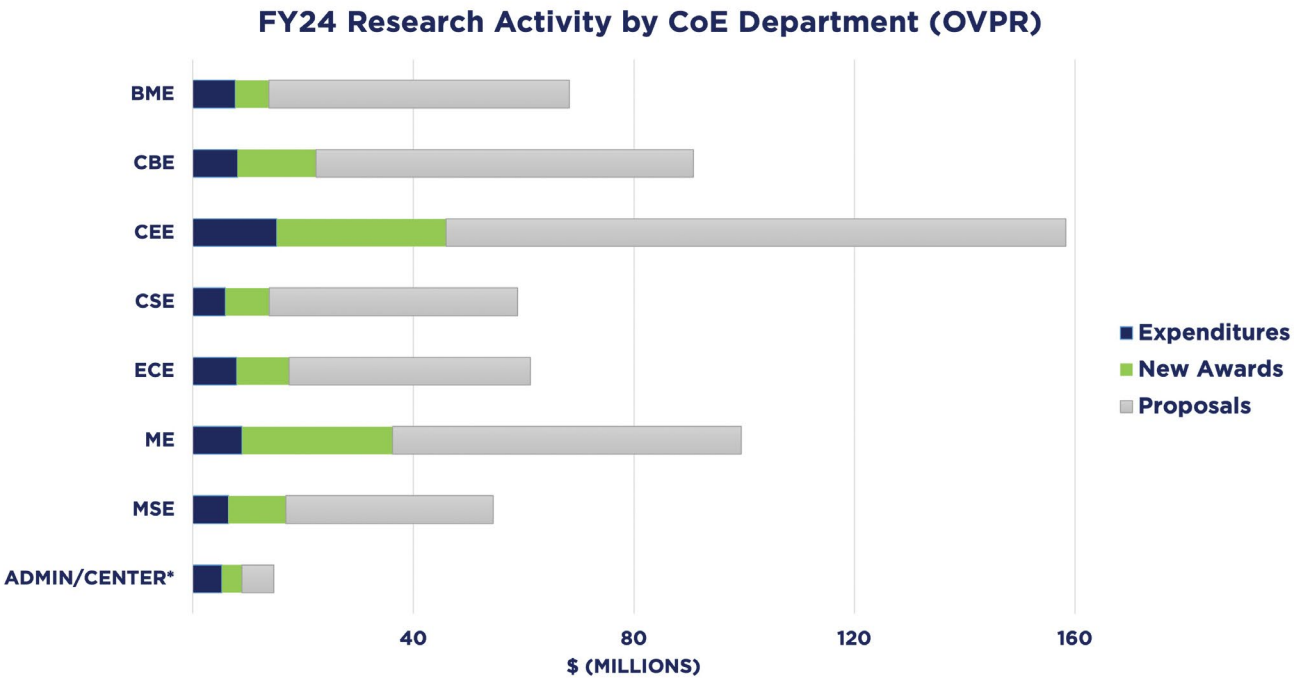
SPONSORED RESEARCH DATA

$80M Total FY24 Research Expenditures

$519K Average Research Expenditure per Faculty

553 Proposals Submitted

541 Active Grants



*Dean, C2E2, CTI, EEC, and PWIASE. (Non-CoE departments/organizations not included)

SPONSORED RESEARCH

Major Awards (FY24)

PRINICIPAL INVESTIGATOR	AWARD	SPONSOR	PROJECT
Christenson, Richard	$8.25M	DOD	NIUVT - Applied Research to Advance Current and Future Technologies in the Undersea Vehicle Domain (FY23)
Gorthala, Ravi	$7.98M	DOE	U.S. Department of Energy Onsite Energy Technical Analysis and Support Center
Chrysochoou, Maria	$5.00M	EPA	UConn TAB: Technical Assistance To Brownfields EPA Region 1
Zhou, Xiao-Dong	$4.50M	DOE	High-performance Metal-supported SOFC System for Range Extension of Commercial Aviation
Wille, Kay	$4.00M	DOC	Long-Term Risk Management and Mitigation Strategies of Crumbling Foundation
Tarakanova, Anna	$3.06M	DHHS	Multiscale Effects of Aging on Elastic Arterial Tissue Mechanics
Cho, Yongku P	$3.05M	DHHS	A Synthetic Biology Approach for Tau Post-translational Modifications in AD
Burkey, Daniel D	$2.50M	NSF	Community, Identity, Competence: Supporting Low-Income and First- Generation Students in Computing and the Data Sciences at the University of Connecticut
Anagnostou, Emmanouil N	$2.44M	EEC	The UConn OPM- Enhancing Prediction Accuracy and Supporting the Emergency Response Team with Real-Time Outage Forecasts
Hebert, Rainer J	$2.36M	DOD	Weldment Research and Prototyping for Hypersonic Air-Breathing Weapons and Advanced Material Manufacturing Research

