I thought I’d awaken to a world in mourning. Heavy clouds crowding, a society storming. But there’s something different on this golden morning. Something magical in the sunlight, wide and warming.

I see a dad with a stroller taking a jog. Across the street, a bright-eyed girl chases her dog. A grandma on a porch fingers her rosaries. She grins as her young neighbor brings her groceries.

While we might feel small, separate, and all alone, Our people have never been more closely tethered. The question isn’t if we will weather this unknown, But how we will weather this unknown together.

So on this meaningful morn, we mourn and we mend. Like light, we can’t be broken, even when we bend.

**As one, we will defeat both despair and disease. We stand with healthcare heroes and all employees; With families, libraries, schools, waiters, artists; Businesses, restaurants, and hospitals hit hardest.**

We ignite not in the light, but in lack thereof, For it is in loss that we truly learn to love. In this chaos, we will discover clarity. In suffering, we must find solidarity.

For it’s our grief that gives us our gratitude, Shows us how to find hope, if we ever lose it. So ensure that this ache wasn’t endured in vain: Do not ignore the pain. Give it purpose. Use it.

Read children’s books, dance alone to DJ music. Know that this distance will make our hearts grow fonder. From a wave of woes our world will emerge stronger.

We’ll observe how the burdens braved by humankind Are also the moments that make us humans kind; Let every dawn find us courageous, brought closer; Heeding the light before the fight is over. When this ends, we’ll smile sweetly, finally seeing *In testing times, we became the best of beings.*

---

American poet and activist Amanda Gorman
Academic year 2020-21 continued to be one of the most complex and challenging times that the UConn School of Engineering (SoE) has ever faced, but it was also a year of strength, resilience, hope, and growth.

The COVID-19 pandemic was a testing and disruptive force to hit institutions of higher education nationwide, including UConn Engineering. In AY20-21, we were able to leverage the knowledge gained in the switch to virtual learning in Spring 2020 to continue providing high quality instruction to our students. This past year, we managed to better navigate the use of our scientific laboratories and experiential learning courses and activities. Many of our lecture courses were allowed to resume as in-person sessions in compliance with strict health mandated protocols. Additionally, the majority of the experimental research functions, given some limitations, were resumed under relevant safety protocols. I am happy to report that the educational goals and outcomes of our academic and research programs were met and often exceeded.

In AY20-21, the SoE also focused on student well-being and mental health. Last year I had shared with you the tragic events involving students in our School and the university. This past year, we actively participated in a university-wide task force and contributed to an actionable strategic plan to help increase awareness and recognition of stress signs, support a school culture that encourages a kind and mindful environment, and increase accessibility to resources that promote mental and physical well-being among students. As a school, we took immediate actions to additionally address student mental health issues within engineering. I remain hopeful—and indeed determined—to see university-wide policies and resources established in the next few years to achieve a robust mental health infrastructure and a supportive environment for students at our university.

In the aftermath of the appalling death of George Floyd in Minneapolis, in the midst of a pandemic that is disproportionately affecting African-American, Latinx, and Indigenous communities, and at a time of growing prejudice against individuals of Muslim faith and Asian descent, AY20-21 also became a year in which we focused our efforts on diversity, equity, and inclusion. I am proud that this annual report reflects numerous achievements and major milestones in our efforts in these areas including the establishment of the Vergnano Institute for Inclusion, as well as the record number of new and diverse faculty hires. It should be noted that the SoE did not and will not stop at our current achievements in the fight for inclusion. We look forward to continuing our efforts and sharing the progress with you in the near future.

In AY20-21, the SoE continued to face financial and resource challenges. We expect that these challenges will intensify as expenses and revenue loss in the State of Connecticut and UConn mount because of the COVID-19 pandemic. The resulting stress on our faculty-staff workforce and the support structure for our academic and research enterprise is significant. We discuss this problem in detail in various sections of this annual report.

Despite all the complexities and challenges we have faced in the past year, our research enterprise experienced tremendous growth. Our research expenditures have continued to increase, and we were able to develop new innovative academic programs and experiences for our students. The entrepreneurial innovations in the School were more vibrant than ever. The SoE enrollment set record highs, and our faculty’s achievements at the national level continue to be a source of pride.

In closing, I want to express how humbled and deeply honored I am by the strong support I have received this past year. The SoE faculty and staff, members of our advisory board, and our industrial and government partners have been exceptionally supportive and a pleasure to work with. In addition, I could not be more grateful for the support that the School and I have received from the Provost and the Provost’s Office as we responded to the many AY20-21 challenges.

I remain deeply appreciative for the opportunity to be the Dean of the School of Engineering at such complex but exciting times, and I am mindful of my personal responsibility to serve the citizens of Connecticut. I look forward to continuing our work with university leadership, our faculty and staff, and our many partners and friends to realize our community’s ambitious vision for UConn and our state.

Kazem Kazerounian
Dean
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**UConn School of Engineering Annual Report 2020-2021**

The UConn School of Engineering Annual Report is produced by the University of Connecticut School of Engineering based on information provided by the deans, department heads, unit directors, and support staff. Special thanks to the SoE Communications, Research Development, and Administrative team members that helped put the final report together.
This report documents the UConn School of Engineering’s goals and achievements during Academic Year 2020-2021. To provide context, it also includes our progress over the past several years and plans for future growth.

Engineering for a Better Connecticut

UConn SoE has emerged as a powerhouse for research and engineering education in the State of Connecticut. Throughout the challenges of the past year, the SoE has demonstrated an unwavering commitment to the betterment of society in Connecticut and beyond through:

- Research and public service initiatives that address socially-relevant challenges, such as the COVID-19 pandemic, brownfields remediation, cybersecurity, and engineering for human rights.
- A resolute pursuit of diversity and gender parity in engineering through initiatives targeted at all levels of the STEM enterprise, from K-12 initiatives, through undergraduate and graduate education, to faculty hiring and development.
- A strong commitment to developing philanthropy to support our students and faculty during tight budgets.
- Being a critical component of economic growth in CT through technology workforce development, innovation, and entrepreneurship initiatives.
- Achieving significant growth in Sponsored Research expenditures which helps support new knowledge and advances in technology development.
- Multiple undergraduate and graduate programs and initiatives were developed and put into practice, including a Robotics Engineering degree and interdisciplinary programs with concentrations on Human Rights and the Fine Arts.

Challenges & Future Growth

There are three main challenges that continue to affect performance: staffing levels, salary compression, and space for offices and laboratories. The SoE will continue to work with university leadership to work through these challenges in the upcoming years.

Looking forward, we have identified two areas for strategic growth: manufacturing and computer science. An emphasis on artificial intelligence and machine learning and their applications to research in material, environmental, biomedical, biomolecular, manufacturing, and other engineering areas, provide an unparalleled impact on UConn’s research enterprise and on our ability to support CT industry and economic growth.

We remain excited about our achievements and our trajectory for the future. The SoE will continue to move forward aggressively, undeterred by our challenges, to shape the engineering and economic landscape of Connecticut.

Introduction

Our dear friend and colleague Dr. Mike Accorsi retired on May 31, 2021, after 35 years of service to the School.

Mike has been an integral piece of our leadership team since he began as Senior Associate Dean nine years ago. He has truly been a wonderful friend, an invaluable colleague, and confidant to us all. We will greatly miss his passion for UConn Engineering, which has led to remarkable partnerships, an increase in research expenditures, and exponential growth in our connections with industry. Mike has truly been the back-bone of the School in the last decade. He has been instrumental in shaping our critical role in the engine of economic growth of the State of Connecticut.

Prior to his role as Sr. Associate Dean, Mike served as the Department Head for Civil and Environmental Engineering and as the Director of the DHS National Transportation Security Center of Excellence. Throughout his career, he has been a highly driven researcher, raising millions of dollars for his research which has been funded by ARO, AFOSR, ONR, Pratt & Whitney, and Electric Boat. While serving as Sr. Associate Dean, he generously shared his research experience to empower our faculty to be more successful in their own research endeavors. For many of us, Mike has been a role model, mentor, and friend. He will be missed at UConn, but we wish him all the best in his retirement adventures!
Introduction

Leadership Milestones

Kylene Perras transitioned from her role as Director of Professional Education and Strategic Initiatives to the newly created role of Assistant Dean for Administrative Operations and Strategic Initiatives.

Professor Xinyu Zhao, of the Mechanical Engineering Department began her role as Director of Graduate Education in the SoE.

Stephany Santos, Ph.D. of the Biomedical Engineering Department began her role as Assistant Professor in Residence and Associate Director of the Vergnano Institute for Inclusion.

Jonathan Bartolotta joined the SoE team as the new Program Manager for Professional Education, bringing his UConn experiences with the AF ROTC program and as an alumni.
Undergraduate Education

Enrollment Growth

In response to ambitious growth targets mandated by the state's Next Generation CT legislation, the UConn SoE has nearly doubled the size of its undergraduate (UG) student body over the past decade and has increased its undergraduate count by 70% since 2012.

The Undergraduate projected enrollment for the Fall 2021 semester is 3255 students. The quality of our students is rising; for admitted incoming freshmen the average SAT score is 1336. However, growth across the various departments has not been uniform e.g., CSE continues to see stronger demand and growth in the last two years. The SoE is working to address this challenge by maintaining current enrollment levels across the departments and continuing to develop student support services and programs to enhance the student experience. The SoE has been working to reallocate resources to meet the current enrollment demands. Department heads are also being encouraged to collaborate with Regional Campus faculty, leveraging remote courses that could be offered across all campuses.

UG Demographics

3424 Students enrolled on the Storrs campus, September 2020
817 Degrees conferred, 2020-21 YTD
870 Female students
193 International students

UG Achievements

53 Honors graduates
3 University Scholars
6 Holster Scholars
8 IDEA grant
9 SURF awardees

In addition to university scholarships, the SoE distributed $527,000 to support 230 undergraduate students this past year.

Engineering in Regional Campuses

Four-Year Computer Science Program at the Stamford Campus

UConn Engineering launched a four-year computer science and engineering program at the Stamford campus in Fall of 2017. Students can now complete their entire degree program in Stamford. The program makes the computer science curriculum widely available to Connecticut's information technology sectors, such as finance and insurance. Our inaugural group of students graduated from Stamford’s program in Spring 2021. A Mobile Systems Development concentration was formalized; however, additional teaching staff is required to fulfill this commitment. In response to this challenge, the SoE has elevated the need of staffing for the concentration for AY21-22.

Freshman Engineering Curriculum at Regional Campuses

The freshman engineering curriculum is offered at all the UConn regional campuses. The SoE continues to work with campus partners to offer coursework beyond the freshman year curriculum at all regional campuses. There was a nearly 50% increase in Regional Campus enrollments during AY20-21. The SoE plans to maximize the number of students that can remain at regionals until Junior year (54 credits) to increase engineering accessibility. With sufficient coursework, there is potential to enroll 20-30 SoE students per academic year.

UConn Hartford interweaves top-tier academic programs with the vitality and unique educational and service opportunities offered by Connecticut’s capital city. Our campus is integrated with the Hartford Public Library, and the surrounding neighborhood includes the Wadsworth Atheneum, CT Science Center, CT Convention Center, and City Hall. Home to a number of unique undergraduate, graduate and professional programs, UConn Hartford leverages its metropolitan setting to provide a remarkable learning environment for a diverse student population.
at each of the regional campuses. The SoE leadership additionally recognizes the opportunity to align specific Engineering programs at regional campuses while balancing the SoE and Regional Campus strategic goals and resource costs.

**Regional Campus Support Network Initiative**

Engineering faculty at regional campuses have developed a support network that adopts innovative course approaches to strengthen and expand curriculum offerings. Many regional campus faculty now offer more flipped classes and online lectures to increase accessibility to students. The SoE in collaboration with the Director of the Hartford Campus has submitted a proposal to the provost to hire full-time faculty in Hartford, taking advantage of the new downtown location and proximity to industry and employers.

**Advising**

UConn SoE Academic Advising efforts were regarded as top strength in its most recent ABET accreditation evaluation. Advising in the SoE is mandatory for every student in every semester. First- and second-year students are assigned to a professional staff advisor, and transition to a faculty advisor when they reach junior standing. Both professional and faculty advisors aim to create active partnerships between students and the University community to support and empower undergraduate students in making meaningful academic decisions in pursuit of their goals.

In Spring 2020, due to the coronavirus pandemic, Academic Advising "went virtual". Using currently existing University technology, advisors and students connected in creative, engaging, and deeply human ways. Faculty and staff Advisors generated new ways to connect with students to carry forward Engineering’s student support mission.

