



ELECTRICAL AND
COMPUTER ENGINEERING

STRATEGIC PLAN 2021

COLLEGE OF
ENGINEERING

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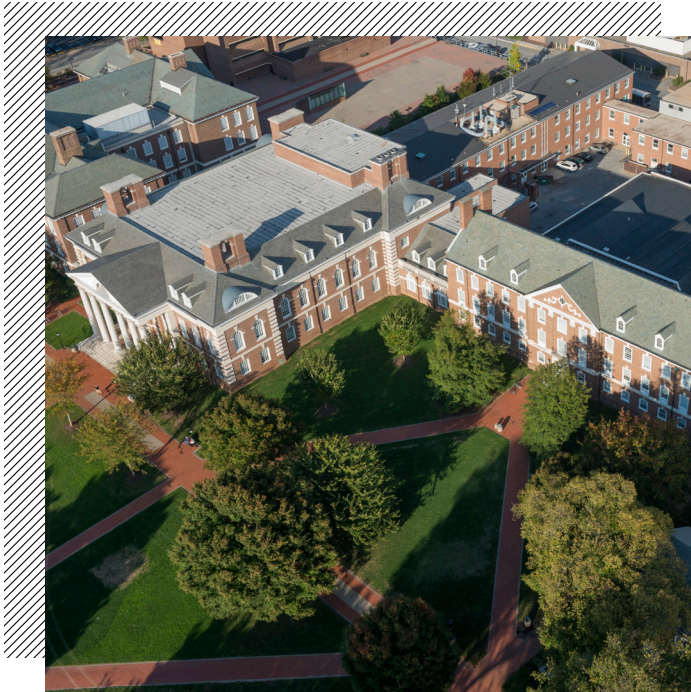
Electrical and Computer Engineering are central to the technologies transforming society—**Information, Security, Robotics, Energy and Sustainability** and **Biology and Medicine**—providing the intellectual and technological bridge between the cyber and physical worlds.

We focus on how the Department of Electrical and Computer Engineering (ECE) will prepare the next generation of talent and leadership in addressing major societal and global challenges.

We align with the vision of the College of Engineering and the University of Delaware to be the destination for an extraordinary education and transformational research, making the world better today and for generations to come.



Jamie Phillips
Chair, Electrical and Computer Engineering



Vision

To innovate across the spectrum of physical and digital systems to enrich society and address global challenges.

Mission

To advance theory, technology, and practice in electrical and computer engineering through research and education in Delaware, the Mid-Atlantic Region, and across the world.

Values

As individuals, we value integrity, compassion, and respect for others as we continuously improve and diligently persevere toward excellence. Professionally, we are energized by curiosity, creativity, a collaborative spirit, technical mastery and constructive dialogue across real and perceived boundaries as we engineer solutions that serve the world.