INDUSTRY ENGAGEMENT

Industry Research Partnerships and Economic Development

The CoE is dedicated to forging collaborative partnerships with industry and government stakeholders to drive innovation and economic prosperity in Connecticut and beyond. Strategic research initiatives have driven the establishment of cutting-edge centers and institutes focused on sustainability, cybersecurity, and aerospace and naval advancements, spanning materials characterization, advanced manufacturing, energy, information technology, and systems engineering. The CoE is at the forefront of groundbreaking research, developing tangible solutions that shape the future of these key sectors.

National Institute for Undersea Vehicle Technology (NIUVT)

The U.S. Navy is currently rebuilding its fleet of submarines, which provides a once-in-a-generation opportunity for Connecticut and Rhode Island to expand economic development associated with this ramp-up. The CoE worked with UConn's Office of Governmental Relations and University of Rhode Island (URI) in partnership with regional industry Electric Boat and Navy collaborators (Naval Undersea Warfare Center (NUWC)) Newport, and Undersea Warfighting Development Center (UWDC) to establish the Institute, launched in 2019. UConn's Co-Director for NIUVT is Professor Richard Christenson.

NIUVT is a university-industry-government partnership that leverages cross-disciplinary expertise to address technology and workforce needs for the large naval ecosystem. Their partnership with URI leverages mutual strengths in naval science and technology.

NIUVT active research grants total $62.3M. In FY24, there were 128 short-term high-impact applied research projects engaging 57 UConn faculty members, 62 graduate students, and 86 undergraduate researchers.

Investment: NIUVT received $21.2M in new awards in FY24 with $7.7M in expenditures.

Project Daedalus – Air Force Advanced Manufacturing Initiative

Project Daedalus is a collaboration with the Air Force Research Laboratory (AFRL) led by Professor Pamir Alpay. Working with industry partners Pratt & Whitney, Aero Gear, GKN Aerospace, Collins Aerospace, and Sikorsky, Project Daedalus will help the U.S. Air Force and their original equipment manufacturers (OEM) to improve manufacturing technologies. It will apply highly specialized expertise in manufacturing simulation, extensive materials analysis, and process modeling to achieve its objective of improving the performance of key technologies used by aerospace manufacturing companies.

Faculty from Materials Science and Engineering, Mechanical Engineering, Chemical Engineering, Civil Engineering, Electrical Engineering along with colleagues from the Chemistry and Physics Departments have advanced manufacturing technologies with funding from AFRL. The initial contract that ended in August 2023 focused on improvements in polymer composite processing, casting, additive manufacturing, and machining with AeroGear, GKN Aerospace, Sikorsky, Collins Aerospace, and Pratt & Whitney supporting the UConn team in their research.

With three active contracts with AFRL, the UConn team focuses on the main thrust of materials-related manufacturing research, on systems engineering, and in a separate effort on electronic, photonic, magneto-optic, magnetic, and multiferroic materials for functional applications. RTX, Aperture Optical Sciences, and Carillon Technologies offer support for the UConn team for their functional materials research. The materials-related manufacturing research examines in one thrust broadly the mechanical and thermophysical behavior of aerospace-relevant materials at high temperatures and extreme service conditions with the aid of uncertainty quantification. With the latest contract UConn collaborates with RTX to address challenges that occur during the manufacturing of novel aerial systems. Manufacturing simulations, advanced material characterization, process modeling, and experimental studies are applied to solve manufacturing challenges. Advanced materials are furthermore examined for high-temperature structural and functional applications.

The manufacturing-related contracts funded by AFRL total nearly $30M with active pursuit of additional funding underway. This includes a $10.5M increase from the previous year.

INDUSTRY ENGAGEMENT

Center for Voting Technology Research (VoTeR)

The VoTeR was established in 2006 in response to the Help America Vote Act initiative that prompted states to modernize voting infrastructures nationwide.

VoTeR provides critical knowledge in cybersecurity that is instrumental to State officials for core responsibilities such as running fair and unbiased elections. For the past 18 years, the VoTeR center has advised and supported elections in Connecticut and worked with multiple administrations to significant successes. Its recent work on adaptive risk-limiting audits shapes current legislation. PIs are regularly called upon to counsel and testify on cybersecurity issues and policies that do affect everyday operations within state offices.