**Multidisciplinary Engineering Degree**

The new Multidisciplinary Engineering (MDE) degree is a unique degree path that will allow students to pursue an engineering degree with a broad skillset, allowing them to work across fields. Grounded in engineering fundamentals from multiple majors, it also provides unprecedented flexibility for engineering students to pair an engineering degree with other interests and majors at the University. The SoE plans to explore several new joint programs with partners around the University that take advantage of the Multidisciplinary Engineering Program's unique structure.

The SoE is currently working with the School of Fine Arts to offer partner programs under the auspices of the Krenicki Institute for Arts and Engineering. The SoE is continuing to work with the Human Rights Institute to increase participation in the Human Rights and Sustainability specialization (the Engineering for Human Rights minor was developed in 2016-2017).

**International Engineering Program**

The UConn SoE Connecticut International Engineering Programs offer an unparalleled experience for students looking to become truly global engineers. By spending one year abroad, students benefit from the combination of a strong engineering program and the immersion into foreign language and culture. The life-changing program prepares its graduates for rewarding and diverse engineering careers around the world. The SoE is also home to a variety of international students who wish to promote cross-cultural interactions among students of all nationalities and backgrounds. International Engineering graduates typically graduate within a five-year span and earn two degrees simultaneously (a B.S. in an engineering discipline and a B.A. in French, German, Chinese, or Spanish).

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**International SoE Enrolled Student Data**

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<th>Count</th>
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Engineering House Living and Learning Community

Every year, the School of Engineering invites 100 first year and 50 second year students to join the Engineering House Living and Learning Community (EH LLC). While the basis of the EH LLC is to provide a sense of community for students in all engineering majors, there are academic and experiential education components. First year students are involved in service-learning projects, Derby Car engineering builds, and a trip to UConn’s Spring Valley Farm to learn about engineering needs in an agricultural setting. Additionally, the student leaders are responsible for planning and running events to aid students in meeting friends, navigating the University, and exploring their majors. Despite pandemic restrictions, students were able to connect virtually using the Discord Platform in which multiple game nights, movie nights, and even an escape room event was held. The annual Pinewood Derby Car competition was also successfully held in a virtual format!

AY21-22 will offer a new sophomore course for EH LLC members, in which they will be working with our Senior Design teams as interns to gain better understanding of the Senior Design requirements, engineering design builds, and working with industry partners.

Cornerstone Initiative: Freshman Experience & Design Lab

In 2016, the SoE launched the “Cornerstone Initiative” which focused on the radical redesign of the freshman engineering experience. The Cornerstone Initiative reworked the ENGR 1166—Foundations of Engineering course. In January 2019, the updated ENGR 1166 course and other freshman activities moved into the newly renovated ~2000 sq. ft. Cornerstone Design Laboratory located on the first floor of the United Technologies Engineering Building. With a modular floorplan, a makerspace, and creative student workspaces, this new centerpiece of the freshman experience serves nearly the entire freshman population in engineering as well as many students interested in exploring engineering. In AY20-21, the SoE developed and presented financial proposals incentivizing potential donors to help name the initiative.

The ENGR 1166 instructional team successfully iterated on the AY19-20 COVID-inspired do-at-home project, focusing on student designs and prototypes for filtration devices for airborne pathogens. Students participated in the Freshmen Expo and were able to work in groups remotely and make virtual presentations in their laboratory sections during the final week of the spring semester.

The SoE successfully responded to COVID-19 constraints on campus as ENGR 1166 was taught in a hybrid modality with large lecture groups taught remotely. Also, the design lab occupancy was capped at 15 students (down from 30) due to physical distancing requirements; in-person students alternated weeks in lab and working on their own, in addition to the students who participated via completely remote sections.

Student Professional Development

Career fairs are a staple event to help our students accept internships with companies. Internships provide undergraduate students with the exposure to the engineering workplace which helps them develop professional skills. The SoE offers additional career development support for students through the Cooperative Education (Co-op) and Senior Design programs. Co-ops offer an extended experiential learning experience for students in industry beyond what can be attained in a traditional summer internship and often results in a post-graduation job offer. Senior Design is a program where all graduating engineering students are required to complete a year-long design project, which is typically performed in teams of three to four students and in collaboration with an industry or government sponsor. More details on student development through industry connections can be found in the “Industry Engagement” section of this report.
### School of Engineering Majors and Exploring Engineering ACES students, Fall 2020

*Office of the Registrar, September 2020*

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Graduate education is at the heart of nearly everything we do at the UConn School of Engineering. Graduate students directly perform much of the research work that leads to new products and discoveries; graduate students are also directly involved in undergraduate education and student engagement, as they help provide mentoring during life-transformative educational experiences.

Our graduate students come from across the country and around the world. They embody a myriad of backgrounds with different racial, ethnic, cultural, neurological, LGBTQ+, and intersectional identities. In response to recent national events, graduate students have led the School in responding to racial injustice and changing the way we recruit, support, and celebrate diversity in our community to advance equity and inclusion in our educational, research, and outreach mission.

In support of our remarkable graduate students, the School of Engineering 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 private industry and academia.

A dedicated team of the SoE faculty and staff led several major initiatives for MS and Ph.D. students this year. AY20-21 leaders included: the graduate directors of all the departments and programs as well as Associate Professor Xinyu Zhao, Director of Graduate Education; Aida Ghiaei Director of Graduate Outreach & Diversity; and Nusaybah Quasem, Program Assistant for Engineering graduate programs.

Recruitment

In the past few years, part of the SoE’s emphasis on diversity recruiting efforts involved steadily building our presence at regional and national events hosted by diversity-serving engineering organizations for Black (NSBE), Chicano/Hispanics and Native Americans (SACNAS), Hispanic (SHPE), female (SWE), and LGBTQ+ (o-STEM) students.

In Fall 2020, UConn organized and hosted the regional GEM GRAD Lab conference. The GEM Consortium is a public-private partnership with universities all across the nation with the mission to enhance the value of the nation’s human capital by increasing the participation of underrepresented groups at the master and doctoral levels in engineering and science. At UConn’s GEM GRAD Lab event in September 2021, 80 minority students attended.

In the past year, the SoE also hosted a virtual open house and 11 other virtual webinars for prospective graduate students. Throughout the recruiting season, our Director of Graduate Outreach & Diversity hosted weekly office hours for prospective students, including sessions designed to accommodate international students.

Our Director of Communications attracted prospective students to these events through a comprehensive and aggressive social media and email marketing campaign that enabled potential students to identify and chat virtually with faculty advisors. The SoE ended its recruiting season with a virtual SoE visitation event where 90 admitted students attended.
Equity & Inclusion Initiatives for Graduate Students

BRIDGE+

Recruiting a diverse group of graduate students is not enough. We also work to ensure that the students we recruit feel welcomed and empowered to thrive and lead within the SoE. In Fall 2021, we received competitive funding to pilot the BRIDGE+ program, which is a new two-week long residential orientation and cohort-building program designed for incoming Ph.D. students across STEM fields, from underrepresented backgrounds. This program is a partnership with other schools and colleges at UConn.

In August 2021, the first pilot cohort will be comprised of seven students including three from engineering. These students will live in the UConn dorms and participate in an intensive round of professional development and team-building activities designed to enhance self-efficacy, student success, and leadership potential. The long-term goal of our BRIDGE+ program is to encourage our growing underrepresented and minority engineering populations and become a model for diversity, equity, and inclusion the state and nationally.

SoE Communication Focus Group

While the SoE has several initiatives that focus on uplifting minorities in STEM, the School wants to project an inclusive and welcoming environment for all incoming students (minority and majority), by celebrating and promoting the achievements of all of the SoE students and avoiding any tokenism.

To ensure that under-represented students have a voice in how they are portrayed in our communication and marketing materials, our Director of Communications created the SoE Communication Focus Group in Fall 2020. The group is comprised of graduate and undergraduate student leaders that are selected from their peers. They meet periodically to provide their valuable feedback to leadership about the SoE marketing publications and communications, making recommendations to ensure the communications remain inclusive and in alignment with the School’s goals and actions.

John Lof Leadership Academy (JLLA)

Since its inception in the Fall of 2017, the John Lof Leadership Academy (JLLA) has brought together a total of 44 student leaders from across the SoE in three separate induction cohorts, roughly 15 students each. The aim of this exclusive academy is to provide graduate students in the SoE with opportunities to develop crucial leadership and other non-technical skills that are historically lacking in a typical Ph.D./Masters curriculum. This is accomplished through a number of focused workshops on various leadership-oriented topics that are planned and executed by the academy’s own members, with an emphasis on individual growth. Of these three cohorts, the inaugural 15 members completed their two-year obligation to JLLA at the start of the Fall 2020 semester. The next 15 will finish the program at the start of the Fall 2021 semester, and the newest 14 members will be recruiting an additional cohort of engineering graduate students as they head into their second year.

Due to the challenges of COVID-19, the various workshops conducted by JLLA were held completely virtually for the AY20-21. At this time, there are plans to safely return to a hybrid approach. In spite of these obstacles, JLLA was still able to bring in various experts and leaders at UConn and beyond to participate as guest speakers or panelists during the events. This list includes prominent alumni Doug Young (VP Program Manager at Northrop Grumman), David Noble (Director of the UConn Werth Institute),
Gladis Kersaint, (Dean of the UConn Neag School of Education), and various other faculty and staff across UConn’s many departments and institutions.

In the upcoming year, JLLA will continue to develop an ongoing research project in which they will gather qualitative and quantitative social science data to measure the effectiveness of the JLLA program leadership skills versus a control group over time. The goal of this study is to publish the findings in a peer-reviewed engineering leadership journal to highlight the benefits of implementing similar programs at other universities, increasing the visibility of UConn concurrently. Additionally, JLLA has agreed to be a resource in developing a National Institute of Environmental Health Sciences (NIEHS) Superfund Research Center in the Department of Civil and Environmental Engineering. A core aspect of this new center will be related to student training, and JLLA will be available to co-host networking and other professional development sessions.

Recruiting

Consistent with nationwide trends, the SoE struggles to recruit and retain high-quality graduate students, particularly domestic students. One contributor to this trend is that the debt incurred in undergraduate education discourages students from entering into graduate programs. UConn is also competing with peer and higher ranked universities for a shrinking pool of students. The current COVID-19 crisis has also dramatically reduced our ability to recruit students internationally. As a result, faculty have had difficulty securing adequate numbers of top talent students, with serious implications for their research programs.

Fellowships Awarded to Supplement & Offset Cost of Grad. Assistants

In the past few years, the SoE has focused on developing philanthropic-based graduate and training grant fellowships. Fellowships help offset the cost of graduate education for tuition-paying graduate students or for principal investigators. Our success in these areas has been significant, totaling over $1.9M in the AY20-21 and includes the following fellowships*:

Federal: 1 NSF Bridge to the Doctorate, 34 ED GAANN, 5 NSF PIRE
Industry: 8 Cigna, 36 GE Innovation, 3 UTC Graduate Fellowship
UConn-Internal Competitions: 3 Giolas Harriott, 1 Crandall Cordero, 1 Taylor Booth

*Our students additionally receive other fellowships directly, which are not reported here.

Challenges

Costs: In FY21, the fringe benefit rate for graduate students was 15.5%. The indirect cost burden was 61%. The cost for supporting a full-time graduate research assistant (entry level M.S. student for 12 months a year working 20 hours/week) was $60,805 which included a stipend, fringe benefits, and indirect costs. This cost is higher than most of our public peer universities in the US, placing significant competitive pressure on faculty researchers who need to support graduate students through their research grants. Additionally, the SoE does not have large numbers of TA lines that are available to support engineering graduate students and provide service courses to non-engineering majors (compared to departments such as mathematics, chemistry, biology, and physics).

Professional Skills is one of the challenge areas facing our graduating M.S. and Ph.D. students as they struggle to keep pace with the increasing emphasis on leadership, interpersonal, and communication skills, which are crucial skills in success for employers in industry. The JLLA is one program that the SoE has set up to help address these ongoing challenges.
Professional Education

Professional Education Students

The Professional Education program (Prof. Ed.) provides courses for:

- Graduate students towards the completion of an engineering degree or advanced engineering certificate.
- Industry students and corporate partners who wish to expand their knowledge to benefit their careers and businesses.
- Practitioners and students who are interested in advancing their knowledge of specific engineering subjects in a non-degree path.

Professional Education Strategy

During AY20-21, the Prof. Ed. team engaged in the following strategic activities to support the program's growth and revenue generation trajectory:

1. Held regular advisory board meetings, consisting of members from the following organizations: Hanwha Aerospace, General Dynamics Electric Boat, Eversource, Fuss & O'Neill, GE Power, Langan Engineering, Medtronic, Pfizer, Pratt & Whitney, Unilever, Kaman, Raytheon Technologies and Collins Aerospace.