Plan of Action

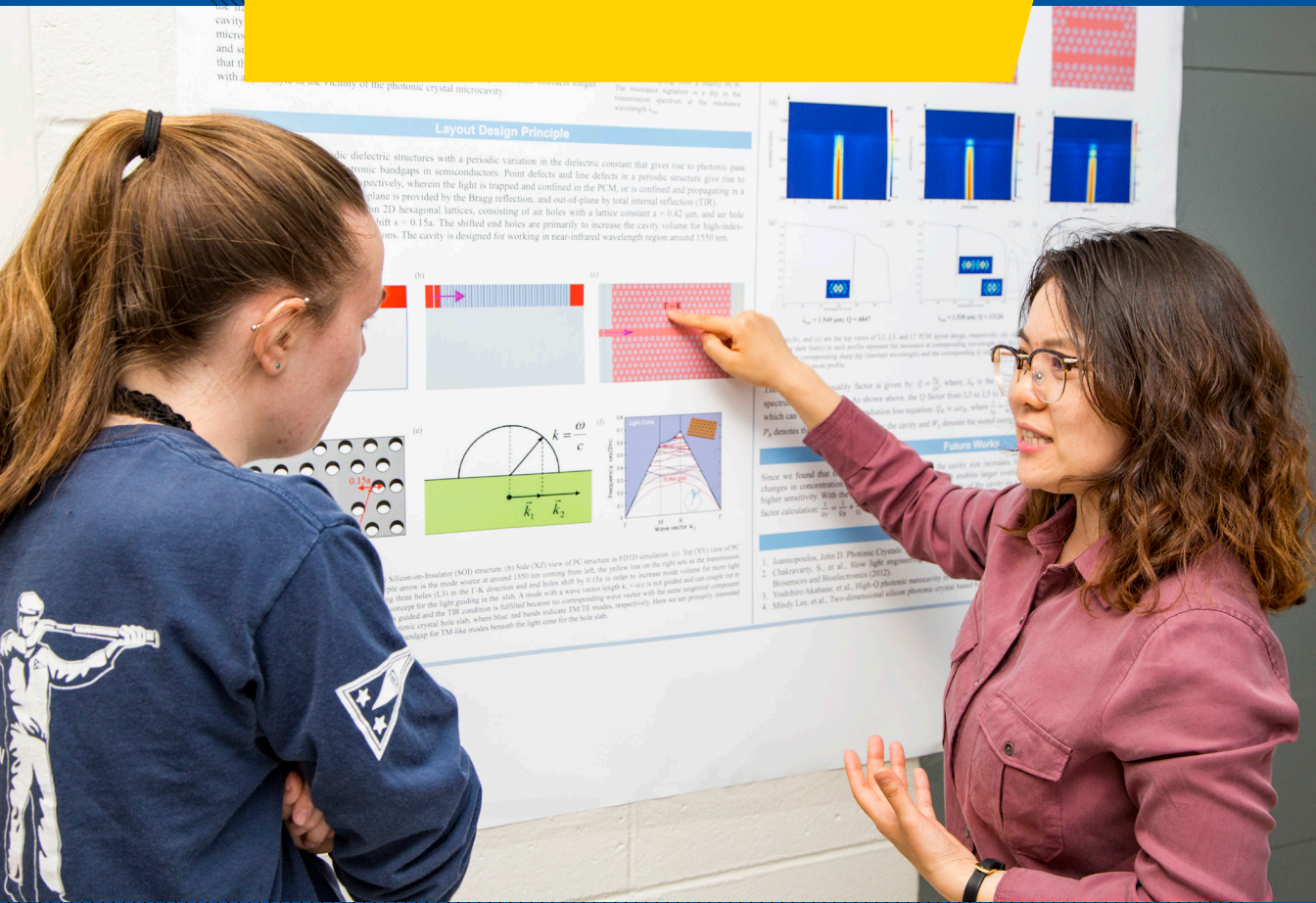
To achieve our vision, we have established four goals in our strategic plan that align with our core twin pillars of Research and Education, and two additional supporting pillars of External Partnerships and a Diverse, Collaborative Community. We have outlined a series of actions to achieve these goals and to further build strong connections among students, faculty, staff, alumni, and partners.

Goal 1: Excellence in undergraduate teaching, curricula, and the student experience

Goal 2: Leadership in multidisciplinary research

Goal 3: Strong external partnerships

Goal 4: A collaborative and inclusive environment that values every individual's contributions



Education

Research

GOAL 1:

Excellence in undergraduate teaching, curricula, and student experience

Engage and impassion first-year students in ECE topics

Provide experiential learning for all undergraduates

Interwoven Research and Educational Activities

GOAL 2:

Leadership in multidisciplinary research

Establish center-level research in ECE

Grow and communicate impactful areas of ECE

External Partnerships

GOAL 3:

Strong partnerships with industry, government and academia

Engage our alumni with students

Develop strategic partnerships with other academic institutions

Establish partnerships supporting industry and government

Diverse, Collaborative Community

GOAL 4:

Collaborative and inclusive environment

Diversify ECE community

Build lively student community

Exposure to real world issues and methods, mentoring, recruiting

Societally relevant research activities

Supportive environment, Outreach, Mentoring

Diverse and collaborative teams with multiple perspectives



EDUCATION

Excellence in undergraduate teaching, curricula and student experience

Our educational programs in ECE aim to strike a balance between a solid foundation in fundamentals, application through engineering design, and the development of broader professional skills such as communications, teamwork, and creative thinking. To ensure the next generation of electrical and computer engineers are prepared and inspired to address major societal challenges, we will refresh our undergraduate curriculum and teach to engage and excite our first-year students so they are passionate about ECE, and integrate experiential learning activities as a key component of the undergraduate student experience.