During this past fiscal year, the Center operated with a $1.2M budget to fund four full-time engineers alongside undergraduate and graduate labor to assist the Secretary of the State's office. High profile projects include participating in the process for acquiring new voting equipment for future elections, selecting and supporting the adoption of a new Voter Registration System, the design and implementation of a citizen-facing infrastructure to support the State-level "Voting Rights Act" and both counseling and development for the adoption of Adaptive Risk limiting Audits.

Eversource Energy Center (EEC)

The EEC, established in 2015 and led by Emmanouil Anagnostou, is a dynamic partnership between UConn and the major utility provider Eversource that strives to solve complex challenges in weather, climate, and energy, particularly where they coincide with real-life events such as hurricanes and snowstorms. Current research areas include projects on storm outage forecasting, tree and forest management, electric grid reinforcement, resiliency, climate change and flooding, geomagnetic disturbances, integration of renewable generation, and cybersecurity. These research topics and ability to quantify damages, outages and impact are becoming particularly salient for growing discussions centered around energy justice across the State.

The offshore wind grid integration project, launched through EEC in collaboration with Eversource Energy and other major vendors, received $3.6M support from the U.S. Department of Energy to develop technologies that improve grid reliability, optimize electricity infrastructure, and facilitate grid connection with renewable resources. Specifically, the project will develop and field demonstrate the real-world grid reliability and resilience enhancement benefits from dynamic line rating (DLR) and power flow controller (PFC) technologies in New England considering changing weather and increasing offshore wind integration. This is the first DLR demonstration project tied with the nation’s first utility-scale 800 MW Vineyard offshore wind generation, which would allow exploring DLR with PFC to unlock existing transmission line capacity without costly and time-consuming new line construction, thereby accelerating the country's ambitious goal for deploying 30 GW of offshore wind by 2030.

The Northeast University Cybersecurity Center for Advanced and Resilient Energy Delivery, or CyberCARED, is a groundbreaking collaborative planned to launch out of EEC. Supported by the U.S. Department of Energy and industry partners, CyberCARED brings together regional universities and industry partners who will focus on addressing critical gaps in cybersecurity research and workforce development within the energy sector through innovative technologies, defense systems, and educational programs.

Investment: FY24 - $16.3M in new awards and $3.4M in expenditures.

INDUSTRY ENGAGEMENT

Pratt & Whitney Institute for Advanced Systems Engineering (PWIASE)

PWIASE produces, disseminates, and commercializes new science and technology in the field of cyber-physical systems engineering through transformative research, education, and workforce development. PWIASE serves as a hub for world-class research, project-based learning by globally distributed teams of students, and industrial outreach activities focused on model-based systems engineering (MBSE) and digital engineering of complex systems that are built from and are dependent on the synergy of computational and physical components. Research applications are broad, and include, e.g., smart buildings and cities, aerospace systems, manufacturing, robotics, energy, and cybersecurity. The institute is led by George Bollas and his Associate Director Ravi Gorthala.

PWIASE leads the Onsite Energy Technical Analysis and Support Center (TASC) network, funded by the U.S. Department of Energy, that focuses on helping industrial facilities and other large energy users increase the adoption of onsite energy technologies. UConn has been named by the U.S. Department of Energy as the national leader to establish and operate TASC in collaboration with three minority-owned small businesses, a consultant, and a nationwide energy consulting company.

Investment: Initial funding of $10M was provided by RTX (formerly UTC). PWIASE received more than $81.3M in extramural funding beyond its initial seed funding (2013-2024). PWIASE has sought more than $13M grant funding in FY23. New grants in FY23 included $12.9M. Its expenditure for FY23 was $4.2M.

STATE PIER INFRASTRUCTURE IMPROVEMENTS PROJECT

The Connecticut Port Authority and State of Connecticut, together with the offshore wind development joint venture of Ørsted and Eversource, have invested $310 million to redevelop the Authority's State Pier Terminal in the Port of New London. Ørsted and Eversource have contributed $100 million to the project. The Terminal began assembly and marshaling operations in 2023. As a result of this combined investment in the terminal, Connecticut is at the forefront of the new American offshore wind industry.

State Pier Terminal is supporting the assembly and delivery of approximately 160 turbines for three offshore wind projects that will provide power to Connecticut, New York, and Rhode Island. Once installed, these projects will have an estimated output of 1,760 MW — enough to power more than 1 million homes.