2. Extended digital presence through extensive social media marketing, and continual expansion of online course offerings (55 online courses have been developed to date). Webinars, email campaigns, an active LinkedIn page, newsletters, virtual career fairs, virtual networking sessions and open house activities, and virtual lunch & learn sessions were executed to attract industry participants.

3. Promoted excellence in curriculum by collaborating extensively with the Center of Excellence for Teaching and Learning for programmatic support and adding new offerings in biomedical engineering and chemical engineering.

4. Collaborated extensively with the SoE departments, career services, development team, alumni relations, the senior design director, as well as UConn colleagues in other schools and colleges, to build industry partnerships.

5. Launched the 2020 Springboard Graduate Scholarship to assist recent 2020 spring and summer graduates with MEng full-time program costs, due to financial challenges that many are facing during the COVID-19 pandemic. In Fall 2020, the school served 20 scholars by providing $197,730 of support. In Spring 2021, the school served 19 scholars by providing $182,520 of support.

Prof. Ed. Programs

- Master of Engineering (MEng) Degree
- Advanced Engineering Certificates
- Graduate Courses (non-degree)
- Customized Training & Development Education
- Boot Camps (currently offering coding)

Prof. Ed. Total Student Enrollment

- 593 Master of Engineering (MEng)
- 65 Advanced Engineering Certificate
- 141 UConn Coding Boot Camp
- 42 Corporate Education (customized training & development)
Enrollment and Revenue for MEng and Certificates

As a result of these efforts and according to preliminary registration data, revenue from Prof Ed. is projected to continually increase during the AY20-21, as follows:

Prof. Ed. Credit Program Offerings

Master of Engineering Concentrations

- Advanced Manufacturing for Energy Systems
- Advanced Systems Engineering
- Biomedical Engineering – Clinical
- Biomedical Engineering – Biomechanics
- Chemical Engineering
- Civil Engineering – Structures
- Civil Engineering – Transportation
- Computer Science & Engineering
- Data Science
- Environmental Engineering
- Electrical & Computer Engineering
- General Engineering
- Global Entrepreneurship
- MBA/MEng Dual Degree
- Manufacturing Engineering
- Materials Science and Engineering
- Mechanical Engineering

Advanced Engineering Certificates

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

UConn Boot Camps

The Coding Boot Camp enrolled 141 students for AY20-21 and it was offered virtually. The program previously transitioned to online due to the pandemic and has made a successful permanent transition to fully online. Per the UConn and Trilogy/2U partnership, the School has received $276,443 since the program's inception.

The Cybersecurity Boot Camp is slated for November 2021 launch. It will be a 24-week program that provides fundamental knowledge, skills and abilities needed to enter the multidisciplinary field of cybersecurity. Theory and practical application labs are combined to achieve proficiency in industry-standard tools and techniques.

Professional Enhancement Modules

Prof. Ed. additionally offers customized training and development to industry. The programming is adapted to accommodate company needs and working professional schedules and even offers its programs at company sites. For AY19-20, the Prof. Ed. program received $37,089 in net revenue.
Faculty Head Count

The number of tenured or tenure track (T/TT) faculty in the SoE has stayed relatively constant in the last four years and has modestly increased in the last five years. A total of 14 T/TT faculty positions have been added since 2012.

Engineering courses are not taught by graduate students. To accommodate the dramatic increase in the undergraduate enrollment, we have developed a cadre of passionate faculty focused on teaching (assistant/associate/full professors in residence). These positions are considered permanent (without tenure) after a seven-year probationary period. Individuals in these positions are largely recruited in national searches and are required to attend training and continuously work with UConn’s Center for Excellence in Teaching and Learning (CETL) to improve their teaching skills. We have also developed rigorous standards for annual evaluations and promotions for our teaching faculty.

Challenges

To accommodate budget cuts in the SoE, senior faculty who have retired or left the School are generally replaced with more junior faculty. While this is an investment in the future, it creates challenges, such as needing to accommodate lower teaching loads for pre-tenured faculty.

We have been extremely successful in enhancing the SoE’s research portfolio and our support for industry. However, future expansions in these areas require meaningful investments by the university in additional T/TT faculty lines. An external review committee independently confirmed this assessment and noted that any further growth in the School would depend on additional resources to maintain educational quality.

Additionally, the salaries we are able to offer our existing faculty are now below national norms, placing us at risk of significant talent losses. In the past, direct support was given by the provost to address specific retention risks, which lessened the potential damage of non-competitive salaries. In their report, the external review committee also noted and raised concerns about the implications of salary compression in the School, including negative impacts on faculty morale and retention of productive faculty.

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Faculty Data Fall 2020

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Faculty Retention

Engineering is a competitive field, and faculty flux is the rule rather than the exception. In the absence of adequate financial capability to retain our faculty, we have focused on creating a positive environment and offering faculty support in research development and teaching skills. As a result, our retention rate has drastically improved. The table to the right shows the trend for the SoE faculty attrition (not including retirement) in the past six years. Approximately 75% of the senior faculty who left the School have moved to senior leadership positions at other institutions in academia. In order to further support our faculty, we have worked extensively with industry and private donors to create chair, named, and term professorships.

Enhancing Research Development Skills

Since 2015, the SoE has provided grant writing skills by training to junior faculty through an annual workshop series focused on the NSF CAREER competition. The workshops are offered monthly between November and May. Three workshop participants received the CAREER award in 2019 and five received the award in 2020.

Additionally, in Summer 2021, ten faculty from various departments participated in a virtual Department of Defense workshop offered by external expertise from Grant Training Center. The SoE plans to continue empowering its faculty through grantsmanship and funding agency training per research development strategies that align with the university’s research growth goals.

Enhancing Teaching Skills

To promote high-quality undergraduate instruction, the School has taken measures to support and promote the teaching mission of its T/TT and in-residence faculty.

In 2017, Dr. Sarira Motaref was appointed as the SoE’s Assistant Director of Faculty Development as well as its liaison with the Center for Excellence in Teaching and Learning (CETL). In AY20-21, workshops on teaching technologies, best practices in online teaching, and inclusive teaching were offered to faculty to explore their application in undergraduate and graduate courses. All departments designed an alternative course evaluation method to address SET+ requirements. The majority of faculty received training on “preparing for distance education” and “effective teaching in a virtual environment” to address challenges during the pandemic. In collaboration with the SoE’s academic advising team, multiple undergraduate courses were identified to be transformed to an online modality; a total of 20 courses were developed and offered online by eCampus in Summer 2020. Faculty worked closely with CETL to develop high quality online courses. In addition to distance learning courses that were already virtually accessible, a total of 57 graduate courses were developed and offered fully online for the Professional Education program in AY20-21.

Faculty Achievements

Generating knowledge through scholarship is vitally important to the SoE. The School promotes scholarship first and foremost by recruiting and retaining the highest caliber faculty. The SoE works to recognize its faculty by systematically recommending them for honors and awards that acknowledge the impact of their contributions to science and society. Our faculty actively advance knowledge in a broad spectrum of fields and raise the visibility of UConn through their many professional activities and appointments.
Summary of Scholarly Activity in AY20-21

The scholarship metrics reported here for the most recent academic year show our faculty to be active at levels equal to the best universities in the country.

471  Journal publications
58   Editorships
865  Conference publications
194  Associate editorships
40   Patents filed (16 issued)
49   Early career awardees, including NSF CAREER and Young Investigator Programs
37   Faculty are fellows of learned national and international societies
55   Members of the Connecticut Academy of Science & Engineering
1   Member, National Academy of Medicine; National Academy of Science; National Academy of Engineering
3   Professors of Practice who are members of the National Academy of Engineering

Honors and Awards

We have a talented and accomplished faculty who have been recognized for their achievements through many prestigious awards and recognitions, and a selection of these recognitions are captured in this section.

A selection of 2021 recognitions across different SoE Departments:

- **BME** Liisa Kuhn, IUSBSE Fellow; Society for Biomaterials Service Award
- Changchun Liu, UConn School of Dental Medicine Outstanding Research Award
- **CBE** Cato Laurencin, National Academy of Science inductee, AICES Biological Engineering James E. Bailey Award, and Hoover Medal
- Daniel Burkey, American Society for Eng. Education William H. Corcoran Award
- **CEE** Arash Zaghi, ASCE Structural Eng. Institute Raymond C. Reese Research Prize
- Shinae Jang, ASEE-CIV Emerging Leader Fellow Award
- **CSE** Suining He, Google Research Scholar; NVIDIA Applied Research Accelerator Award
- Fei Miao & Songyang Han, Best Paper Award (12th ACM/IEEE Intl. Conference)
- **ECE** Peter Willett, NATO CMRE Science Achievement Award
- Bahram Javidi, Berthold Leibinger Innovation Finalist (COVID-19 Detection Device)
- **ME** Tianfeng Lu, Combustion Institute (CI) Fellow
- George Matheou, University Level Teaching Excellence Award
- **MSE** Pamir Alpay & Radenka Maric, UConn Board of Trustees Distinguished Professors
- Lesley Frame, Correlated Solutions Inc. Women in Engineering Award

**Connecticut Academy of Science & Engineering (CASE)** is Connecticut’s premier organization recognizing achievements in science and engineering. CASE identifies and studies issues and technological advances that are of concern to the people of Connecticut, and provides unbiased, expert advice on science and technology-related issues to state government and other Connecticut institutions. There are currently 55 UConn Engineering faculty that are members of CASE.

**NSF CAREER Recipients in FY21**

The CAREER program offers the National Science Foundation’s most prestigious award in support of early career faculty.

- **Jasna Jankovic** Materials Science & Engineering
- Understanding degradation mechanisms in sustainable energy electrochemical systems using advanced characterization approaches.
- **Xinyu Zhao** Mechanical Engineering
- Physics and modeling of flame extinction in presence of evaporating droplets.
- **Fei Miao** Computer Science and Engineering
- Distributionally Robust Learning, Control, and Benefits Analysis of Information Sharing for Connected and Autonomous Vehicles.
- **Alix Deymier** Biomedical Engineering/School of Dental Medicine
- A New Science of Skeletal and Physiological Systems: using integrated approaches to elucidate mineralized tissue properties and behavior focuses on examining the role of HPO4 in bone mineral structure, composition, mechanics and in turn, bone function.
- **Ying Li** Mechanical Engineering

2021 SoE Inductees: Maria Chrysochoou, Professor & Head of Civil & Environmental Engineering Department; Tianfeng Lu, Professor of Mechanical Engineering; Jeffrey R. McCutcheon, Professor & Executive Director of CCAST at the Tech Park and Al Geib Professor of Environmental Engineering Research & Education.
Staffing Levels

School-wide budget cuts have resulted in a shortage of the SoE support staff. Despite dramatic growth in the number of students and in the scale of our research enterprise, the staff size has remained flat or has been reduced in certain areas.

One notable exception is the number of professional undergraduate advisors that increased from zero to seven in AY13-14 in response to a deficiency identified in an external ABET review in 2012. The new advising hires account for seven of the ten staff gains (from 48 to 58) between 2012 and 2014 (see chart below). Overall, we believe the SoE is operating on an extremely lean staff size.

Research Support Staff

The University’s support for research support staff is minimal (see chart below). The support staff in the research centers are mainly supported by external grants and in most cases are project specific.

In general, we consider the staff size in the SoE to continue to be inadequate and an impediment to further growth in our research, industry engagement, or educational mission. This opinion was strongly corroborated by the external review committee, which cited lack of research support staff as a “drain on faculty productivity” and noted that Engineering’s staff is well below current metrics for Research 1 institutions.
The Vergnano Institute for Inclusion (VII)
Formerly the Engineering Diversity and Outreach Center

Thanks to a generous donation from Mark and Betsy (Reddington) Vergnano, the Engineering Diversity and Outreach Center (EDOC) will rebrand and grow as the Vergnano Institute for Inclusion (VII). This Institute will expand EDOC's previous scope by serving an ecosystem made of PK-12 students and teachers, undergraduate students, graduate students, UConn faculty and staff, alumni and other community partners for diversity, equity, and inclusion (DEI) initiatives.

At the core, the foundation of the Institute will be:

2. Equity: Ensuring a healthy environment where all members have what they need to thrive and help others.
3. Resilience: Tools to fortify and grow our students' confidence, self-efficacy and leadership.
4. Community Health: Where thriving and well-being are at the forefront for all.

