

## 2023 ANNUAL REPORT

**Name of Department:** Electrical and Computer Engineering

**Mission Statement.** Please provide your department's mission statement

*The mission of the Electrical & Computer Engineering (ECE) Department is fourfold:*

- *To provide educational programs in Electrical and Computer Engineering and related fields at the bachelor's, master's and doctoral levels of high quality and sufficient breadth and depth to serve industry, government and academic institutions of our State and Nation.*
- *To conduct research and pursue scholarship to advance knowledge and apply that knowledge in areas relevant to our State and Nation in order to meet the demands of the coming information age and global competition.*
- *To serve the State and Nation by making available the accumulated expertise, knowledge and experience of the faculty to industry and government.*
- *To recruit and provide educational opportunities to underrepresented minorities, women and physically disabled students.*

### OVERVIEW

In a few sentences, please describe your department's strategic activities for the 2022-2023 academic year. Do not exceed 500 words.

Strategically, the department continues to pursue long-term goals of sustained excellence in research and teaching. Increasing undergraduate enrollment is still a high priority. Last summer, we offered a new robotics summer enrichment program targeted to high school students and we plan to offer it again this summer. HKN, our department honor society, has been instrumental in helping reach out to admitted students with targeted phone calls and informal webinar sessions. The robotics engineering undergraduate degree kicked off in Fall 2022 with 11 students. The number of applications for the Fall 2023 nearly doubled, and as of May 3, we are on track for 19 freshman robotics engineering students enrolling in the fall. The new robotics degree has the potential to double the number of undergraduate students in the ECE department over the next 5 years. We have an open robotics faculty search that has not been filled as of yet.

We continue to grow our professional education efforts with our third cohort of about 20 students expected from Electric Boat completing a certificate in Power Engineering. The department is also participating in an Ocean Engineering certificate with the ME department and the Marine Sciences Department.

Personnel changes: Shane Eagleson returned to ECE April 2022, Prof. Krishna Pattipati retired in July 2022, and Jodi Peterson joined in July 2022. Mary McCarthy also retired in June 2022 but has been working part-time until June 2023. Three research professors, Mikhail Bragin, Kaipei Yang, and Ha Ngyuen moved on to new opportunities in August 2022.

### EDUCATION

**AY 2022-2023 Student Data:** NOTE: Student data will be obtained by the Undergrad Office and shared with you when it is received.

	Enrollment					Degrees Awarded AY21-22	
	Total Enrolled	Male	Female	US	Int.		
<b>Undergraduate</b>							
Freshmen	101	84	17	93	8	B.S.	93
Sophomores	57	54	3	56	1	Minors	0
Juniors	80	70	10	75	5		
Seniors	133	122	11	123	10		
Total	371	330	41	347	24		
<b>Graduate</b>							
M.S.	16	16	0	11	5	M.S.	12
M.Eng.	15	15	0	15	0	M.Eng.	6
Ph.D.	91	76	15	22	69	Ph.D.	4

#### AY 2022-2023 Senior Design Information

# Projects/ Teams	30
# Students Participating	85
# Company Sponsors	18
\$ Revenue from Sponsors	\$75,833

**Please list up to five of your department's most important initiatives or accomplishments in undergraduate education.**

- (1) 1<sup>st</sup> Robotics Engineering cohort of 11 students in Fall 2022
- (2) **Malik Francis** (CMPE'25) selected as McNair Scholar
- (3) Frost Robotics club was awarded a \$10k grant from the Norwalk Havoc Robot League
- (4) **Peter Chardavoyne** (EE'23), **Allan Feygin** (EE'23), and **Uiliam Kutrolli** (EE '23) with Prof. Zongjie Wang, received the 2nd best paper award at the 2022 North American Power Symposium.
- (5) **Nick Satta** (EE'23) and his teammates placed 3rd in CoMIS - which is an opportunity for future IT leaders to test their business acumen, problem-solving, teamwork, and presentation skills in a case competition designed to simulate real-world business conditions.

