Magnetosphere, phenomena of the ionosphere and plasma discharges, waves in plasmas, interactions of fields and matter. Specialties: electromagnetic waves.

Mark Golkowski, PhD, Assistant Professor
Specialties: measurements and characterization, device modeling, VLSI.

Hamid Fardi, PhD, Professor
Specialties: solid state electronics, nondestructive evaluation, processing, mathematical modeling, imaging, signal and image processing.

Fernando Mancilla-David, PhD, Assistant Professor
Specialties: electromagnetic and medical physics, applied electromagnetics and electromagnetic imaging, signal and image processing, mathematical modeling and simulation, pattern recognition, nondestructive evaluation.

Youn Y. Deng, PhD, Assistant Professor
Specialties: biomedical imaging and medical physics, applied electromagnetics and electromagnetic imaging, signal and image processing, mathematical modeling and simulation, pattern recognition, nondestructive evaluation.

Miloje (Mike) Radenkovic, PhD, Assistant Professor
Specialties: electric machine design, energy conversion system applications.

Jeffrey Selman, MS, Senior Instructor
Specialties: computer architecture, embedded system design and fault tolerance, software (programming languages, parallel processing, compilers), scientific computation (high performance computing).

Robert Godlke, MS, Senior Instructor
Specialties: system design methodology, microprocessor-based systems, real-time software design, digital and embedded systems, and their application to robotic systems.

Carl Jakob, PhD, Professor
Specialties: electrical and magnetic fields and waves.

Tao (Che Feng) Lai, PhD
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The Department of Electrical Engineering offers graduate programs with the following areas of emphasis:

- Biomedical Photonics
- Computer Engineering and Embedded Systems
- Electromagnetic Fields, Waves, and Optics
- Energy and Power Systems
- Microelectronics and VLSI
- Signal Processing and Communication Systems
- System and Control Theory

**What are the admissions requirements?**

Interested students with questions may contact members of the Department of Electrical Engineering Graduate Committee by calling 303-556-2872.

Applicants who are U.S. citizens or permanent residents who apply for admission through the Department of Electrical Engineering, University of Colorado Denver, Campus Box 110, P.O. Box 173364, Denver, CO 80217-3364; telephone 303-556-2872; fax 303-556-2383. Applicants who are not citizens or permanent residents of the United States should apply through the University of Colorado Denver, Office of International Students. They may be required to take or repeat certain undergraduate courses before their admission, and may be required to receive approval before registering for any class in electrical engineering. Students are expected to plan a program of study in consultation with the electrical engineering faculty advisor(s) during the first semester of study and submit their plans to the department for approval. The MSE major advisor must be a full-time graduate faculty member in UCD's Department of Electrical Engineering.

### What are the degree requirements?

**Master of Science (MS) Program**

The Department of Electrical Engineering requires a candidate to complete — within a seven-year period — an approved program of study consisting of at least 30 semester hours, maintaining a grade point average of 3.0 or higher. There is no specific curriculum for the MS degree except for a breadth requirement, and the student, with the assistance of his/her Advisory Committee, is free to choose any combination of courses. Skill-based programming language courses will not count toward the total graduate credits needed for the MSE degree. Students must meet the requirements of their department or the MSE as a whole. Students who have a lesser degree in electrical engineering may be required to repeat certain courses from undergraduate study in consultation with the electrical engineering advisor(s) during the first semester of study and submit their plans to the department for approval. The MSE major advisor must be a full-time graduate faculty member in UCD's Department of Electrical Engineering.

**Master's Thesis, requires a minimum of 24 credit hours of graduate coursework and 6 credit hours of master's thesis work.**

**Master's Project, requires a minimum of 27 credit hours of graduate coursework and 3 credit hours of master's project work.**

**Master of Engineering (MEng) Program**

A qualified student may pursue a Master of Engineering degree through the Department of Electrical Engineering. This broad-based degree program is designed for students who want to further their education in and beyond electrical engineering by taking up to half of their courses in other areas of engineering as well as in related areas such as management, public policy, environmental science, or computer science. A minimum of 30 semester hours of academic work acceptable to the Advisory Committee (within the rules established by the College of Engineering and Applied Science) are required for the Master of Engineering degree. At least 15 of those hours must be electrical engineering courses at the 5000 level or above, and must be taken through UCD's Department of Electrical Engineering. As many as 15 credit hours can be taken outside of engineering, including 3 credits of Master of Engineering Project. The project should cover some area of creative investigation, may relate directly to the student's professional work, and must be defended orally before the Advisory Committee.

**Doctor of Philosophy (PhD) Program**

A PhD in Electrical Engineering is available through the University of Colorado at Boulder. The Department of Electrical Engineering, UCD graduate faculty may serve as research advisors by individual arrangement.

**UCD Electrical Engineering Courses**

**Computer Engineering and Embedded Systems**

ELEC 5501-3 Microprocessor-based Design

ELEC 5511-3 Hardware/Software Interface

ELEC 5521-3 Design and Test of Digital Systems

ELEC 5593-3 Advanced Computer Architecture

ELEC 5723-3 High-Performance Computer Architecture

**Electromagnetic Fields, Waves, and Optics**

ELEC 5133-3 Electromagnetic Radiation and Antenna

ELEC 5233-3 Advanced Electromagnetic Fields

ELEC 5687-3 Optical Communication Systems

ELEC 5697-3 Optical and Spatial Information Processing

ELEC 5832-3 Fundamentals and Application of Plasma Energy and Power Systems

ELEC 5104-3 Electric Drive Systems

ELEC 5174-3 Power Electronic Systems

ELEC 5184-3 Power Systems Analysis

ELEC 5194-3 Power Systems Operation and Control

ELEC 5774-3 Power Systems Dynamics and Protection

ELEC 5802-3 Advanced Electric Drive Systems

ELEC 5806-3 Substation Engineering Design

ELEC 5808-3 Renewable Energy Systems

ELEC 5813-3 Energy Systems Planning

ELEC 5821-3 Advanced Power Electronic Systems

**Microelectronics and VLSI**

ELEC 5005-3 VLSI Device Modeling

ELEC 5023-3 Device Electronics

ELEC 5455-3 Numerical Analysis of Semiconductor Devices

ELEC 5522-3 VLSI System Design

ELEC 5555-3 VLSI Circuit Simulation

**Signal Processing and Communication Systems**

ELEC 5248-3 Digital Communication Systems

ELEC 5249-3 Space Communication Systems

ELEC 5252-3 Computer Communication Networks

ELEC 5551-3 Pattern Recognition

ELEC 5617-3 Noise and Random Processes

ELEC 5657-3 Digital Signal Processing

ELEC 5667-3 Adaptive Signal Processing

ELEC 5667-3 Detection and Estimation of Signals from Noise

ELEC 5667-3 Wavelet Theory and Applications

**System and Control Theory**

ELEC 5230-3 Advanced Linear Systems

ELEC 5456-3 Nonlinear Control Systems I

ELEC 5466-3 Introduction to Modern Control Theory

ELEC 5546-3 Sampled-Data and Digital Control Systems

ELEC 5566-3 Adaptive Control System Design

ELEC 5567-3 Optimal Control Systems

ELEC 5586-3 Modeling and System Identification

ELEC 5496-3 Robust Control

**Selected Math Courses**

ELEC 5210-3 Optimization Methods in Engineering

ELEC 5320-3 Methods of Engineering Analysis

**Other Courses**

ELEC 5290-3 Statistical Quality Control