DEI in the Community

Racial Inequity: The VII ramped up its service and commitment to the School of Engineering following the civil unrest and global awakening after George Floyd was murdered in May 2020. As a response, the team created a letter to the SoE Community committing to several points of action, and created a new webpage called "Building Anti-Racist Communities". The webpage contains resources that many in the SoE Community have found helpful including an Anti-Racist Action Planner, a comprehensive resource guide for those wanting to learn more about racial bias, privilege, oppression, and history, as well as a guide to help individuals communicate with each other when addressing bias.

Since June 2020, the VII built on its initial response, by implementing the following strategic initiatives:

1) Hosted ten Community Conversations on various topics to engage the community intellectually and emotionally.
2) Released a video message following the murders in Atlanta spas against Asian or Asian American individuals, which received appreciation from students.
3) Created new programs elaborated on later in this document, including the Inclusive Excellence Program: Justice, Equity, and Transformation, and the Students’ Collaborative Action Network.

Mental Health: Across the world, mental health is a challenge and particularly plagues college-aged students at a higher rate than any other population in the United States. Moreover, according to the National Institutes of Health, women tend to have higher reported prevalence of mental illness than males (unfortunately data were reported in a binary), and Black and African Americans have equal prevalence of mental illness despite have lower reported prevalence, largely due to stigmas of mental health in communities of color.

On December 6, 2019, the SoE and VII lost one of their student leaders, Justin Niezrecki. The VII staff collaborated with his family to help fundraise for the Justin Niezrecki Scholarship Fund, which was successfully endowed in 2021, and conducts suicide awareness with the Engineering Ambassadors Network and greater community.

Community Conversation Topics

- Reading Dr. King’s Letter from a Birmingham Jail and applying it today’s world.
- Watching Dr. Ibram X. Kendi’s interview discussing How to Be Anti-Racist, and how this applies to being an engineer.
- Discussion on the gender pay gap in conjunction with the UConn Women’s Center.

Stephany Santos, Ph.D., Associate Director of the Vergnano Institute for Inclusion.
Recognizing the need to help with underrepresented students and all students’ mental health, and to prevent additional deaths like Justin’s, the VII offered a course called The Science of Well-Being, inspired by free course at Yale by Dr. Laurie Santos. In the course, students participated with Yale’s asynchronous course, then attended a live online discussion facilitated by VII Director Kevin McLaughlin, and Associate Director Stephany Santos. This course received a 4.5 average rating on the Student Evaluations of Teaching.

**DEI Funding**

**NSF Grant for LSAMP Renewed:** Leaders within EDOC/VII collaborated with Associate Dean Daniel Burkey in Engineering, Associate Vice Provost Tadarrayl Starke in the Institute for Student Success, and other community partners successfully applied for and received funding from the NSF for $2.5M over five years. UConn Engineering will be a central part of the Northeast Louis Stokes Alliance for Minority Participation (NELSAMP). Additional partners are from University of Massachusetts Amherst, University of Rhode Island, Northeastern University, Tufts University, and Worcester Polytechnic Institute.

**President’s Commitment to Community:** In 2020 and 2021, EDOC received funding from the UConn President’s Commitment to Community Initiative for the BOSS LADI (Building Our Sistas’ Strength: Leveraging Adversity, Diversity, and Intellect) course. In 2021, EDOC received funding to begin the new BRIDGE+ program for graduate students in STEM that are underrepresented in their respective fields.

**DEI Opportunities for Faculty and Staff**

In addition to increasing diversity within the faculty and staff population, this year VII aims to work on advocacy and action, acknowledging that change is necessary to improve the environment and culture within the School of Engineering.

**The National Conference on Race and Ethnicity (NCORE)** was attended by two faculty and three staff from the SoE in June 2020. The virtual conference hosted by the University of Oklahoma covered topics that spanned from race and social justice in higher education, to intersectionality and identities discussions.

**The Inclusive Equity Program: Justice, Equity, and Transformation (JET)** was created as an optional program for faculty and staff that is intended to help the SoE units organize their anti-racist and anti-discrimination efforts. This program aims to provide individuals with training and a scaffold for turning the training into action and promoting broader collaboration and coordination across the SoE. Specifically, there are three components of the program.

1. Education  
2. Personal Action*  
3. Collective Action*  

*For the action, individuals/units can bring their own projects, ideas, and initiatives. VII also has brainstormed potential ideas that can serve as inspiration for participants to work on.

This program is a UConn collaborative effort between the School of Engineering (SoE) and VII, the Center for Excellence in Teaching and Learning (CETL), Office for Diversity and Inclusion (ODI), and the John Lof Leadership Academy (JLLA).
The objectives of this program are:

1. Build a positive, supportive, and affirming culture around discussions of race within the SoE and STEM initiatives.
2. Provide faculty and staff with the resources and incentives they need to continually educate themselves on the issues of racism and white supremacy existing inside and outside of academia.
3. Integrate and amplify justice, diversity, equity, and inclusion principles into the fabric of the SoE.
4. Create a sustainable program, enable local ownership and systems of accountability, and be flexible enough to adapt as the community and their needs change.

The first cohort began in January 2021 and is comprised of nine faculty and four staff from various SoE departments. Currently, there are two graduate students (Anna Marie LaChance and Randi Mendes) that are helping to facilitate the program per their alumni experiences with the John Lof Leadership Academy (JLLA). The cohort will have official one-year terms, with the option to continue projects via mentorship and continued engagement after their term.

DEI Opportunities for Graduate Students

Universities nationwide are struggling to attract and retain a diverse graduate student body. VII recognizes that the successful recruitment of minority students requires a sustained national presence at conferences and other recruitment venues, so we have worked to establish a presence at these conferences. In addition, we continued our mentoring and support of our current graduate underrepresented student population through our Bridge to the Doctorate (BD) program, and all graduate students in the JLLA, and the Student Association of Graduate Engineers (SAGE).

Bridge to the Doctorate: Although the grant for the Northeast Louis Stokes Alliance for Minority Participation (NELSAMP) Bridge to the Doctorate Fellowship ended in summer of 2020, we continued supporting and mentoring our six BD fellows throughout the pandemic. They received academic, professional development and mental health support.

Recruitment: Aida Ghiaei and Stephany Santos were invited to hold a workshop at the regional SHPE conference in March 2020. This workshop was attended by over 50 SHPE members, resulting in a successful conference recruiting event. Due to the pandemic in 2020, all the conferences that VII typically participates in for recruiting underrepresented minority (URM) students were cancelled or delayed to the next year. However, virtually the team was able to attend the annual GEM conference in August of 2020, SACNAS National Conference in October 2020, and oSTEM (Out in STEM- LGBQTi+) in November 2020.

In September of 2020, the SoE Graduate Programs in collaboration with Northeast Louis Stokes Alliance for Minority Participation (NELSAMP) hosted the GEM Grad Lab virtually. In this event, over 110 students from NELSAMP program attended remotely where UConn’s Bridge to the Doctorate fellows participated as panelists and shared their experiences as URM students in STEM. Aida Ghiaei gave a presentation at the GEM GRAD Lab on “Applying to Graduate School” with information on the UConn Graduate School.

Our former BD fellows from University of Puerto Rico in Mayagüez (UPRM) visited UPRM during January 2020 where they held workshops and talked to STEM students about graduate studies at UConn.

Multiply Your Options is a one day conference for Grade 8 females aimed at exposing the students to female role models in the fields of science, technology, engineering, and mathematics (STEM). When young women see and have the opportunity to talk to professional engineers working in the industry, they will be introduced at an early age to career possibilities that girls are historically often not exposed to, thereby multiplying their options.

As a result of the VII recruitment efforts, 20 URM students applied to UConn Engineering and three were accepted in 2020.
During Fall 2020, weekly workshops and presentations on topics such as “How to apply to graduate school, how to make the application strong, how to fund your Graduate studies”, and topics on why UConn engineering graduate programs and graduate school 101. More than 100 students local, national, and international attended these events.

**BRIDGE+:** As a part of President’s Commitment to Community in 2021, VII leaders collaborated with the departments of Chemistry, Ecology and Evolutionary Biology, Pharmacy and Physics, and received funding to begin the new BRIDGE+ program for incoming first year Ph.D. graduate students in STEM that are from marginalized and/or underrepresented backgrounds. Over the course of three weeks (Aug. 9-27), graduate students will participate in courses, seminars, social activities and STEM challenges that will help them build community, resources, and the necessary skills to get a jump start and be successful in graduate school. The first cohort will be connected with current graduate students, faculty, and undergraduates in order to build a network of mentors and community that will last beyond the time frame of the program.

**Graduate Chapter of the National Society of Black Engineers (NSBE):** The first graduate chapter of NSBE started in late Fall 2019; the team held meetings, workshops and social gatherings during the pandemic year to keep the community together. Six members were supported to attend the 2020 NSBE national conference, however, due to the pandemic in 2020, all conferences were cancelled or postponed to another year. We are planning to attend the regional and national NSBE conferences in 2021.

**Undergraduate Student Organizations Promoting DEI & Outreach**

**Engineering Ambassadors (EA)** has been an extremely effective student outreach program since its inception in Fall 2010. After the COVID-19 pandemic, EA adjusted to virtual visits, where supplies were dropped off or shipped to schools in order to sustain hands-on activities. In AY20-21, the EA Presentation Team made 32 off-campus visits to K-12 schools, which is only two less than pre-COVID-19.

EA Tour Guides hosted 22 virtual tours to prospective students and their families. EA’s annual STEM Night at the Connecticut Science Center was adapted to be virtual and hosted 80 students from six middle schools across the state. Lastly, EA started two new collaborations. The first, with UConn Athletics, in which they worked together to create a virtual pregame experience to a men’s basketball game for young Scouts to obtain their engineering badge. The second, was the joint effort between the company Synchrony and the UConn Stamford campus to help reach students in that region of Connecticut.

**The Society of Women Engineers (SWE)** plays a leading role in planning and carrying out the Women in Engineering outreach activities, including helping to organize the on-campus tours for young women, spending one-on-one time with visitors during the SWE Student Lunch, and coordinating phone conversations with our prospective female students to give them a personal insight into how UConn Engineering is working to support female engineers.

The SWE team also volunteered as workshop leaders and role models for Multiply Your Options (MYO), our program for Grade 8 girls, which successfully transitioned to virtual experiences this year. SWE leaders also recognized the importance of intersectionality, such that the experiences of womxn are not all the same and the intersection of race and gender, or race and other aspects of their identities, play an important role in their experiences and how they perceive them. SWE leaders brought in facilitators from the National Conference for Community and Justice (NCCJ) to lead discussions on microaggressions for both SWE and the greater SOE Community.
The National Society of Black Engineers (NSBE): This organization works with student organizations on campus and throughout the region to fulfill its mission to increase the number of culturally responsible black engineers who excel academically, succeed professionally, and positively impact the community. NSBE students also serve as workshop leaders and role models for the Engineering Your Future conference for Grade 8 boys, and Sisters in STEM Conference for Grade 10 girls. Unfortunately, the 2020 conferences were cancelled due to COVID-19, but undergraduate and graduate student members were able to attend the 2021 virtual conference.

The Society of Hispanic Professional Engineers (SHPE): This organization changes lives by empowering the Hispanic community to realize its fullest potential and to impact the world through STEM awareness, access, support, and development. SHPE students serve as workshop leaders and role models for UConn’s Engineer Your Future (EYF) conference for Grade 8 boys and Sisters in STEM Conference for Grade 10 girls. SHPE also partners with middle schools to give bilingual presentations about engineering.

Students’ Collaborative Action Network (SCAN): In 2020, the Engineering Student Leadership Council (ESLC) evolved to become SCAN. For years, ESLC served as a resource for all engineering student organizations. It planned events, activities, and opportunities for the entire SoE, making it easy for engineering organizations to communicate their activities to all students. SCAN combines the principles of collaboration from ESLC with principles of shared governance and action from the UConn SoE Advisory Board and UConn Undergraduate Student Government. Each engineering student organization can have representatives, and students can nominate themselves to be representatives at large. SCAN Leaders meet regularly with Deans Kazerounian, Shor, and Burkey to discuss issues and initiatives to help the community.

Undergraduate Diversity Initiatives

BRIDGE is the lynchpin of the SoE undergraduate diversity initiatives the program’s participants are all URM engineering freshmen. The annual cohort includes females, Black, Latinx, LGBTQ, neurodiverse learners, and other underrepresented students. To date, more than 1,300 incoming underrepresented freshmen have completed the five-week intensive summer residential program. BRIDGE focuses not only on academic enrichment and preparing students for the challenging freshman curriculum, but participants also form a close-knit community that provides a safety net and peer mentoring for students as they progress through their academic programs. BRIDGE participants graduate from the SoE at higher rates than their peers. They become leaders on campus, in student organizations, in the workforce, and in the community. BRIDGE is made possible by the School’s donors and endowments.

