

# Electrical and Computer Engineering

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## Program and Application Information

<b>Interim Department Chair:</b>	Benjamin Braaten
<b>Graduate Coordinator:</b>	Dr. Rajesh Kavasseri
<b>Email:</b>	Rajesh.Kavasseri@ndsu.edu
<b>Department Location:</b>	101 Electrical Engineering Building
<b>Department Phone:</b>	(701) 231-7019
<b>Department Web Site:</b>	www.ndsu.edu/ece/
<b>Application Deadline:</b>	February 28 for fall and October 15 for spring (openings may be very limited for spring)
<b>Degrees Offered:</b>	Ph.D., M.S., M.Engr.
<b>Test Requirement:</b>	GRE
<b>English Proficiency Requirements:</b>	TOEFL ibT 71, IELTS 6; To qualify for teaching assistantship TOEFL ibT 100, IELTS 7

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## Program Description

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.

## Admission Requirements

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. 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. 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.

## 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.

## 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, a waiver of graduate tuition during the academic year and summer, but do not cover the minimal activity fee. 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.

## 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.

## 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. 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.

**Benjamin Braaten, Ph.D.**

North Dakota State University, 2009

Research Interests: Applied Electromagnetics, Electromagnetic Compatibility and Signal Integrity

**Dong Cao, Ph.D.**

Michigan State University, 2012

Research Interests: Power Electronics and High Power Electrical Motor Drives, Renewable Energy Systems Grid-Integration and Standalone Operation, Power Management For Smart Grid, Transportation Electrification/Hybrid Electric Vehicle, Microgrid/Distributed Generation Source, Wide-Band Gap Device

**Nilanjan Ray Chaudhuri, Ph.D.**

Imperial College, 2011

Research Interests: Power System Dynamics and Control, Wide-Area Monitoring Systems, Application Of Power Electronics In Power Systems, Online System Identification, FACTS, HVDC, Renewable Energy Systems, Distributed Energy, Demand Side Response

**Debasis Dawn, Ph.D.**

Tohoku University, 1993

Research Interests: Microelectronics/Microsystems, Radio Frequency Integrated Circuits (RFIC) Silicob (CMOS/SiGe), Ics for radar, sensors

**Daniel L. Ewert, Ph.D.**

University of North Dakota, 1989

Research Interests: Biomedical Engineering

**Jacob Glower, Ph.D.**

The Ohio State University, 1988

Research Interests: Control Systems, Digital Systems

**Na Gong, Ph.D.**

University of Buffalo, SUNY, 2013

Research Interests: VLSI, Computer Architecture, and EDA

**Roger Green, Ph.D.**

University of Wyoming, 1998

Research Interests: Signal Processing, Array Processing, Time-frequency Analysis

**Sanjay Karmakar, Ph.D.**

University of Colorado, Boulder 2012

Research Interests: Wireless Communications, Information Theory, Coding for MIMO Systems

**Rajesh G. Kavasseri, Ph.D.**

Washington State University, 2002

Research Interests: Power Systems, Nonlinear Dynamics, Renewable Energy resources

**Samee U. Khan, Ph.D.**

University of Texas-Arlington, 2007

Research Interests: Optimization, Robustness, and Security Of: Cloud, Grid, Cluster and Big Data Computing, Social Networks, Wired and Wireless Networks, Power Systems, Smart Grids, and Optical Networks.

**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

**Mark Schroeder, Ph.D.**

University of Texas, Austin, 1999

Research Interests: Biomedical Engineering

**Scott C. Smith, Ph.D.**

University of Central Florida, 2001

Research Interests: Asynchronous Logic, VLSI, Computer Architecture, Embedded Systems

**Sudarshan Srinivasan, Ph.D.**

Georgia Institute of Technology, 2007

Research Interests: Computer Engineering

**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

**Jinhui Wang, Ph.D.**

University of Rochester and Beijing University of Technology, 2006

Research Interests: VLSI, Power Management for SoC and Microprocessor, Novel Memory Design, CAD Methodologies in VLSI

**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