UConn CoE and the EEC will contribute to offshore wind research by advancing technology and improving efficiency, which will foster industry growth. As UConn and other stakeholders develop new methods and solutions, it will attract investments and projects to the region. The presence of cutting-edge research initiatives will enhance the local workforce's skills, leading to higher employment opportunities in both direct and ancillary services related to offshore wind energy.

INDUSTRY ENGAGEMENT

Centers and Institutes

The CoE plays a crucial role in providing strategic leadership to the University by fostering impactful collaborations at the Innovation Partnership Building (IPB) at UConn Tech Park. The primary aim is to further develop the IPB as a central hub for fostering collaborative research between industry partners and departments across the University. Equipped with cutting-edge laboratories, advanced technological infrastructure, networking spaces, and dedicated personnel, the IPB serves as a catalyst for driving innovative research.

Over the past five years, the academic-industrial partnerships listed below have contributed significantly to UConn Tech Park, with an aggregate investment exceeding $400M. These partnerships have been instrumental in driving the growth and success of the IPB since its inauguration in 2018. The following list includes four newer centers established at IPB since 2022. For additional information on ongoing initiatives within Tech Park, visit the UConn Tech Park website.

Center for Excellence in Sensor Technology and Diagnosis

Est. 2023
Center Director: Yu Lei
The Center is dedicated to advancing sensor technology research and applications and strives to contribute to Connecticut's high-tech economy through collaborative industry projects with businesses engaged in sensor development or seeking innovative sensor solutions.

Center for Materials Processing Data (CMPD)

Est. 2019
Center Director: Lesley Frame
Mission: A member-driven research center dedicated to producing and collecting pre-competitive transient material property data used in materials process simulations; to be the premiere platform for the materials community to access transient materials data; and a data hub for accelerating the transfer of knowledge discovery in materials science to implementation in manufacturing.

Center for Science of Heterogeneous Additive Printing of 3D Materials (SHAP3D)

Est. 2018
Center Director: Anson Ma
Mission: To perform pre-competitive research providing the fundamental knowledge for additively printed heterogeneous products that integrate multiple engineering materials with complex 3D structures and diverse functionality.

Collins Aerospace Center for Advanced Materials

Es. 2016
Center Director: Steve Suib
Mission: The Collins Aerospace Center for Advanced Materials offers research support to graduate and undergraduate students in materials development and characterization. It supports several co-op and internship positions and multiple senior design projects.

Connecticut Advanced Computing Center (CACC)

Est. 2014
Center Co-Directors: John Chandy and Laurent Michel
Mission: To expand theoretical models and the boundary of cybersecurity technology to enable organizations to protect and safe keep the digital assets under their purview as well as enable safe, private, reliable, and trustworthy computing in adversarial settings.

INDUSTRY ENGAGEMENT

Connecticut Center for Applied Separations Technology (CCAST)
Est. 2013
Center Director: Jeffrey McCutcheon
Mission: We identify opportunities to implement membrane and other advanced separation technology into various industrial and manufacturing processes in order to lower energy use, reduce carbon footprint, limit waste, and prevent adverse environmental and health impacts.

Connecticut Manufacturing Simulation Center (CMSC)
Est. 2016
Center Director: Professor Jeongho Kim
Mission: Promote innovation and economic development through modeling and simulation and develop the next-generation workforce with computing and simulation skills.

Daigle Labs
Est. 2023
Center Director: Ryan Coles
Daigle Labs is the first university research center dedicated to organization science. Daigle Labs also has an applied lab where Principal Investigators use organization science and global studies to experiment with building businesses around science and technology research.

Nursing & Engineering Innovation Center
Est. 2023
Center Co-Directors: Leila Daneshmandi, Tiffany Kelley
The mission of the new center — which encompasses research, education, community engagement, and technology transfer efforts — is to advance health care, workforce, and economic development through interdisciplinary collaborations between nursing and engineering that promote innovations in health technology.

Pratt & Whitney Additive Manufacturing Center (PWAMC)
Est. 2013
Center Director: Rainer Hebert
Mission: To advance the fundamental understanding of additive manufacturing machine-material-microstructure linkages and to develop students into future leaders of additive manufacturing.

Proof of Concept Center (POCC)
Est. 2016
Center Director: Sina Shahbazmohamadi
Mission: To help Connecticut manufacturers achieve their production goals through access to rapid prototyping technologies.