The Summer 2020 BRIDGE experience was virtual and included 75 students. The BRIDGE staff additionally introduced a new one credit course in the fall, and a one credit course in the spring to further support and build community for BRIDGE students. In the fall course, BRIDGE students were matched with upper-level students to provide one-on-one social and academic support throughout the academic year. In the spring course, BRIDGE students were matched with the SoE and BRIDGE Alum who are in industry or graduate school to provide professional and personal mentorship.

SCAN brings together members from both undergraduate and graduate student populations who have a desire to create a positive and equitable community in the School of Engineering.
K-12 Student Outreach, AY20-21

SPARK STEM program for girls entering Grades 6-9 marked its fourth year in Summer 2020. SPARK consists of four week-long sessions in topics such as coding, underwater robotics, drone design and flying, and engineering through the ages. Due to COVID-19, SPARK was held virtually, and there were 30 girls who participated in SPARK for one or more weeks.

Pre-Engineering Program (PEP) students learn engineering concepts from female and marginalized undergraduate role models. The AY20-21 PEP program transitioned to a virtual program due to COVID-19. There were 33 middle school students who participated in this 11-week Saturday enrichment program.

The Multiply Your Options (MYO) conferences were held virtually in AY20-21 due to COVID-19. The students were able to participate in fun, hands-on activities under the guidance of female undergraduate students and young female alumnae. Thanks to the virtual aspect, alumnae from all over the country were able to return and share their stories and experiences with the next generation.

Engineer Your Future (EYF) is an annual one-day spring conference that introduces URM students to role models in STEM fields. For AY20-21, over 100 Grade 8 boys from minority-serving schools were able to attend the conference virtually.

The Explore Engineering (E2) program allows the high school students the opportunity to explore engineering disciplines using seminars, discussions, and hands-on activity. In summer 2020, this popular summer residential program was redesigned to be offered as a two-week online experience for rising high school juniors and seniors. The summer 2021 program was cancelled due to COVID-19 restrictions.

The Connecticut Invention Convention (CIC) is an internationally recognized educational organization started in 1983. Throughout the year, K-12 teachers use CIC curriculum to develop creative problem-solving and critical thinking skills through invention and entrepreneurship. VII helps coordinate the CIC annual spring competition which is traditionally held at UConn’s Gampel Pavilion. VII recruits volunteers and facilitates participants, judges, and attendees. The 2020 event was cancelled due to the COVID-19 pandemic and held virtually in 2021, in which VII leaders served as judges for the virtual participants.

K-12 Teacher Outreach, Summer 2021

DaVinci Program: Grades 5-12 teachers spend an exciting week at the Storrs campus learning engineering fundamentals and developing practical curricula and exercises that will help them expose students to engineering when they return to teaching in the Fall. Due to the pandemic, this program was not held in 2020, but was held in person in Summer 2021.

Joule Fellows: Due to the pandemic, this program was not held in 2020 and is being held in summer of 2021 in person. The NSF Research Experience for Teachers (RET), "Joule Fellows: Sustainable Energy for an Inclusive Society" program offers an intensive six-week summer research and professional development experience for CT teachers serving Grades K-14. The Joule Fellows program targets teachers from underserved districts to promote educational opportunity among minority communities. Teachers participate in one of our faculty’s laboratories, assisting with research in an area focused on sustainable energy. Classroom activities developed during the summer enrich teaching and learning in the Fellows’ own school districts.
Krenicki Arts and Engineering Institute (KI)

The establishment of the Krenicki Arts and Engineering Institute, a joint effort of the Schools of Fine Arts (SFA) and Engineering, was announced in September 2019. John and Donna Krenicki provided a $5M endowment to launch and sustain research and educational programs that explore engagement of engineering and the arts across technological fields, industrial design, and advanced manufacturing. KI has been working to establish a major, minor, graduate seminars and workshops, and an online graduate certificate. Opportunities to visit and intern at industrial design studios and advanced manufacturers and to participate in research initiatives will be part of every student’s experience.

In AY20-21, the institute established a Minor in Industrial Design, with its first graduated student in May 2021. The KI team is advertising its new classes in industrial design, offered to students from the SoE and the SFA. The classes are planned to be part of the new BFA with a concentration in Industrial Design, and the Multidisciplinary Degree in Engineering (MDE) with a specialization in industrial design. For AY21-22, the institute was awarded a grant to participant in research for the National Space Grant Foundation. The multidisciplinary team will focus on technology to enable 1/6-G suited testing in field environments. The project will be part of the Art3705 and Art3720 classes offered by KI. In October 2021, the Institute is expected to complete its infrastructure plans for equipment, floorplans, finishes, and computer room materials for a dedicated KI space in the School of Fine Arts.

Connecticut Brownfields Initiative (CBI)

The CT Brownfields Initiative is an interdisciplinary service-learning program launched in AY2019 that teaches students how to transform polluted and abandoned property into usable land. The Initiative is led by Prof. Maria Chrysochoou and managed by Prof. Nefeli Bompoti. UConn students work directly with Connecticut municipalities to revitalize and restore properties. The program helps municipalities prepare and submit grant proposals for investigation and cleanup of contaminated sites, collect background information and data, draw up sampling plans, develop brownfields inventories and prioritization lists, evaluate redevelopment options, and conduct community outreach. The program is supported by the CT Department of Economic and Community Development, the Community Foundation of Eastern Connecticut, and an array of philanthropic supporters.

In AY 20-21, 28 students from seven majors participated in the fall semester course, working with the Towns of Bristol and Stratford, the Eastern Connecticut Brownfields Land Bank, the Western Connecticut Council of Governments and the St. Luke’s Development Corporation, a non-profit organization located in New Haven. The students gained experience in preparing US Environmental Protection Agency grant proposals to support brownfield characterization and redevelopment. In the spring semester, eleven students worked with seven municipalities (New Milford, Bloomfield, New London, Stafford, Waterbury, Enfield, Waterford) on nine different projects. The students prepared three brownfield inventories with methodologies for site prioritization, a site review of an old mill, two gap analysis reports for contaminated sites, and an analysis of redevelopment alternatives.

In April 2021, the U.S. Environmental Protection Agency announced that UConn and the CBI team will be the new provider for the Technical Assistance for Brownfields (TAB) program for EPA Region 1. The 5-year, $1M cooperative agreement will enable an interdisciplinary team of faculty and staff to work with communities across New England and provide technical assistance and continuing education around brownfield redevelopment.
The Engineering for Human Rights Initiative (EHRI), a collaborative venture between the SoE and the UConn Human Rights Institute, continues to expand its reach and impact. Globally recognized for our efforts in mainstreaming human rights into engineering education and research, EHRI involves 60 faculty affiliates across departments within the SoE and in UConn’s School of Medicine; School of Social Work; School of Law; School of Business; College of Liberal Arts & Sciences; and College of Agriculture, Health & Natural Resources. Two new Assistant Research Professors, recruited after highly competitive searches over the past two years, are spearheading the creation of a “Transportation Equity” measure and a “Human Rights Research and Data Hub” along with new courses at the intersection of human rights, engineering, and policy making.

At the height of the COVID-19 pandemic, Engineering for Human Rights core members responded by quickly developing public-facing communications on their research to address critical challenges to protect public health. The EHRI mobilized to communicate these lessons to the policymakers, scholars, and potential funders by hosting a webinar showcasing pandemic-related research by our faculty. Additionally, we offered input into both the Connecticut Governor’s Council on Climate Change and the Long Island Sound Study. We also convened a virtual workshop to explore transportation challenges for elderly and people with disabilities in Connecticut, drawing together representatives of the Connecticut Dept. of Transportation, the CT Department on Aging and Disability Services, and the CT Council on Developmental Disability. These types of events have spurred new grant writing for local, national, and international funding agencies and have raised the profile of our initiative as a valuable policy partner. On campus, we continue to add to courses for the Human Rights Major and Minor at UConn, broadening the range of engineering and other STEM students able to earn such degrees. The SoE has also launched a Bachelor of Science in Multidisciplinary Engineering with a thematic focus on Human Rights and Sustainability that is now enrolling students as well. We’ve submitted grants to test the effectiveness of such teaching with collaborators in the United Kingdom and Peru, and we regularly present on UConn’s unique approach to engineering education with audiences at other schools of engineering in the USA and abroad – this past year, at Northeastern University; at the University of Dayton; for the CT/Baden-Wurttemberg, Germany consortium on human rights; and upcoming at Worcester Polytechnic Institute.

Our faculty are collaborating across half a dozen areas of expertise, to tackle some of the most pressing challenges facing the field including 1) Water, Health & Food Security; 2) Product Design, Manufacturing, and Supply Chain Management; 3) Community Planning, Resilience and Justice for a Changing Environment; 4) Engineering Education and Accessibility Rights; 5) Engineering Substances and Process Sustainability; and 6) Cybersecurity, Privacy and Human Vulnerability.

For details on research, publications, and related teaching resources, please visit: https://engineeringforhumanrights.uconn.edu/
The UConn Engineering research enterprise encompasses an expanding federal research portfolio, state-funded research and service initiatives, and major industrial partnerships—many of which undergird the UConn Technology Park (Innovation Partnership Building). Many projects are interdisciplinary and engage students and faculty across the university. The SoE’s scholarship, education, and outreach missions all depend on a vibrant research portfolio.

SoE Research Development Strategy

To expand the research opportunities available to our faculty and students, the SoE has implemented a four-fold research development strategy, as follows:

**New Faculty Development via CAREER:** New faculty are often accomplished researchers and authors, but they have not always had deep experience in the skills required for winning research grants. New SoE faculty are provided special training and support through our CAREER proposal development workshops. This full-year program provides beginning 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. After intensive mentoring for CAREER, faculty not only often win the award, setting them up to be leaders in their field in the years to come, they also learn proposal writing skills that are transferable to other agencies and programs. The proof of this program is in our success rate, with nearly 50% of our assistant professors receiving the highly selective NSF CAREER since the establishment of this program.

**Focus on Mission-Driven Agencies:** UConn’s local industry network and major funded initiatives such as the National Institute for Undersea Vehicle Technology (NIUVT) and the Air Force Research Laboratory (AFRL) put UConn in a strong position to win funding from certain mission-driven agencies. Our strategy for continued success is to align new programs with our existing structural advantages; to cultivate, initiate, and pursue contacts and advocacy with program managers and agency personnel; to work with the Office of Governmental Relations to gain access to diverse funding streams; to assist faculty that are new to UConn by establishing personal connections. In addition to supporting our research programs, these efforts also align the School’s unique capabilities and State of Connecticut priorities to help enhance the economy and jobs across the state.

**Industry Partnerships and Economic Development:** Research has the greatest impact when it connects with industry and society. UConn SoE 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. Our efforts in this area proceed primarily through The Tech Park’s centers and institutes as a gateway for industry engagement throughout UConn.

**Selectively Pursue Major New 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. Only seldom does an individual 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. With the help of our SoE Research Development Officer, Tina Ryan, the research leadership team meets frequently to track progress of major engineering research proposals under development and step in if they need support. The team also identifies key funding opportunities, helps to catalyze the team formation and brainstorming process, monitors progress through the process, and brings in additional support as needed to enhance the probability of a winning outcome.

The pandemic has dramatically increased demand for masks and created an environmental problem. Many people do not dispose of their masks properly, leaving them littering the ground where they can seriously harm wildlife as they pollute the land and seas.

UConn assistant professor of mechanical engineering Thanh Nguyen, along with Ph.D. students Eli Curry, Thinh Le, and Tra Nguyen have filed a patent application for a biodegradable, reusable mask to address these concerns.
Research Development Support for Faculty

Under Senior Associate Dean Mike Accorsi, a robust infrastructure to support research endeavors of faculty has been developed over the years. Currently, the SoE’s research development strategy is led by the School’s three Associate Deans and Assistant Dean and is supported by the Research Development Officer:

**Associate Dean Dan Burkey** supports research operations through the Engineering Education Center. He supports Pedagogy and DEI proposal management & research strategies for agencies like NSF, and focuses on programs for undergrad education, e.g., LSAMP, SSTEM, and REU/RET.

**Associate Dean Leslie Shor** focuses on research strategy for Biotech, Healthcare, Environment & Sustainability; Innovation & Entrepreneurship; DEI. She supports faculty in their research with agencies like NSF, NIH, DOE, USDA, EPA, CTDEEP and the Dept. of Education, while overseeing SoE Graduate Education programs, including, NRT, GAANN, and Innovation & Entrepreneurship (CI/CTNext).

