Electrical and Computer Engineering

Department Information

- **Department Chair:**
  Benjamin Braaten, Ph.D.
- **Graduate Coordinator:**
  Sudarshan Srinivasan, Ph.D.
- **Department Location:**
  101 Electrical Engineering Building
- **Department Phone:**
  (701) 231-7019
- **Department Web Site:**
  www.ndsu.edu/ece/ (http://www.ndsu.edu/ece/)
- **Application Deadline:**
  February 28 for fall and October 15 for spring (openings may be very limited for spring)
- **Credential Offered:**
  Ph.D., M.S., M.Engr.
- **Test Requirement:**
  GRE
- **English Proficiency Requirements:**
  TOEFL ibT 71, IELTS 6, Duolingo 105; To qualify for teaching assistantship TOEFL ibT 100, IELTS 7, Duolingo 125

The Department of Electrical and Computer Engineering offers graduate programs in selected specialty areas leading to the M.Engr., M.S. and Ph.D. in Electrical and Computer Engineering. Current departmental research expertise falls into one of the following areas: Biomedical Engineering, Communications/Signal Processing, Computer Architecture, Cyber Physical and Embedded Systems, Electromagnetics/Optics, Power/Power Electronics, and VLSI. The ECE Department is also a key contributor to NDSU's Research and Technology Park.

Research Facilities and Equipment

The department is housed in a modern, well-equipped building. Graduate students have access to laboratories, instrument rooms, and computer services ranging from the university computer system to departmental computers. Research facilities include cardiovascular engineering lab, computer architecture lab, digital systems lab, EMI shield room, power and power electronics lab, signal processing and systems lab, and printed circuit lab.

There are three avenues for admittance to the Electrical and Computer Engineering program.

1. The preferred avenue is to contact and work with an NDSU ECE Professor before coming to NDSU, such that the professor recommends you for admittance into the program. Each professor will have different expectations for the amount and type of work he/she will require you to do in order for him/her to recommend you for admittance into the NDSU ECE graduate program. Please look at each faculty's website (https://www.ndsu.edu/ece/people/faculty/)and contact a faculty member working in a research area in which you are interested in pursuing your graduate studies.
2. A secondary avenue is to have a GRE score of at least 145 Verbal and 155 Quantitative and a minimum GPA of 3.0 on your latest Electrical Engineering or Computer Engineering degree, either B.S. or M.S. The GRE subject area test is not required.
3. To be admitted as an ECE M.E. student, you must have a GRE score of at least 145 Verbal and 155 Quantitative and a minimum GPA of 3.0 on your Electrical Engineering or Computer Engineering B.S. degree. The 3.0 minimum GPA admission requirement may be waived for M.E. students with substantial ECE industry experience. The GRE subject area test is not required.

Financial Assistance

The department has a limited number of both teaching and research assistantships available. These assistantships provide a monthly salary during the academic year. In addition to the stipend, graduate assistants receive a graduate tuition waiver. Tuition waivers cover base tuition for NDSU graduate credits only. Students are responsible for differential tuition, student fees, and tuition for non-graduate level credits taken or Cooperative Education credits. In addition, there are opportunities, both in the department and on the campus, to perform part-time work as graders, teachers, tutors, and consultants. These assistantships are awarded on a competitive basis -- typically at the time of admission for fall semester.

Master of Engineering and Master of Science

The Master of Engineering and the Master of Science degrees require a minimum of 30 semester credits beyond the B.S. degree. The Master of Engineering is a course-work only program requiring a capstone consisting of a portfolio or written exam. For the Master of Science, 6 hours of the 30 must be assigned to the thesis. All students must pass a final oral examination covering both course work, and the thesis.

Ph.D. Program

The Doctor of Philosophy degree requires a minimum of 90 credits beyond the baccalaureate with an overall GPA of 3.0 or higher. Of these 90 credits, a minimum of 36 credits of graduate-level coursework and a minimum of 30 credits of dissertation are required, including ECE 702: Advanced Research Topics, 1 credit.

Academic Good Standing

All graduate students must maintain a 3.00 GPA or better and make significant progress towards their degree to remain in good standing. Failing to do either may hinder the student's financial assistance and/or ability to register for courses in the ECE graduate program.

Omid Beik, Ph.D.
McMaster University, 2016
Research Interests: Power and Energy Systems, Renewable Energy Systems, Power Electronics, Electric Machines, Transportation Electrification

Benjamin Braaten, Ph.D.
North Dakota State University, 2009
Research Interests: Applied Electromagnetics, Electromagnetic Compatibility and Signal Integrity

Farhad Shirani Chaharsooghi, Ph.D.
University of Michigan, 2017
Research Interests: Privacy and Security, Wireless Communications, Information Theory, and Learning Theory

Shuvashis Day, Ph.D.
Monash University, 2018
Research Interests: Microwave Devices and Antennas, Metamaterial and Terahertz Devices, RFID Based Sensing, Chipless RFID Based Tag and Sensor, Internet of Things (IoT), Microwave Sensors for Biomedical Applications, Smart Sensing Materials, Machine Learning

Daniel L. Ewert, Ph.D.
University of North Dakota, 1989
Research Interests: Biomedical Engineering

Sumitha George, Ph.D.
Pennsylvania State University, 2020

Jacob Glower, Ph.D.
The Ohio State University, 1988
Research Interests: Control Systems, Digital Systems

Roger Green, Ph.D.
University of Wyoming, 1998
Research Interests: Signal Processing, Array Processing, Time-frequency Analysis

Ivan T. Lima Jr., Ph.D.
University of Maryland, Baltimore County, 2003
Research Interests: Photonics

Dharmakeerthi Nawarathna, Ph.D.
University of Houston, 2005
Research Interests: Lab-on-a-chip Technologies, Single-cell Genomics, Nanobio-engineering, Tissue Engineering, Novel Imaging Techniques for Biology and Computational Simulations.

David A. Rogers, Ph.D.
University of Washington, 1971
Research Interests: Microwave Engineering, Electromagnetics, Fiber Optics

Sudarshan Srinivasan, Ph.D.
Georgia Institute of Technology, 2007
Research Interests: Computer Engineering

Dali Sun, Ph.D.
University of Tokyo

Research Interests: Bioengineering, Electrical Engineering, Software Engineering

Umamaheswara Rao Tida, Ph.D.
University of Notre Dame, 2019
Research Interests: Device- and System-Level Modeling and Design of 3-D Integrated Systems, Machine Learning Design Frameworks, Hardware Design for Edge Computing, Power Delivery Networks and, Low-Power Circuit Designs

Danling Wang, Ph.D.
University of Washington, 2013
Research Interest: Development of Sensor Devices Based on Novel Nanostructured Materials and Advanced Techniques. Focusing on Sensor Design, Fabrication, and Application of Early-Stage Human Disease Monitoring and Diagnosis, Such as Breath Analyzer for Diabetes; Industrial, and Military Safety, Such as Environmental Explosive or Toxic Gas Detection

Di Wu, Ph.D.
Polytechnic University of Turin, 2011
Zhejiang University
Research Interests: Renewable Energy Integration, Application of Complex Network Theory in Power Grids, Cascading Failure Analysis, Power System Dynamics and Stability

Qifeng Zhang, Ph.D.
Peking University, 2001
Research Interests Electric Materials and Devices for Energy Conversion and Storage, involving Solar Cells, Lithium Batteries, and Solid State Electrolytes; Nanomaterials for Sensor and Biomedical Applications; and Nanotechnology