Reverse Engineering Fabrication Inspection & Non-Destructive Evaluation (REFINE)
Est. 2017
Center Director: Sina Shahbazmohamadi
Mission: REFINE focuses on "correlative microscopy." The Center makes instruments talk to each other to bridge length scales and answer real-world problems.

INDUSTRY ENGAGEMENT

Southern New England Industrial Assessment Center (SNE IAC)
Est. 2021
Center Director: Liang Zhang
Mission:

- To offer free and comprehensive audit and consulting services to small-to-medium enterprises (SMEs) for saving energy, reducing water usage, minimizing industrial waste, strengthening cyber security, reducing carbon footprint, adopting renewable energy, and improving productivity;

- To train students in improving industrial energy efficiency through hands-on, real-world experience by conducting student team assessments of SMEs; and

- To provide outreach and education opportunities to nonparticipating SMEs.

Thermo Fisher Scientific Center for Advanced Microscopy and Materials Analysis (CAMMA)
Est. 2014
Center Director: Steve Suib
Mission: CAMMA is one of the world's foremost facilities for electron microscopy. Its nine microscopy instruments include the Titan Themis for sub-angstrom analysis of materials and the Talos TEM for simultaneous quantitative energy dispersive spectroscopy and analysis of the chemical composition of materials. CAMMA equipment is available for collaborative research with industry partners, including applications for clean energy materials and the testing of additively manufactured components such as those found in medical devices and polymeric materials for biomedical applications.

UConn DENSsolutions Center for IN-siTu/Operando Electron Microscopy (InToEM)
Est. 2019
Center Director: Yuanyuan Zhu
Mission: The InToEM center aims to advance materials' life cycle management for improved safety and sustainability by revolutionizing microscopy into an in-situ and operando characterization lab-on-a-chip.

Summits and Events

The CoE is dedicated to fostering collaboration with industry partners, leveraging education, research, and technology infusion to drive economic development at both state and national levels. The Innovation Partnership Building (IPB) at UConn Tech Park likewise remains committed to proactive outreach and engagement initiatives aimed at enhancing awareness of its advanced scientific resources and fostering sustainable growth. The program seeks to forge new business partnerships that benefit the residents of Connecticut and enhance the collective resources of the IPB, with a particular focus on vital industry sectors like energy, cybersecurity, and aerospace.

Visitors to the IPB gain firsthand exposure to its impressive broad range of resources, including cutting-edge equipment, academic excellence, and technological sophistication. They engage with IPB centers through various avenues such as guided tours, faculty consultations, seminars, and collaborative workshops. Additionally, the Tech Park team actively extends its efforts to reach out to businesses through on-site visits to manufacturing firms and collaborations with industry associations.

INDUSTRY ENGAGEMENT

Noteworthy Outreach

Summits, workshops, and conferences

ORGANIZATION/ACTIVITY	ATTENDANCE	DATE
Polish Delegation	6 Polish businesses represented	Sep 12, 2023
ASSA ABLOY	6 global technology leaders	Sep 12-13, 2023
Connecticut Manufacturing Meetup	6 small business executives	Sep 19, 2023
Climate Venture Studio Kickoff Event	Second cohort of 6 companies	Sep 20-21, 2023
2nd Annual Separations Conference/Workshop	55 businesses represented	Oct 5-6, 2023
Shap3D Annual Meeting	71 guests	Oct 25-26, 2023
AI Workshop	56 guests	Nov 3, 2023
Inaugural UConn QuantumCT Consortium Meeting	100 guests	Nov 15, 2023
Medtronic Research Day	15 guests	Nov 7, 2023
Climate Venture Studio Closing Event	Second cohort of 6 companies	Nov 16, 2023

Small- and Medium-Sized Business Support

Aligned with its mission statement to support industry partnerships, the IPB strives to support Connecticut small and medium-sized enterprises in their pursuit of innovation, production efficiency, and new product development. IPB has increased interactions with small businesses, engaging 126 SMEs in 2023 versus 30 in 2022.

Noteworthy in 2023, IPB made further progress with ASSA ABLOY and Medtronic, setting the stage for research engagement in the coming years. ASSA ABLOY is establishing a research partnership under the title "The ASSA ABLOY Sustainability Center" and Medtronic is considering research with faculty in CoE and CLAS.

QuantumCT

QuantumCT is an initiative led jointly by UConn, including CoE, and Yale that aims to position Connecticut as a national hub for quantum technology, driving transformative economic growth. Bolstered by a $1M grant from the U.S. National Science Foundation, QuantumCT plans to establish a quantum-focused innovation ecosystem, with the potential to unlock significant additional funding to accelerate Connecticut's quantum landscape.