**Associate Dean Pamir Alpay** is the executive director of the UConn Tech. Park, which is home to several Engineering Centers and Institutes. He supports research development for Manufacturing, Energy, Electronics, Data/Information via mission driven agencies like the DOD, DOE, Army, Navy, Air Force, and NASA. Pamir also supports industry-related projects such as IUCRC, INTERN supplements and small business programs (SBIR/STTR, CTSBDC).

**Assistant Dean Kylene Perras** is focused on Transportation and Research Infrastructure via agencies like the DOT and NSF. She is leading activities under NIUVT, CT Brownfields, CT Transportation Institute, Manufacturing, Facilities, Tech Services, and Infrastructure. Kylene supports any research proposals that require equipment/instrumentation/space, NSF, MRI.

**Christina (Tina) Ryan** joined the team in 2021 as the new SoE Research Development Officer. She is a UConn alumni (B.S. & M.S. in M.E.), with a decade of experience working as an engineer at Pratt & Whitney. In addition to research proposal support, Tina is creating decision systems to help the SoE leadership team identify major funding opportunities of strategic importance to the school. These high-level and ongoing strategic analyses will ensure that the research teams have the support they need to maximize our chances of bringing in major new awards.

Sponsored Research Trends

The SoE’s research expenditures have been consistently increasing over the past five years. The SoE achieved an approximately 27% increase in expenditures in the past year reaching $67M. This total reflects numbers reported by the OVPR in addition to research funds administered through the UConn Foundation and the UConn Health Center that are not included by the OVPR accounting. The average research expenditure per faculty reached $372K in FY21, a figure aligned with many top-50 schools of engineering.

NSF CAREER Support

In 2021, the SoE Research Development Officer helped support faculty in the CAREER submissions process by:

- Providing proposal and project management feedback.
- Coordinating the SoE part-time writing and editing staff that reviewed faculty proposals.
- Collaborating with the Office of the Vice President for Research (OVPR) Research Development Services (RDS) team for proposal development workshops and streamlining proposal requests and proofreading schedules.

Sponsored Research Data

<table>
<thead>
<tr>
<th>Sponsored Research Data</th>
<th>$67M</th>
<th>Total FY21 research expenditures</th>
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<tbody>
<tr>
<td>$372K</td>
<td>Average research expenditure per faculty</td>
<td></td>
</tr>
<tr>
<td>458</td>
<td>Proposals submitted</td>
<td></td>
</tr>
<tr>
<td>543</td>
<td>Active grants</td>
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The two pie charts show FY21 data on expenditures and proposals submitted (OVPR only) by funding agency. Both 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).

Research Challenges

The SoE’s research expenditures have had strong growth over the past five years. Despite this growth, the School faces a number of challenges that have impeded progress and threaten our continued research success. The primary challenges that we face in our research efforts are lack of research space; insufficient staff sizes for general research support and research development (pre-award); retention of top research faculty; and lack of strong interdisciplinary research collaboration. Based on a space assessment by Payette, as of Fall 2018, the SoE has no space available for growth. As the School’s research expenditures continue to grow, lack of space has become increasingly difficult to solve. Similarly, growth in research support staff, both pre-award and post-award, has not kept pace with growth in research activities. This places a larger portion of this work directly on faculty, which is a poor use of their time and impacts morale. The Deans will continue to strategize with UConn leadership to address these challenges.

Salaries are severely compressed due to state-mandated cuts in operating budgets for the past several years. The School has done an excellent job of recruiting top talent, but will continue to face morale problems and loss of research productive faculty unless an open and transparent process to reward top performers is implemented.”

*Institutes & Centers: MSI, C2E2, CTI, ESEC, Tech Park/UTC-IASE
Major Awards

<table>
<thead>
<tr>
<th>PI</th>
<th>Award</th>
<th>Project Title</th>
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<tbody>
<tr>
<td>Jackson, Eric D</td>
<td>$9.9M</td>
<td>CT Transportation Safety Research Center Strategic Plan</td>
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<tr>
<td></td>
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<td>Sponsor: DOT/Federal Highway Administration (FHA)</td>
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<tr>
<td>Alpay, Pamir</td>
<td>$7.9M</td>
<td>Materials and Processes for Smart, Agile Air Force Tech.</td>
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<td></td>
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<td>Sponsor: DoD/Air Force Research Laboratory</td>
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<td>Zhao, Shanshan</td>
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<td>Further Advancing the Transportation Safety Analysis Capabilities of the CT DOT</td>
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<tr>
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<td>Continued Development of the Enterprise GIS Capabilities of the CT DOT</td>
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<td>Shor, Leslie M</td>
<td>$2M</td>
<td>Engineering Suspension Feeder Systems for Separation and Elimination of Microplastics from Water</td>
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<td>Sponsor: NSF/ENG/Directorate for Engineering</td>
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<tr>
<td>Zhang, Yi</td>
<td>$1.3M</td>
<td>A Wireless, Closed-loop Neural Probe for Optogenetics, Pharmacology and Neurochemical Monitoring</td>
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<tr>
<td></td>
<td></td>
<td>Sponsor: DHHS/NIH/NI Neurological Disorders and Stroke</td>
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Industry Research Partnerships & Economic Development

The SoE has been highly successful in forming strategic partnerships with industry and federal and state agencies to pursue major research funding opportunities to establish new centers and institutes that target economic development areas for the State of Connecticut and the region. Over the last three years, we have focused these efforts on the aerospace and naval sectors in technical areas including materials characterization, advanced manufacturing, cybersecurity, and systems engineering.

National Institute for Undersea Vehicle Technology (NIUVT)

The U.S. Navy is currently rebuilding its entire fleet of submarines, which provides a once-in-a-generation opportunity for Connecticut and Rhode Island for economic development associated with this ramp-up. In 2017, the SoE worked with UConn’s Office of Governmental Relations, regional industry (Electric Boat), and Navy partners (NUWC and UWDC) to establish the Institute.

NIUVT is a university-industry-government partnership that collaborates with the Navy to advance the capabilities of the next generation U.S. undersea fleet by providing a highly-trained workforce and accelerating the research, development, and transition of key enabling technologies. The Institute is a partnership with the University of Rhode Island, which leverages our mutual strengths in naval science and technology.

NIUVT received $3.5M in funding from the Office of Naval Research (ONR) in FY18 and an additional $7.0M in FY19 and $9.4M in FY20. To date, there have been 61 (32 UConn-led) short-term high-impact applied research projects engaging 38 UConn faculty members and 58 graduate and undergraduate students. UConn’s Co-Director for NIUVT is Professor Richard Christenson.

Mission Driven Agency Training

In Summer 2021, SoE’s Research Development support team coordinated research faculty and staff learning via a virtual DoD grant workshop; valuable mission driven agency information and participant feedback were garnered to help shape SoE mission driven agency strategies moving forward.
Project Daedalus – Air Force Advanced Manufacturing Initiative

Beginning with a $5.4M contract to UConn Tech Park in 2018, Project Daedalus is a collaboration with the Air Force Research Laboratories (AFRL) to provide transformative manufacturing technology to the AFRL and OEMs and their supply chains. The program focuses on increasing capability to reduce scrap rates, increase yield and performance, and cut down failures.

In Fall 2020, Project Daedalus was expanded through an additional stand-alone $8M contract from the AFRL. Working towards the same mission as Phase 1, this new Phase 2 effort (SoE and Physics based), together with local industrial partners including Pratt & Whitney, Aerogear, GKN, Collins Aerospace and Sikorsky Aircraft, focuses on advanced manufacturing initiatives involving uncertainty quantification of manufacturing technologies, heat treating, metal and ceramic casting, composite manufacturing, metal additive manufacturing, characterization of materials under extreme environments, and advanced systems engineering.

Center for Hardware and Embedded System Security and Trust (CHEST)

In 2019, NSF designated CHEST as an Industry-University Cooperative Research Center Program (IUCRC). For this program, UConn partnered with Northeastern University, University of California-Davis, University of Cincinnati, University of Texas-Dallas, and University of Virginia.

The focus of the Center is to coordinate university-based research with the needs of industry and government partners to advance knowledge of security for electronic hardware and embedded systems including identification, detection, monitoring, mitigation, and elimination of vulnerabilities. This center has strengthened UConn's ongoing engagement with industry in cybersecurity while also bringing additional national recognition to our activities. In addition to annual NSF funding of $150K, CHEST received $2.1M in research funding in FY20 and FY21 from 22 industry and government partners as well as $3M in congressional appropriations in the FY21 NDAA.

Centers and Institutes

The SoE has taken the lead to support the University in working with industry to establish impactful partnerships at the UConn Technology Park Innovation Partnership Building (IPB). The goal is to continue to establish the IPB as a gateway for industry collaborations across the University. The Innovation Partnership Building (IPB) at the UConn Tech Park, not only features state-of-the-art laboratory facilities, but also meeting rooms, networking space, and staff support for effective university, industry, and government technical engagement.

Several School of Engineering-led industrial partnerships, listed below, have brought approximately $100M to UConn’s Tech Park in the last six years, enabling a successful continued growth of the IPB since its 2018 launch. Note that further details on Tech Park initiatives can be found in the UConn Tech Park Annual Report.

The Center for Clean Energy Engineering (C2E2) (Est. 2002) focuses on all aspects of energy research and innovation. C2E2 has 16 core and 16 affiliate faculty, two research staff, more than 69 graduate and 42 undergraduate students, and eight post-doctoral scholars. C2E2 has dedicated facilities of ~35,000 sq.ft. C2E2 managed research of ~$5.6M in expenditures and received $3.1M in new awards in FY20.
Center for Science of Heterogeneous Additive Printing of 3D Materials (SHAP3D) (Est. 2018): Federal support $2.25M to be matched or exceeded by industry investment of $2.25M for five years. Additional funding of $980k for SHAP3D received in 2020-21 from industry and federal grants.

Connecticut Advanced Computing Center (CACC)
- Comcast Center of Excellence for Security Innovation (Est. 2014 $7.5M)
- Center for Hardware and Embedded Systems Security and Trust (CHEST) (Est. 2012 $1.2M industry investment and $3.25M federal investment)
- Synchrony Financial Center of Excellence in Cybersecurity (Est. 2016 $3.2M)
- Center for Voting Technology Research (VoTeR) (Est. 2006 $500K annual state invest.)

Connecticut Center for Applied Separations Technology (CCAST) (Est. 2013)
Industry/state investment $7.2M; previously the Fraunhofer Center, relaunched in spring 2020 as CCAST. Additional funding raised since 2018 with industry/federal grants of $5M.

Connecticut Transportation Institute (CTI) conducts integrated multidisciplinary research, education and related services that promote safety and efficiency in multi-modal passenger and freight transportation systems and, in turn, enhance livable communities, sustainable economies and the environment. In AY18-19, CTI had 54 active grants totaling over $11.5M and total grant expenditures of $6.8M.

Connecticut Transportation Safety Research Center (CTSRC): Total investment in CTSRC since the center was established is now ~ $25M from state and federal government. In the last year, investments have increased by $3.57M.

Enterprise Solution Center (ESC) centers were established with support from the Economic Development Administration and Connecticut Innovations (CMSC, QCIC, POCC) and an EDA CARES Act grant (CMRC).
- Connecticut Manufacturing Simulation Center (CMSC) (Est. 2016 $2.1M)
- Quiet Corner Innovation Cluster (QCIC) (Est. 2016 $1.5M)
- Proof of Concept Center (POCC) (Est. 2016 $500K)
- Connecticut Manufacturing Resource Center (CMRC) (Est. 2020 $300K)


UConn-Thermo Fisher Scientific Center for Advanced Microscopy and Materials Analysis (CAMMA) (Est. 2014 $25M)

Pratt & Whitney Additive Manufacturing Center (PW AMC) (Est. 2013 $7.5M)

UTC Institute for Advanced Systems Engineering (UTC-IASE) (Est. 2013 $10M)

Collins Aerospace Systems Center for Advanced Materials (Est. 2016 $2.2M)

Eversource Energy Center (Est. 2015 $10M, 2018 $7.5M)

Reverse Eng. Fabrication Inspection & Non-Destructive Evaluation (REFINE) (Est. 2017 $9M)


Center for Materials Processing Data (CMPD) (Est. 2019)
A central mission of the SoE is to collaborate with industry partners through education, research, and technology infusion, as these aspects directly contribute to economic development within the state and nation.

The School performs considerable industry engagement through its centers and institutes, which are identified in the Sponsored Research section of this report. Many of these centers and institutes are in the Innovation Partnership Building (IPB). The IPB Annual Report also highlights industry engagement activities conducted by engineering faculty. Some of the SoE’s research and development initiatives with industry are also described in the Sponsored Research section.