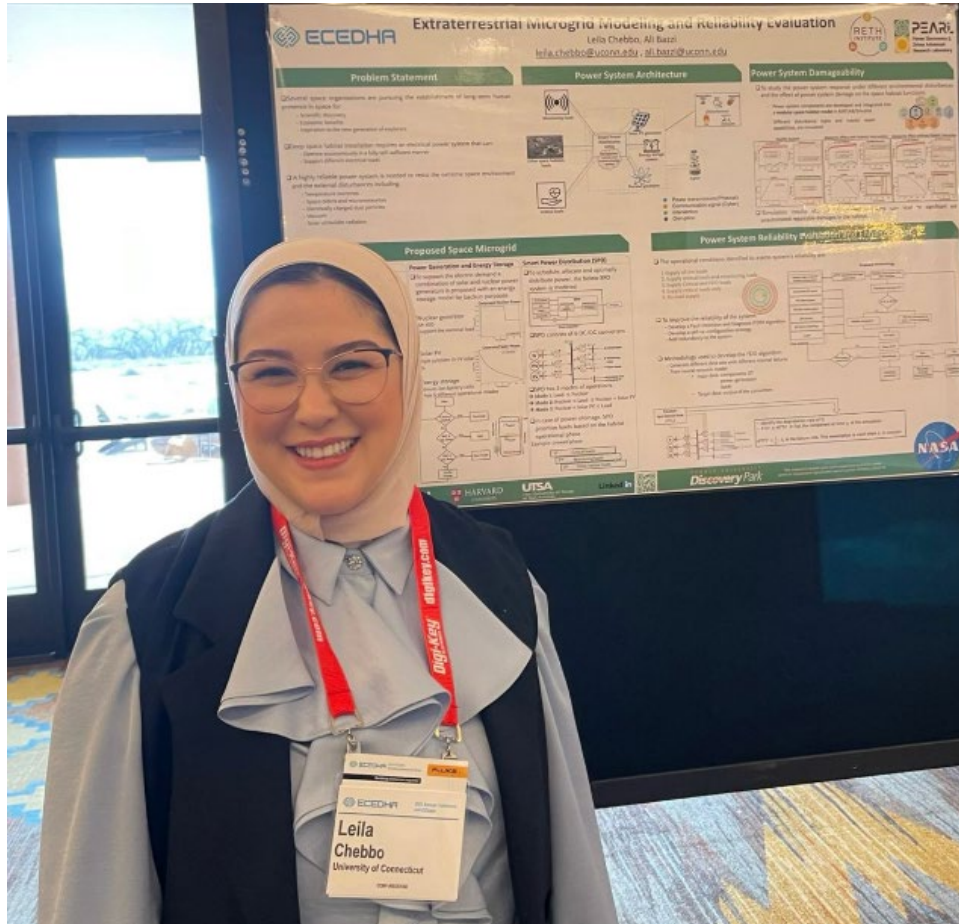


Left to right - Tyler Goodwin (BUS), Julie Somma (MEM), Nick Satta (ECE)

**Please list up to five of your department's most important initiatives or accomplishments in graduate education.**

- (1) **Jason Philhower**, a Ph.D. student under the supervision of Prof. Junbo Zhao, received the IEEE PES CT chapter 2022 Outstanding Chapter Volunteer Award.
- (2) **Jinxian Zhang**, advisee of Prof. Junbo Zhao has received the Best Paper Award at the 6th IEEE Conference on Energy Internet and Energy System Integration.
- (3) Prize winners from the Connecticut Microelectronics & Optoelectronics Consortium poster competition include: Grad Students **Abdulmajeed Almalki** , advisee of Faquir Jain, for Best Poster Paper, and **Elisa Parent**, advisee of John Ayers for Best Poster
- (4) Graduate student **Leila Chebbo**, advised by Ali Bazzi, was one of only 12 students to receive a Professional Development Award to attend the iREDEFINE Workshop, a workshop designed to increase the number of women and underrepresented minorities (URMs) among the faculty in ECE departments.
- (5) **Hasan Talukder**, advised by Ali Gokirmak and Helena Silva, won the best ECE poster award at the 2023 SoE Poster Competition, and **Tashfiq Kashem**, advisee of Helena Silva, **Yen-Che Hsiao**, advisee of Abishek Dutta, and **Haoyi Wang**, advisee of Junbo Zhao, won 1<sup>st</sup>, 2<sup>nd</sup> and 3<sup>rd</sup> place respectively in the IEEE/ECE Poster Competition.
- (6) **Raja Gudlavalleti** won the ECE Spring 2022 TA award for his outstanding service to ECE 4244, and **Ryan Harvey** won the ECE Fall 2022 TA award for his outstanding service to ECE 4122.