By fostering an innovation ecosystem and cultivating a skilled workforce, the initiative facilitates research expansion, industry engagement, and talent development. Collaborations across academia, government, private sector, and community leaders ensure inclusive economic development. This diversity- and inclusivity-driven approach helps ensure broad participation and equitable benefit, with the promise of creating a new industry and generating jobs across various sectors, strengthening the state's economy.

IPB collaborates with the OVPR to organize and host QuantumCT conferences, strategically tailored to align with these approaches and contribute towards achieving the initiative's ambitious long-term objectives.

INDUSTRY ENGAGEMENT

Climate Venture Studio

In connection with OVPR, the IPB is the host of UConn/RGA's Climate Venture Studio, a studio that identifies, supports, and collaborates with promising startups addressing the most critical dimensions of climate challenge, including decarbonization, alternate energy, planetary resilience, social impact and more. The Studio serves as a catalyst for growth and expansion, providing selected companies with a range of resources and support mechanisms. Participants benefit from access to industry experts and UConn faculty, including CoE faculty, capital investment from R/GA Ventures, and technological infrastructure housed within the IPB. In early 2023, six companies were accepted into the first cohort, with an additional six in the second cohort in Fall 2023.

Industrial Workshop on Separations Technology

The Connecticut Center for Advanced Separations Technology (CCAST) hosted its second Industrial Workshop on Separations Technology at IPB in Fall 2023, bringing together end users, established providers, start-ups, public/private funding entities, researchers, and seasoned industry experts for a dynamic exchange of ideas and insights. For the membranes research community, this workshop offered a unique platform to explore advancements in membrane technology and its applications across various industries. Speakers and panelists delved into key topics pertaining to separations technologies including challenges that require new technologies, business opportunities and innovations in the field, how membrane technologies impact industry and businesses, and perspectives and trends that may guide future R&D efforts. With support from the Connecticut Department of Economic and Community Development, Mott Corporation, and the Athletic Brewing Co., the 1.5-day event attracted over 110 registrants from more than 60 companies.

UConn Depot Campus Research Centers

Outside of the UConn Tech Park, the Depot Campus continues to be a center of research and innovation for CoE units. Center For Clean Energy Engineering (C2E2).

Our mission is to become a leader in transforming science to systems: bridging the gap from fossil fuels to 100% renewable energy and enabling the development of economical solutions for critical technical issues; and providing guidance and leadership in solving global societal issues ranging from sustainable energy to the environment.

- GA Research Summit in Sustainability – graduate students shared their ongoing research in this inaugural summit. The summit gave the students the opportunity to expand their knowledge and refine their research presentation skills, while receiving valuable feedback from their peers.
- Hall of Fame in Sustainability – aims to honor the exceptional achievement of students, staff, and faculty from the Center who have attained national recognition i.e., early career awards, graduate fellowships, fellows and student organizations gained recognition.
- Launch of the ECS Student Chapter – UConn's significant electrochemistry student body (one of the largest worldwide) makes it an ideal candidate for establishing its own EDS chapter and is led by Christabel Adjah-Tetteh. The chapter's establishment at UConn promises to enrich the academic and professional landscape for students in this field.
- New awards in FY24 continue to rise and have reached $9.8M. Proposals have increased to $91.6M, up 41% from the previous year, and expenditures have also increased to $10.1M, up 34.9% from the previous year.
- H2 REU will complete its third year of its summer program. Students gain hands-on experience with research while also working closely with faculty and being focused on cleaner energy practices.
- C2E2 hosted the OREO+C Workshop. The workshop featured discussions about scale-up fabrication and characterization of fuel cell and electrolyzer electrodes. The workshop welcomes industry, national labs and academia with the United States and German OREO team and they reported on four years of collaborative findings.
- New Center Director appointed to the C2E2. Xiao-Dong Zhou to lead clean energy efforts at UConn. Xiao-Dong Zhou aspires to catalyze the widespread adoption of clean energy sources, reduce greenhouse gas emissions, and promote environmental stewardship by focusing on the development of advanced materials, efficient processes, and innovative solutions.

INDUSTRY ENGAGEMENT

Connecticut Transportation Institute (CTI)

CTI operates within the CoE and serves as a focal point for transportation-related research at the university and training throughout the state.