The following section summarizes the SoE’s significant industry engagement activities during the past year.

**Small and Medium Enterprises (SMEs)**

The SoE continues to emphasize the importance and impact of relationships between the School and SMEs. In recent years, as much as 18% of the School’s research funding has come from industry, which includes projects with large companies like Pratt & Whitney, as well as numerous small and medium enterprises. The School performed approximately 50 research projects with 25 different SMEs with total expenditures of approximately $2.2M (FY19), and secured approximately 22 additional awards from SMEs corresponding to $1.65M in funding. Although the average award size for these projects is modest ($75K), the impact of these projects with SMEs is significant in terms of workforce training, economic development and opportunities to leverage federal research funding.

**Student Development through Industry Connections**

The demand for engineering talent within Connecticut has been particularly high with the unprecedented growth in the State’s aerospace and naval sectors. In the past two years, this trend was disrupted by the outbreak of the novel coronavirus. The SoE offers several programs and special events that cultivate workforce-relevant skills and connect students with potential employers. These initiatives include internships and co-ops, senior design projects, access to “Handshake” database to find job opportunities and on-campus employer interviews, and undergraduate and graduate research projects sponsored by industry, and career fairs.

**Career Fairs**

The School of Engineering is partnered with the Center for Career Development to provide students with support throughout their academic experience at UConn. In AY20-21, in addition to the university fairs in the fall, the School of Engineering held their first-ever virtual fairs in February and March. The fairs were attended by over 100 companies and government agencies, and because of the virtual nature of the event, the team was able to use the online platform to quantify that 1,615 one-on-one conversations occurred between engineering students, employers, and alumni.

Career fairs are a great way for students to make professional connections that can lead to full time jobs, internships, and even Co-ops. In a Co-op, engineering students take a semester or two off from school and work full-time during an academic semester. All co-op placements are paid, pre-professional experiences in industry. Students also have the option to complete summer or winter break internships, most of which are paid opportunities. The SoE’s co-op program has strategically developed relationships with key employers in Connecticut.
Senior Design Program

The capstone Senior Design Project Program is a hallmark of success for engineering seniors. In this one or two-semester course, senior students are mentored by faculty and industry engineers as they work to solve real-world engineering problems for company sponsors. The program provides a multitude of benefits to UConn students and the sponsoring companies and provides an excellent vehicle for large-scale industry engagement and collaboration.

In AY20-21, there were 242 projects, 109 external sponsors, and 800+ student participants. Some companies were even able to sponsor up to five separate projects. On Demonstration Day, the teams were asked to create a short video that explained their project and its significance. Individual departments scheduled virtual viewing and judging events with sponsors, industry, and alumni. The SoE has also created a repository for Senior Design videos and will be archiving them going forward as a living record of the amazing work that UConn seniors do in their capstone projects.

Students end their project by presenting the summary of their work on Demonstration Day, which is typically held in Gampel Pavilion as shown above.

Over 200 companies, towns, and agencies have worked with UConn Engineering in the past two years, including the following:

- ABB • ACMT, Inc. • CT Center for Advanced Technology • AEDC • AgriVolution, LLC • Air Force Office of Scientific Research • Air Force Research Laboratory • Anton-Paar • Army Research Laboratories • ASML • Associated Spring • Atlas Stamping & Manufacturing • Avitus Orthopaedics • Barnes Aerospace • Belimo Americas • Biomass Controls • Biorasis • Blue Crest Inc • Cabot Corporation • Cadena Innovation • Candoo Tech • Carrier Center for the Ecological Study of Perception & Action • CGI • CHA Consulting • Chapman Manufacturing • Charles Gray Airboat • Charter Oak Environmental Services • Cigna • City of Hartford • City of Norwalk • City of Stamford • Cleveynburgh Farm • CME Associates • Cognizant Technology Solutions • Collins Aerospace • Colonial Bronze • Comprehensive Environmental, Inc. • Connecticut Children’s Medical Center • Connecticut Department of Energy and Environmental Protection • Connecticut Department of Transportation • Connecticut Government Management Informational Sciences • Connecticut Transportation Safety Research Center • Control Module Inc. • Convention Nation • Defibtech, LLC. • Department of Energy • Depuy Synthes Mitek Sports Medicine • Diameter Health • Digipops • Dive Technologies • Dyadic Innovations • EA Patten • East Hartford Public Schools • EDAC Technologies • Enpacsoleau • Energid • Ensign-Bickford Aerospace & Defense • Eversource • Ferrel Pomerin • FM Global • Fuss & O’Neill • GE Power • Gens Sensors & Controls • General Digital • General Dynamics Electric Boat • Gentex Optics • Gerber Technology • GKN Aerospace • Global Steering Systems • Hartford Steam Boiler • Henkel • Holol Krome • Holologic, Inc. • Hubbell Incorporated • Information Technology • Innovation Cooperative 3D (IC3D) • Interface Technologies • Institute for Collaboration on Health, Intervention, and Policy (InCHIP) • ISO New England • Jacobs Engineering • Guiding Light Orphans (GLO) • Jonal Laboratories Inc. • Joshua’s Trust • Keney Park Sustainability Project • Kinsley Power Systems • KX Technologies • L&T Info Tech (LTS) • Lake Chaffee Improvement Association • Lambda Vision • Land Maverick • LBI Corp. • Lefty EQ, LLC. • Lenard Engineering • Lenze Americas • LEVO International • Lockheed Martin • Logisbroker • Loureiro Engineering • Manaforn Brothers • Manchester Land Trust • Marmon Utility • Mattern Construction, Inc. • Mattershift • Medtronic • MITRE Corporation • MDOIC Inc. • Movia Robotics • NASA Ames Research Center • Nassau Re • Naval Submarine Medical Research Laboratory • Naval Undersea Warfare Center • Nel Hydrogen • NGO Solutions, LLC • Numotion • Otis Elevator Company • PepsiCo Frito-Lay • Pfizer • POWWR • Pratt & Whitney • Precision Combustion Inc. • Prime AE • Proton OnSite • Qualtech Systems • Quantum Biopower • Radio Frequency Systems • RBC Aircraft Products Inc. • RBC Bearings Inc. • REA Resource Recovery • Reality Interactive • Reverse Anselmo • Rowheels Inc. • RSL Fiber Systems, LLC • Rubber Labels USA • SESI Consulting Engineers • Sikorsky Aircraft Corporation • Simvade LLC • Sonalysts • Sonics & Materials, Inc. • Sperry Rail Services & Transportation • Infrastructure • Spring Valley Student Farm • Standanady • Stanley Access Technologies • Stanley Black & Decker • Synchrony Financial • ThayerMahan • The Carlyle Johnson Machine Company • The Jackson Laboratory • The Maritime Aquarium at Norwalk • Tighe & Bond • Towns of Bethel, Essex, Hamden, Manchester, Old Lyme, Stonington, Stratford, Thompson, and Wethersfield • Triumph Engine Control Systems • TRUMPF • UConn Center for Clean Energy Engineering • UConn Department of Kinesiology • UConn Department of Natural Resources • UConn Electric Motorsports • UConn Health Center • UConn School of Nursing • UConn Student Affairs • Ulbrich Stainless Steels & Specialty Metals • Undersea Warfighting Development Center • Unilever • Unisoft Medical Corp. • United States Bureau of Reclamation • United States Coast Guard • United Technologies Research Center • Universal Safety Net Solution • Urbowicz • US Army Natick Soldier Research, Development and Engineering Center • US Coast Guard Research & Development Center • UTC Climate, Controls, & Security • Veeder-Root • WNS Enterprizes, LLC • Web Industries • Whitcraft LLC • WickAway • Winchester Interconnect • Windham Dental • Wright-Pierce • WSP USA • Yankee Casting • YouUCOMM LLC • Zachry Nuclear Engineering • ZEISS
Innovation & Entrepreneurship

Engineers apply their knowledge of science and math to solve problems to improve people's lives. Engineers are innovators, and SoE aims to instill the entrepreneurial mindset into each one of our students, faculty, and staff. Starting with our entering freshmen, and even with K-12 students, our School takes pride in advancing innovation and entrepreneurship (I&E) in our community through our education, research, and outreach efforts.

I&E and Education

Curiosity is in our human nature. Children are curious about their surroundings and as they grow, they learn how to work together to solve problems. As a learning institution, the SoE’s task is to recognize and enrich this inherent capacity in our students. Our undergraduate curriculum increasingly emphasizes open-ended problems, project-based learning, and teamwork. Innovation and education are blended together by sharing the latest innovations and problem-solving methods in the classroom and by bringing students of all levels into the research process through research programs for undergraduate and graduate education, as well as K-12 teachers.

For students who express a higher interest in I&E UConn offers the “Entrepreneurship and Technology Innovation” minor. This minor is jointly offered by the School of Business and the School of Engineering to teach the fundamentals of entrepreneurship and technology innovation, with a focus on the product design process, business principals required for viable startups, and physical prototyping. Students in this program additionally benefit from opportunities to participate in networking events, pitch competitions, and mini grant competitions as they develop their own ideas into the next great startup.

For entrepreneurship-oriented STEM graduate students, SoE offers a Global Entrepreneurship concentration (MEGE) as a part of the MEng degree program. This is a full-time, tuition and residency based concentration that offers one-on-one mentoring and introductions to expert entrepreneurs and their networks. Additionally, the SoE offers full scholarships to prospective students that own IP related to high-tech venture ideas. Through a generous grant from CTNext, fellowship students receive up to four semesters of a graduate assistantship to develop their venture into a successful high-tech Connecticut business. So far, the participating high-tech startups have multiplied the state’s investment by a factor of ten in terms of funding, awards, grants, and in-kind contributions.

- The SoE’s first exit from the MEGE program, Reza Armin and his startup company, Bastion Health, recently received a $2.2M investment from the Werth Family Associates.

- The SoE’s second exit startup, Encapsulate, with gross revenue just under $1M, was recently named a top five Global Biochip Startup by StartUs Insights Platform. The principals (all UConn SoE alumni) were also the 2020 winners of the CT Entrepreneurship Award in the Scalable Venture Entrepreneurs category.

In January 2021, we welcomed three new MEGE fellowship recipients and their companies, Aqualumos, VoltXon, and Webequity, which are already established as LLCs in Connecticut, and have already won local and regional grants and competitions, including Third Bridge, Bio Pipeline CT, and MassChallenge.
I&E and Research

Our faculty are excellent educators, but they are also scholars who create new knowledge and invent the devices, systems, and processes needed to solve the grand challenges facing society today and in the future. In the past year, our faculty have filed 34 new invention disclosures and 40 patents and received 16 patents. Faculty are also actively forming new companies and negotiating on IP licensures. I&E activity in the present is crucial to funding Connecticut’s high tech economy for decades into the future.

This past year, the SoE also launched an Innovation & Entrepreneurship cluster hire with four positions available across all disciplines and levels of seniority. This cluster sought after faculty who could combine a vibrant funded research program and develop innovative courses at the intersection of engineering, business, and technology, in addition to providing leadership in enhancing inclusion and broadening participation with significant personal achievement in technology I&E.

This I&E cluster hire search attracted high caliber of scholars and entrepreneurs, including Dr. Shiri Dori-Hacohen, who is joining the Computer Science and Engineering Department in August 2021. Shiri is the Founder, CSO & Chair of the Board of Automated Controversy Detection, Inc. (AuCoDe), an AI-based startup that converts online misinformation into actionable intelligence. These I&E new hires will further expand our courses, programming, and activity in I&E instruction, partnerships, and student and peer mentoring.

I&E and the Community

As part of the flagship public research university in Connecticut, the SoE is responsible for proactively recruiting and training future leaders of I&E. The SoE must ensure that these leaders faithfully reflect the composition of our communities, in which an emphasis on diversity, equity, and inclusion (DEI) is necessary to positively impact human rights, accessibility, and fairness, to help meet future social and economic needs. Unfortunately, a legacy of racial injustice and a traditional reliance on personal and professional networks for startup funding results in the vast majority of investment dollars flowing to businesses owned by white men. There is an urgent need for action that proactively provides pathways to success for entrepreneurs from all parts of our state, but particularly for underrepresented minorities from underserved communities.

One of our strategies to advance DEI in the I&E sector and drive economic development and state job growth, is to financially support and intensively train graduate student entrepreneurs that own compelling high-tech IP. This program, “Enhancing the Connecticut Entrepreneurship Network,” is a timely re-focusing of a related program established in 2018 but modified in 2020 to emphasize outreach for recruiting minority entrepreneurs from underserved communities. The program also includes a robust new partnership between local industry and Southern Connecticut State University (SCSU), a minority-serving institution located in New Haven.

