The Electrical and Computer Engineering Department at Binghamton University works with the building blocks of power, energy and information systems — photons, electrons and bits — but people are at the core of what it does. Research and teaching revolves around electrical components, systems, microprocessors, software and hardware, all in the pursuit of improving electronic and computer systems to make life easier. The department has research clusters in smart energy, biosystems and cyber security.

**TWO GRADUATE DEGREE OPTIONS**

• Master of Science (MS)
• Doctor of Philosophy (PhD)

**SOME ECE DEPARTMENT NUMBERS**

• 20 faculty in 6 research areas
• 4 papers per faculty per year
• 200 graduate students (125 master’s and 75 PhD)
• Over $2.3 million in research awards in 2015–16

**AWARD-WINNING ECE FACULTY**

• 7 SUNY Chancellor’s awards
• 1 Air Force PECASE award
• Numerous “best paper” awards with grad-student coauthors
• 3 SUNY Distinguished Faculty: Distinguished Professor Distinguished Service Professor Distinguished Teaching Professor

**RESEARCH OPPORTUNITIES**

We’re always looking for bright, energetic students to join our groups and contribute to our research.

**FINANCIAL ASSISTANCE**

Financial aid for graduate students is available in the form of research assistantships, teaching assistantships, fellowships, grants, loans and work-study. Most full-time PhD students are supported, normally as research or teaching assistants.

You may request information about grants, loans and work-study from the University’s Student Financial Aid and Employment Office.

**MS PROGRAM**

The MS program prepares students for development-oriented engineering careers and/or continuation to doctoral studies by providing:

• Increased depth in an area of specialization
• Expanded breadth in supporting areas
• Focused study of recent advances in your area of specialization

The MS program provides a balance of advanced theory and practical engineering knowledge necessary to prepare its graduates for professional practice and/or for continuation into a PhD program. The program culminates with either a thesis or a project report through which students develop their ability to perform independent investigation of recent advances and present the results in a written document. The typical time for completion is 18–24 months of full-time study.

**PhD PROGRAM**

The PhD program is a research-focused program that prepares students for R & D careers in corporate, academic and research lab environments by providing:

• A flexible program of course work to support your research area
• Extensive independent research on a cutting-edge research topic
• PhD students publish and present their work in top-notch journals and conferences

**RESEARCH AREAS**

- Digital Signal Processing
- Communications
- Controls
- and Laser Communication
- Information Assurance
- Computer Architecture and Networks
- Digital Signal Processing Communications
- Power and Energy
- Micro- and Optoelectronics
MS IN ELECTRICAL AND COMPUTER ENGINEERING

SPECIALIZATION COURSES
• Three courses in a single area of specialization: control systems, DSP and communications, computer architecture and networks, information assurance, physical electronics/electro-optics, power/energy engineering, VLSI

BREADTH COURSES
• Two ECE courses in two areas outside specialization

MATH METHODS COURSE
• EECE 506 or 507 — Mathematical Methods in EE or in Computer Engineering

ELECTIVES
• Two courses (for thesis) or three (for project) — Can be from ECE or other departments (e.g., math, science, business)

THESIS OPTION OR PROJECT OPTION
• EECE 599, Research Thesis (6 credits)
• EECE 598, Project (3 credits)

PhD IN ELECTRICAL AND COMPUTER ENGINEERING

24 CREDITS OF COURSE WORK — ALL FOCUSED IN RESEARCH AREA
• Tailored classroom work and independent study to build a solid research foundation in selected area

CUTTING-EDGE RESEARCH IN ONE OF MANY AREAS
• Steganography and watermarking
• Multimedia security and forensics
• Computer and network security
• Signal processing in sensor networks
• Signal processing for communications
• Optoelectronics and laser communication
• Smart-grid power systems
• Computer design
• Fault-tolerant control systems
• Speech signal processing
• Solar-cell devices and systems
• BIOMEMS/NEMS, biosensors, biofuel cells
• Medical cyber physical systems

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