CTI's core programs serve to advance the maintenance and enhancement of transportation systems and safety, with a particular focus on Connecticut's current and future needs. While each of CTI's programs has a unique mission, they work in tandem to promote innovative research and training to provide state-of-the-art information on current trends and practices.

- CTI was awarded a five-year contract as the Region 1, University Transporation Center by the USDOT. This is a $15M grant focused on safety, equity, and automation as part of a consortium of universities and community colleges. The new center is called the New England University Transportation Center (NEUTC).
- The CTI's T2 Center had 170 graduates from their education programs, and has grown to 10 certificate programs and 10 staff members.
- In 2023, Governor Ned Lamont signed Senate Bill 904. Section 5 of the Bill requires Local Traffic Authorities to attend a training program, Local Traffic Authority (LTA) 101 through the T2 Center at UConn. This first year was well-received and well-attended.
- The T2 Center hosted the 2024 Northeast Local Technical Assistance Program (LTAP) Regional Meeting, where staff shared all the great work that is being done to support our local and state agencies.
- The T2 Center hosted their first Instructor Development Day in Storrs, in addition to a host of other courses (i.e., ADA Self Assessments and Transition Plans workshop, Road Master program, Surveying Methods for Local Roads, Traffic Signal Technician, Local Traffic Authority (LTA) 101, All About Asphalt.
- The CAPLab hosted the first-ever Department of Corrections Asphalt Training Program, which assisted all five individuals enrolled in securing a job on their release.
- The CAPLab continued and expanded their research into the critical crumbling foundation issue plaguing many homes in the state.
- CTSRC released a series of new crash data dashboards and appeared in a number of media interviews to support the state on safety issues.
- CTSRC also hosted a law enforcement training session on pedestrian crash investigations culminating with a live crash demonstration on the Depot Campus.

DEVELOPMENT

The AY2023-2024 was used to grow the engineering development team by two new members as the CoE prepares for future growth. Simultaneously, development staff deepened CoE's alignment with University focus areas in sustainability, diversity, equity & inclusion, and manufacturing. Financial estimates are accurate as of August 15, 2024.

Highlights included:

- The CoE development team had an outstanding year, raising nearly $17M.
- UConn Gives: During this year's record-breaking campaign, alumni and friends of the UConn community raised over $19K, benefiting Formula SAE, the Engineering Dean's Student Emergency Fund, and Brewing Innovation. This achievement, supported by 76 generous donors, represented a 90% increase in funds raised compared to last year.
- UConn FSAE built both an internal combustion (IC) and electric vehicle (EV) racecar for the first time in their 15-year history, raising nearly $20K to support their efforts. The IC team achieved impressive results, including fourth place overall and top 10 finishes in several events. Despite a logistics error that affected their final ranking, they are recognized as the second-best team in North America. The EV team faced technical challenges that prevented competition but successfully got the car running, marking a significant milestone. The team is now prepared to compete next year with improved knowledge and experience.
- Two alumni donors have significantly advanced the CoE's mission at UConn by launching the Mashikian Entrepreneurship Innovation Hub, and the Jeannine A. Gouin Engineering Initiative for Women in Leadership. These initiatives position CoE as a leader in promoting entrepreneurship, innovation, and the advancement of women in executive leadership and STEM fields.

COE DEVELOPMENT TEAM

Don Swinton
Senior Director of Development
(860) 336-7234
dswinton@foundation.uconn.edu

Caitlin Krouse '09
Senior Director Alumni Relations
(860) 207-0815
ckrouse@foundation.uconn.edu

Sarah Martin
Director of Development
(959) 232-1506
smartin@foundation.uconn.edu

Shawn Bernier
Associate Director of Development
(512) 202-8500
sbernier@foundation.uconn.edu

Shannon Nichols
Administrative Assistant
(860) 222-9408
snichols@foundation.uconn.edu

INFRASTRUCTURE

Engineering Technical Services (ETS)

ETS oversees all technical operations in the CoE. These include providing information technology, manufacturing, electronics support, and coordinating facilities management of CoE buildings.

