Meeting of the ECE Advisory Board
December 10, 2021

Joseph JaJa

DEPARTMENT OF
ELECTRICAL &
COMPUTER ENGINEERING

Highlights

- Full in-person teaching and research but challenges remain regarding the new normal.
- Significant loss of faculty, lecturers, and staff – challenging times to staff our courses and support our activities
- Major efforts continuing on updating and revising courses, exploring a new minor in quantum, DEI efforts, etc. In the process of revising Plan of Organization and Bylaws
- Substantial increase in external support and major new awards by faculty
- Major new efforts to recruit more faculty and lecturers.

New EE Curriculum – Ready for Campus Submission

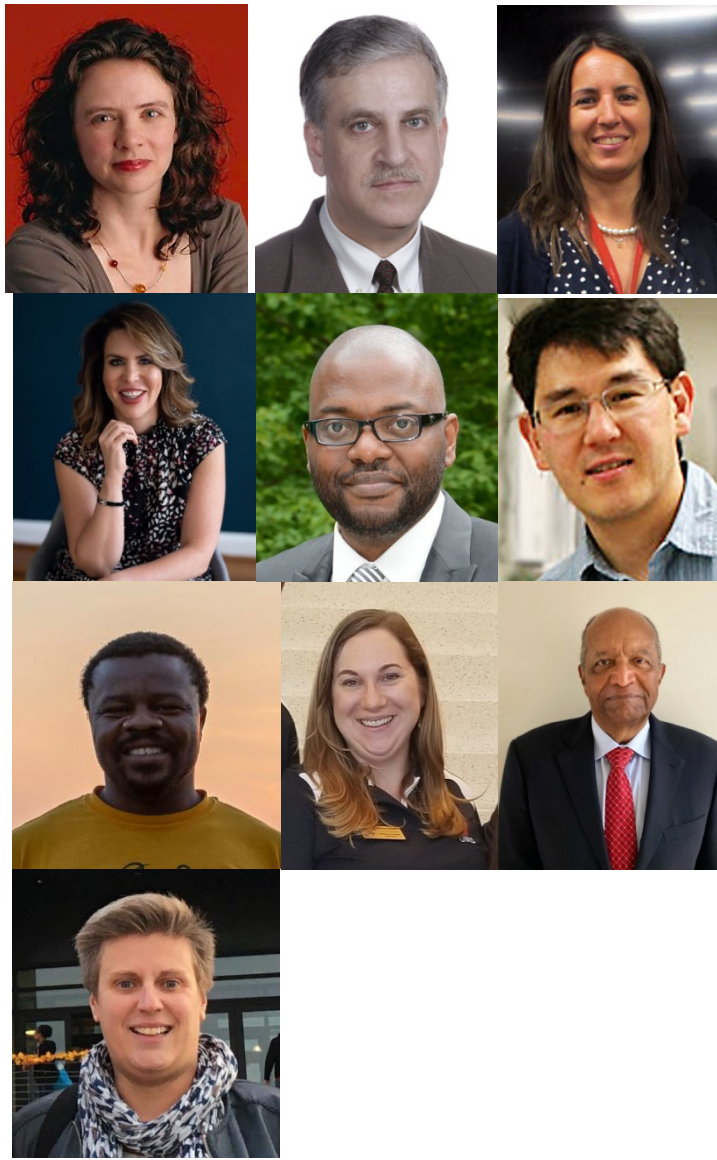
- Add flexibility and modernize curriculum
  - One required ECE course per area in junior year plus new elective courses at the junior and senior years with hands-on experience.
- Allow possibility of area/specialization tracks
- Increase retention and facilitate graduation rates
- Prepare students for real world and life-long learning
- Satisfy ABET and University Requirements

Revamped ECE Honors Program – To Be Discussed by College PCC Committee Soon

- Less focus on courses and additional participation requirement in experiential learning and/or service learning.
- Experiential Learning: university-based or industrial-based research project with a final oral presentation and a thesis.
- Service Learning: students must login at least 75 hours of service learning and take ENEE 399 (Leadership, Creativity, and Service Learning).

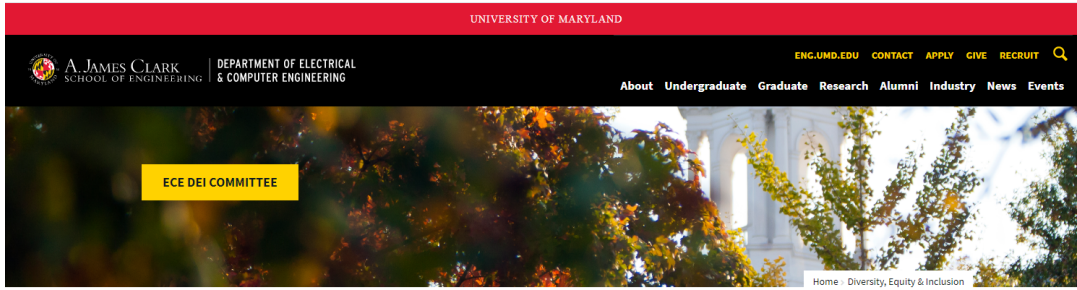
Diversity, Equity, and Inclusion Committee