Engage and impassion first-year students in ECE topics and plug them in to ECE activities

- Embed ECE in the first-year core curriculum.
- Incorporate events to engage first-year ECE students in activities across campus.

Integrate experiential learning for all undergraduate students

- Formalize experiential learning as an undergraduate program requirement.
- Expand Vertically Integrated Projects (VIP).
- Increase undergraduate research opportunities in ECE.

An aerial, high-angle view of a city at night, showing a dense grid of buildings and streets. The lights from the buildings and streets create a vibrant, colorful pattern of reds, oranges, yellows, and blues, with some green and purple highlights. The perspective is looking down from a height, giving a sense of scale and urban complexity.

RESEARCH

Leadership in multidisciplinary research

As a part of our mission, we will continue to focus on excellence in fundamentals in our scholarship. To achieve our vision of having a major impact on society, we will develop leadership in multidisciplinary research by aligning our scholarship in ECE to global challenges and to pursue daring, large-scale research activities.

Develop center-level multidisciplinary research activity led by ECE

- Incentivize, mentor, and reward faculty to pursue major center proposals.
- Facilitate the exchange of ideas and team building in ECE.
- Pursue a major research facility led by ECE that spans departments/colleges.

Grow and communicate impactful areas of ECE

- Dedicate resources to build on existing and emerging strengths.
- Increase external public presence and leadership in the technical community.
- Showcase departmental excellence through enhanced communications.



EXTERNAL PARTNERSHIPS

Strong partnerships with industry, government and academia

To achieve excellence in our education and research, we must recruit top talent and connect our work to issues faced by industry and both local and global communities.

Strong external partnerships are critical for success. Building on the strength of our existing relationships in the mid-Atlantic, our global alumni base, and leveraging regional leadership in the defense and financial sectors, we will develop and strengthen connections to academic institutions, industry, and government.

Engage our alumni with students

- Involve alumni in targeted department events and student mentoring.

Develop strategic partnerships with other academic institutions

- Develop joint degree programs with local institutions.
- Expand summer student research exchange programs, building on strengths such as our Colombian summer research program.

Establish partnerships supporting industry and government.

- Develop industry partnerships that match needs in finance and security.
- Develop government and industry partnerships that match needs in defense and national security.

DIVERSE, COLLABORATIVE COMMUNITY

A collaborative and inclusive environment

People and culture are the foundation for all of our efforts. Engineering, and societal challenges, increasingly require team-based multidisciplinary activities that combine skills and perspectives from a diverse set of individuals. To succeed in our vision we need an inclusive environment that welcomes diverse teams and values every individual’s contribution. We will continuously strengthen our diversity, equity, and inclusion efforts in ECE for our student, staff, and faculty community. In the near term, we will also improve the ECE culture through student community building and extending the breadth and reach of ECE to showcase the relevance and impact of our work to major societal challenges.

Build a lively student community

- Actively engage students in ECE activities in their first year.
- Establish a formal student peer mentoring program.

Diversify ECE community by diversifying ECE breadth and reach

- Expand connections to important impact areas such as biology/medicine and sustainable energy.
- Develop an ECE K-12 outreach program.







Plan for Growth of ECE to Achieve Desired Impact

Our ambitious goals for ECE will require substantial growth to achieve success.

We need to grow our faculty body to strengthen diversity and capabilities, to increase our undergraduate and graduate student body, and to increase our staff as partners in developing and administering our proposed initiatives. In five years, we aim to grow our department by approximately 30%.

The expansion at STAR Campus at the University of Delaware, including the new FinTech building, will help to facilitate our plans for growth.

ECE IN 2020-2021

- 30 faculty
- 288 Undergraduate students
- 111 MS students
- 101 Ph.D. students

5-YEAR GOAL FOR ECE

- 35 faculty
- 400 Undergraduate students
- 130 MS students
- 120 Ph.D. students



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