IT Support for CoE

- Software management for learning centers
- Research computing support
- Supported Q drive migrations to Sharepoint and OneDrive

Facilities

- Equipment donations and renovations
- New undergraduate advising center was renovated in room 303 within Engineering II
- Pratt & Whitney Engineering Building signage, artwork and door replacements
- Supporting C2E2 move to the Innovation Partnership Building - including additional moves to free up space for C2E2 in IPB

Innovation Shop (iShop)

Engineering has made a major investment in the iShop (formerly the Machine and Electronics Shops) to increase student involvement in the shops and provide a space for students to work on academic and extracurricular projects. The shop has undergone a soft launch with a full launch planned in Fall 2024. Comprising four individuals spanning backgrounds in engineering, healthcare, accounting, architecture, military-specification machining, electronics and more, students can gain skills in varied fields on their way to a complete engineering education. The Engineering 1166 course was integrated into the space in the spring semester, and shop staff are prepared to introduce other classes and departments involved in the shop space. Most importantly, the iShop has received its first donation this past spring to help students explore their creativity.

Top: UConn's new fuel cell is located at the C2E2 facility on the Depot Campus.

Middle: The Pratt & Whitney Engineering Building, Storrs Campus.

Bottom: Students from the Navy STEM program working on projects in the iShop.

INFRASTRUCTURE

CoE Communications Team

The CoE Communications Team consists of Manager of Communications and Digital Strategy Claire Tremont, Webmaster / Programmer Analyst Orlando Echevarria, and Media Producer Christopher LaRosa, and is supported and guided by Assistant Dean Kylene Perras and Administrative Assistant Noreen Wall. The Communications Team is available to help with any marketing and communications needs for CoE faculty and staff. We oversee website design, development, and maintenance; digital and print promotional fliers and brochures; social media accounts; digital display announcements; apparel and swag purchasing; promotion of CoE events; a professional portrait studio; news stories; media relations; and more.

The Communications Team can be reached at coe.communications@uconn.edu.

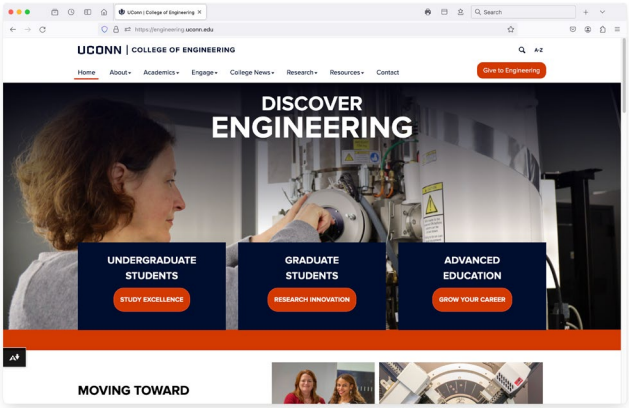
School to College Rebranding

Starting with a co-written proposal to the UConn Board of Trustees in summer 2023, we rebranded the School of Engineering to CoE, as well as rebranded three departments into schools. This work included the development of websites; logos; printed and digital brochures and fliers; banners and flags; letterheads; slide presentation templates and more. A successful rebrand started inside the organization, and we've encouraged our faculty and staff to fully embrace the transition and celebrate the new College with a strong unified identity.

Internal Communications

The CoE Communications Team led training to increase use of the internal calendar, which allows faculty and staff to schedule and promote events to the entire College. The internal calendar is hosted on the CoE Intranet. We encourage faculty and staff to browse and use the Intranet to their advantage, and connect with us to request additional content that the site could offer.

EXTERNAL COMMUNICATIONS AND MEDIA RELATIONS



engineering.uconn.edu

In January, our team of three expanded for the first time ever, and we hired our first social media coordinator under a special payroll position. Katherine Flood is tasked with writing, posting, and leading social media strategy for the flagship accounts. She is also available to help departments and centers improve their social media presence.

- **https://www.facebook.com/uconn.engineering/**
- **https://www.instagram.com/uconnengineer/**
- **https://www.linkedin.com/school/uconn-college-of-engineering**
- **https://x.com/uconnengineer**

We have worked to better align with the UConn Today news platform. UConn Today is now our main posting platform, with the old UConn Engineering news site phased out. With the help of freelancers Olivia Drake and Ira Morrison, we are improving our external connections and increasing the awareness of CoE through the University, state, and nation. By working closely with UConn Communications, we pitch news updates to state and national news organizations regularly. Promoting externally aids in increasing the reputation of CoE, a necessary step to improve *U.S. News & World Report* rankings.


SEC 120
2024
HONORS SCHOLAR


PRATT & WHITNEY
DEPENDABLE ENGINES
PRATT & WHITNEY
ENGINEERING BUILDING

Help a deserving student become an engineer.

giving.engr.uconn.edu

UCONN
COLLEGE OF ENGINEERING

261 Glenbrook Road, Unit 3237
Storrs, CT 06269-3237

engineering.uconn.edu