Prof. Shiri Dori-Hacohen is an incoming Assistant Professor at the Department of Computer Science & Engineering at the University of Connecticut, and the Founder, CSO & Chair of the Board at AuCoDe.

Prof. Dori-Hacohen's research focuses on threats to the information ecosystem online and to healthy public discourse from an information retrieval lens, informed by insights from the social sciences. Upcoming projects address the connections between m/disinformation and weaponized controversy, online and in social networks. Additionally, her work addresses fairness and bias in medicine. Prof. Dori-Hacohen's approach to these research questions is grounded in an ethics, fairness & AI safety perspective.

Her career in both academia and industry spans Google, Facebook, and University of Massachusetts, Amherst among others. She received her M.Sc. and B.Sc. (cum laude) at the University of Haifa in Israel and her M.S. and Ph.D. from the University of Massachusetts Amherst where she researched computational models of controversy.

Dr. Dori-Hacohen is the recipient of several prestigious awards, including the 2011 Google Lime Scholarship and first place at the 2016 UMass Amherst’s Innovation Challenge. She has taken an active leadership role in broadening participation in Computer Science on a local and global scale.
In the first year of this reimagined program, our MEGE Fellows from all three cohorts have established close connections with the Entrepreneurship Club at SCSU to provide role models and mentorship. Our students have also had presenting and networking opportunities via the Graduate Students of Color Association (GSCA) and Women’s Advance Workshop. MEGE fellow Kianjai Huggins, CEO of Webquity, was recently invited as a commencement speaker for the Housatonic Valley High School. Other ongoing partnerships include the Make Haven space in New Haven, where our fellows will be embedded as peer entrepreneur mentors.

Real change requires broad engagement and partnership with a myriad of organizations including communities and schools, non-profit organizations, and our local industry leaders. In Spring 2021, the SoE External Advisory Board members Sudhi Bangalore from Stanley Black & Decker and Steve Russo from IBM participated in an I&E guest lecture series for hundreds of SoE students in our Foundations of Engineering freshman course. They provided our students with their perspective on the essential need for innovation and an entrepreneurial mindset even in a vast multinational company.

Other industry partners such as Pfizer have contributed generously to fund I&E diversity fellowships to help our MEng in Global Entrepreneurship students participate in outreach activities with underserved communities. We encourage our constituents to engage with us in advancing innovation & entrepreneurship in our education, research, and community outreach to help ensure UConn and Connecticut stay competitive in leading the current information and technology revolution.
The SoE Development works under the umbrella of the UConn Foundation serving as the primary fundraising vehicle for the School. The SoE Development drives positive change through its support of philanthropic efforts and quality programs and services for the School, as well as its alumni and supporters.

Despite the challenges of the pandemic, the SoE’s commitment to recruiting top students is unwavering. Since demand is high for young engineers, we have focused our philanthropic efforts on pursuing scholarships for top talent students who want to choose UConn Engineering, but need financial support. The SoE is at a disadvantage compared to its university competitors, especially when comparing scholarships metrics. At this time, the SoE offers ~230 private scholarships averaging $2,300 across ~3,500 undergraduate students. To keep in-state talent from accepting larger scholarship packages across our borders, we must increase our fundraising efforts to offer more competitive scholarships.

UConn Engineering alumni Mark & Betsy Vergnano have fortified the SoE’s diversity, equity, and inclusion (DEI) work with a major gift that is creating more scholarships and bolstering programs from K-12 outreach to career placement. Mark will actively be working with students, staff and faculty at the Vergnano Institute for Inclusion to help us attract more scholarships. See https://inclusion. engr.uconn.edu/ for more details.

Demand is also growing for the SoE research. Companies have realized the competitive advantages that UConn Engineering provides through collaborative research grants and projects.

We want to engage with companies that understand that a long-term relationship with UConn Engineering is in everyone’s best interest. When working with UConn, companies gain a strong ally that can add to their bottom lines, and the School gains partners that can support the students who become their employees, and the research that becomes their competitive edge. When the SoE helps a company or individual, we add power to the state economy.

A streamlined “Front Door” initiative is currently being developed to handle all industry and small business inquiries for collaborative work with UConn. This will be especially helpful to the School of Engineering, as it will help companies move quickly to find information, spanning advice, research, recruiting, internships, co-ops, and professional education – all the types of engagement that can lead to what we prize most – partnerships.

The UConn Engineering mission sets its constituents up for success: Educate tomorrow’s workforce; Help Connecticut companies with economic development; Create new knowledge.

This year we are going out to meet friends old and new – in person – to ask them how they are coping and how we can help. If they need technical support or are recuperating from workforce losses, we will introduce them to the right people in our School. If they want to join Connecticut’s most vibrant engineering community, connect with Engineering alumni, or be at the tip of the spear of Connecticut’s economic development, we will invite them in.

An estimated 37% of the Connecticut economy is driven by engineering. By educating skilled graduates, helping professionals update their skills through Professional Education programs, conducting research and technology deployment projects in collaboration with industry, and through technology entrepreneurship, the SoE plays a critical role in Connecticut’s economy. Collaborations with industry help to create a climate that encourages innovation leading to economic growth.

The pandemic has taught us new ways to collaborate with people, and our Alumni Relations Director, Cait Krouse, can help you make those connections. (Ckrouse@foundation.uconn.edu)
Endowment

Last year the SoE reached $50 million – almost double its value of $26.8 million seven years ago. This growth has allowed the School to award $527,000 in scholarship support to 230 students in AY20-21 in addition to scholarships awarded to the SoE students by the university. The endowment also secured 24 chaired and named professorships and 20 term professorships.

The following are examples of relationships built in the past few years:

**2020-2021:**
- Total giving: $5,043,480. Individual giving included:
  - The Vergnano Institute for Inclusion (Mark & Betsy Vergnano gift of $3M)
  - Pratt & Whitney Additive Manufacturing instruments. (Raytheon - $533K)
  - Anonymous pledge to the Dean’s Fund ($172k)
  - The Peter Willett Fellowship (Vijay Raghavan - $125k)
  - Catalyst research for Alkane oxidation (American Chemical Society - $110k)

**2019-2020:**
- Anonymous planned bequest for the use of Artificial Intelligence in Medical Diagnosis Excellence ($1.2M for joint work with the Schools of Engineering, Business and Nursing)
- Anonymous planned bequest for scholarships ($1M)
- Anonymous planned bequest for scholarships ($400K)
- Planned IRA distribution gift for the Dean’s Fund ($400K)
- Realized bequest creating the Tina & Blake Lewis Scholarship Fund ($202K)
- A gift establishing a fund for study abroad ($101K)

**2018-2019:**
- John and Donna Krenicki gift to establish the Krenicki Arts and Engineering Institute (S5M) Announced September 2019
- Eversource Energy Center renewal ($5M gift)
- Altschuler Cybersecurity Laboratory (Samuel & Stephen Altschuler gift of $1M)
- James J. Boland and Owen F. Devereux MSE Scholarship ($1.87M bequest)
- Planned anonymous bequest ($1.3M)

**2017:**
- Gift of Vetra FIB for circuit edit system (anonymous $1.35M)
- Planned bequest of $2.4M
- Connecticut Brownfields Initiative (multiple donors $300K)

**2016:**
- Synchrony Financial Center of Excellence in Cybersecurity ($3.2M)

**2015:**
- Eversource Energy Center of Excellence ($9M)

**2014:**
- Thermo Fisher Scientific Center of Excellence in Microscopy & Materials Characterization ($12.7M)
- Comcast Center of Excellence for Security Innovation ($7.5M)

- United Technologies for Advanced Systems Engineering ($10M)
- Pratt & Whitney Center for Additive Manufacturing and Innovation ($8M)

The UConn School of Engineering announced the creation of the Vergnano Institute for Inclusion, an endowed Institute funded by a generous gift from two UConn alumni, that will drive increased diversity, equity, and inclusion (DEI) within the engineering field by providing underrepresented students with access to scholarships, coaching and mentorship opportunities, training, and other critical career development resources within the School. This gift represents the largest DEI investment in the history of the UConn School of Engineering and is one of the largest single DEI investments in UConn.

Betsy and Mark Vergnano (courtesy of Saleem Ahmed).
Programs Cultivating Donor Relationships

The SoE supports a number of initiatives that steward external relationships throughout the year. For example, the SoE’s Senior Design program supports full-year collaborations between teams of students and company sponsors. These projects address real-world engineering challenges, leading directly to technology transition and company connections with future employees. The Senior Design program generates approximately $600,000 per year from company partners.

In addition, sponsored research projects, distance learning and continuing education programs, and networking events engage industry partners throughout the year. Events like the Academy of Distinguished Engineers Induction Ceremony, GE Night, General Dynamics Electric Boat Alumni Reception, and Lockheed Martin-UConn Day are just a few examples of engagement between the School and its partners. The SoE administrators have also held frequent donor events and alumni receptions around the country.

In Fall 2016, we held the Centennial Engineering Gala to mark the 100th anniversary of UConn Engineering as a four-year degree program. Every major Connecticut manufacturing company and many state and university leaders were among the 370 attending—reflecting the close rapport and reliance that business and industry has developed with the SoE. Additionally, the Centennial Gala generated net income of $279,000 for engineering scholarships.

There is No Better Time than Now to Support UConn School of Engineering Students

UConn Engineering wants to do better for its students, now and in the future and we need your help. By supporting the Engineering scholarships, you make a concrete investment in Connecticut’s future. The power of a UConn Engineering degree is what grows industry, jobs, and prosperity in these difficult times.

• Only ~260 of approximately 3,500 undergraduate students benefit each year from privately funded scholarships. We must do more.

• Direct costs for an in-state student total nearly $32K. The average scholarship award is less than $3K. Every dollar has a profound impact.

• The SoE enrolls 1995 students with financial need each year. With your help, we can close the gap.

• For nearly 35 years, the School of Engineering has worked to ensure students from underrepresented and underprivileged communities attend and thrive in our programs. Our BRIDGE program has had among the highest graduation rates in our School.

Please contact Donald Swinton at (860) 336-7234 or Nora Sutton at (860) 539-8785 to learn how you can help.

For more details on how you can help, visit: giving.engr.uconn.edu
Engineering Advisory Board

The SoE has an active, engaged, and diverse advisory board representing industry, government, alumni, and higher education. Members are appointed for renewable three-year terms. The board meets as a group twice a year, but sub-groups may meet more often. Members are also contacted by the dean on an as-needed basis when specific guidance or support is required.

The current board members include two Commissioners of State of Connecticut departments (Economic and Community Development and Transportation), the CEO of CT Innovations, two engineering Deans (RPI, URI), one Provost (Dartmouth College), and many senior state and national industry leaders. A list of the Engineering Advisory Board members can be found at: https://www engr uconn edu/about at a glance industry advisory board/

Space Planning and Management

The SoE space currently accommodates today’s needs with no vacancy. The Master Space Plan provided to the School by the Payette architectural firm in January 2019 stated that “At the end of the Fall 2018 semester, there will be no available space in the SoE.” This study accounts for the opening of the Engineering Science Building (ESB) in June 2018 and the relocation of multiple Engineering research centers to the Innovation Partnership Building in September 2018.

With continuing growth in the SoE’s student enrollment and research expenditures, availability of space to support the School’s core missions has become a significant challenge. The university goal is to double research over the next 10 years. The SoE generates a significant portion of UConn’s total research funding. At this juncture in time, the SoE lacks the physical space needed to support significant research growth.

As a result, the SoE has focused its efforts to optimize usage of all existing space through reassignments and renovations. During the past year, the SoE received $1.3M for renovations to address space needs and worked closely with University Planning, Design and Construction to perform 12 major projects. These projects have been helpful; however, space remains a challenge when looking towards the University research goals.

IT Support for Education and Research

In 2018, the SoE worked closely with ITS and the OVPR Export Control Office to develop and implement an IT system that meets NIST 800-171 data compliance standards. This IT security standard is required for research projects involving controlled information or proprietary data.

During the past year, the new system demonstrated its tremendous value to the research community. One example is the support for the recently established National Institute for Undersea Vehicle Technology (NIUVT) which requires NIST 800-171 compliance on all its projects. In its first two years, NIUVT has secured $10.5M in ONR funding to date, to support 35 research projects; NIUVT anticipates an additional $10M and 40 new projects in the upcoming year. This highly successful research initiative would not be possible without this specialized IT and export control support.

The SoE’s IT support was also very successful in its response to the COVID-19 pandemic. Within one week, the School deployed 650 virtual computers to support off-campus educational and research needs of its students and faculty.
Help a deserving student become an engineer:
giving.engr.uconn.edu