- (7) **Tong Su**, an advisee of Prof. Junbo Zhao, has received a best paper award from the flagship conference IEEE PES General Meeting 2023. Each year, less than 30 papers out of more than 2000 would be selected to get this recognition.



Leila Chebbo at the iREDEFINE Workshop organized by the Electrical and Computer Engineering Department Heads Association

## RESEARCH

**FY 2022-2023 Research Development Data (\*\*currently through April 2023 - awaiting data through June 2023)**

	Expenditures	Proposals Submitted		New Awards	
		Number	Value \$	Number	Value\$

Industry	\$589,048	7	\$663,602	4	\$265,288
Federal	\$5,945,706	36	\$30,379,794	13	\$3,582,883
State	0	2	\$60,000	2	\$60,000
Other	\$69,196	0	0	0	0
Total	\$6,603,950	45	\$31,103,405	19	\$3,908,171

#### AY 2022-2023 Research Products Data

	Number
# Patents Awarded	6
# Journal Papers	115
# Conference Papers	130

**Major Faculty Awards and Honors.** Please list up to 10. *Please include the name of the faculty member and the name of award or honor.*

1. **Bahram Javidi** was elected as a fellow of the American Association for the Advancement of Science (AAAS).
2. **Yaakov Bar-Shalom** received the Pioneer Award from the IEEE Aerospace and Electronic Systems Society.
3. **Marten Van Dijk** was selected for the 2023 Edward J. McCluskey Technical Achievement Award.
4. **Junbo Zhou** earned a number of awards including:
  - Outstanding Editor awards from *IEEE Transactions on Network Science and Engineering*, *IEEE Transactions on Power Systems*, and *CSEE Journal of Power and Energy Systems*.
  - Highly cited paper awards in *International Journal of Electrical Power & Energy Systems*, *Applied Energy*, and *IEEE Transactions on Industrial Informatics*
  - Two papers recognized as 2022 *IEEE Transactions on Power Systems* Outstanding Papers
  - 2022 Outstanding Engineer Award- IEEE PES Connecticut chapter
  - 2023 Co-recipient of AAUP Research Excellence Award –Early Career
5. **Peter Willett** was elected to CT Academy of Science and Engineering.
6. **John Chandy** received the 2023 AAUP Service Award.
7. **Ali Bazzi** was featured on WFSB News, discussing technology to use to help homeowners save on energy costs.
8. **Abhishek Dutta** was invited to speak in May 2023 at the Gates Foundation's Annual Symposium at the Institute of Disease Modeling.
9. **Omer Khan** was promoted to Full Professor.

**Most Significant Faculty Professional Leadership Positions**, *including society officer, journal editorships. Please list up to 10. Please include the name of the faculty member and the name of leadership position.*

- (1) Prof. **Eric Donkor** was selected as Secretary for the Connecticut Academy for Science and Engineering

## OUTREACH

**Please list your department's top 3 achievements and initiatives in outreach.**

- (1) Prepared and distributed a **newsletter** highlighting ECE achievements during the previous year.
- (2) Quarterly email highlight updates to other department heads
- (3) Promotional Lab Videos in development. First is Prof. Helena Silva's lab - see <https://youtu.be/npS4rgXFhbc>
- (4) Robotics outreach has included organization of a Husky Invitational Robotics event on campus, tabling at New England First and VEX Robotics competitions, as well as sending flyers about the new robotics program to High School guidance counselors and local Robotics clubs throughout CT and RI.

## DEVELOPMENT

**Please list your department's top 3 achievements and initiatives in development.**

- (1) ECE Alumni LinkedIn group has over 550 members with more active updates of faculty and student successes.

## PERSONNEL

**Please provide the numbers of faculty and staff in each category.**

	FT	PT	Total
<b>Faculty</b>			
Tenured/ Tenure Track	27		
Research Faculty	0		
Post-Docs	1		
Teaching (In-Residence, Visiting, etc.)	1		
Adjunct		2	
<b>Total</b>			
<b>Staff</b>			
Administrative	3		
Lab/ Technical	1		
Other			