- Pamela Abshire, ADVANCE Professor
- Eyad Abed, Professor
- Yanne Chembo, Professor
- Timothy Horiuchi, Professor
- Kristin Little, Director of Finance and Business Services
- Cassandra Mendez, Business Manager
- Franklin Nouketcha, ECEGSA President and PhD Student
- Percy Pierre, Adjunct Faculty Member
- Amanda Stein, Director of External Relations
- Crystal Umaru, Assistant Director of Finance & Business Services
- Miranda Van Iersel, Visiting Associate Research Scientist
- Kathryn Weiland, Director of Undergraduate Studies



DEI Committee – New Website

- DEI Policies
- Equity in Teaching
- Staff/Faculty Relations
- Events & Training
- Research & Career Mentoring
- Recruitment
- Diversity Resources & Services
- https://ece.umd.edu/Diversity-Equity-Inclusion
- https://ece.umd.edu/ece-dei-committee



Diversity, Equity & Inclusion

Mission

The University of Maryland's Department of Electrical and Computer Engineering embraces diversity, equity, and inclusiveness as core values. Our vision is to promote an inclusive learning and working environment in which all members of our community – including faculty, staff, and students – are treated with respect and fairness, are included and welcomed, and are empowered to thrive and succeed.

Our mission is to increase diversity, to promote a culture of respect, equity, and inclusion, and to offer training and events that raise awareness and understanding of these issues. We invite you to work collaboratively with us to advocate policies and practices to engineer a better world for all.

Staff/Faculty Relations

Our intellectual community is based upon the strong foundation of a culture of respect in which all members feel appreciated and welcome, free of bias and discrimination, and with the tools and training they need to be successful, with open exchange of ideas. We aim to foster a positive working and learning environment amongst faculty, staff and students.

Awareness & Education

The ECE Department's DEI committee is currently planning future events to raise awareness about issues of diversity, equity, and inclusion that impact the Electrical and Computer Engineering Department. We will also promote related events organized by other units on campus.

Research & Career Mentoring

Mentoring is an important tool for career development and research experience. The Undergraduate Office runs the ECE Peer Mentoring program, which matches first-semester freshmen and transfer students with upper-class peers for a year-long partnership. Students are strongly encouraged to take advantage of many excellent opportunities to get involved with research projects under the mentorship of ECE faculty.

Selected Recent Faculty Recognition

- Rajiv Laroia (alum) – National Academy of Engineering
- Min Wu, President Elect, IEEE Signal Processing Society
- Min Wu receives the Outstanding Faculty Research Award for Senior Faculty
- Prof. Chembo elected to IEEE Photonics Society Board of Governors.
- Profs. Carol Espy-Wilson and Gang Qu elected IEEE Fellows
- Tom Antenson receives the 2022 IEEE Marie Sklodowska-Currie Award

Significant Recent Funding Awards

- Phase II of NSF Convergence Accelerator Program – PI: Edo Waks - $5M over two years.
- Quantum Leap Challenge Institute for Robust Quantum Simulation: $25M, PI: Andrew Childs – Mohammad Hafezi: Associate Director for Education.
- NSF STC Center for Integration of Modern Optoelectronic Materials on Demand – $25M; lead University of Washington; UMD major partner with Edo Waks co-PI, as the UMD lead.
- $3M NSF Award for Rules of Life of Natural Neuronal Networks, PI: Pamela Abshire
- $3M NIH Award – Jonathan Simon (PI) and Behtash Babadi (co-PI) plus others
- $1.5M DoE Award on Quantum Diamond Mangetometers, PI: Ron Walsworth
- $1.2M NSF Award for AI and Health, PI: Min Wu
- $1M NSF and Amazon Award: Fairness for AI (M. Wu, D. Dachman-Soled, F. Huang)

Active Faculty Searches this Year:

- **Computer Engineering**: analog and neuromorphic computing, embedded and IoT systems, resilient systems, formal methods
- **Microelectronics**: power electronics, bioelectronics, neuroengineering, radio frequency integrated circuits
- **Cybersecurity** – all areas; joint with CS
- **Quantum –** College wide committee
- **Two Brendan Iribe Professorships in Robotics/Automation**, and **AI/Machine Learning –** joint with CS

Conclusion

- Department doing very well overall in terms of education and research: new and revised courses, more proposals, and significantly more external funding for research.
- All new programs are up to a very good start, and currently developing new programs and enhancing existing ones.
- Confronting significant challenges due to faculty loss, staff turnover, and very limited discretionary funds