

# Electrical Engineering M.S., Ph.D.

## What are the requirements for the Electrical Engineering program?

**M.S. Degree - Thesis Track:** Each student is required to take 45 units consisting of:

- At least 15 units in one of the four core areas of emphasis: Photonics and Electronics, Signal Processing and Communications, Remote Sensing, or Nanotechnology.
- At least 25 units of Electrical Engineering graduate courses
- At most 10 units of independent study (EE 297, EE 299). Completion of a Master's Thesis is required for the Master's degree

**M.S. Degree - Project Track:** Each student is required to take 40 units consisting of:

- At least 15 units in one of the four core areas of emphasis.
- At least 25 units of Electrical Engineering graduate courses.
- At most 5 units of Master's Project (EE 296). Completion of a Master's Project is required for the Master's degree

**Ph.D. Degree:** Each student is required to take 50 units consisting of:

- At least 20 units in one of the four core areas of emphasis: Photonics and Electronics, Signal Processing and Communications, Remote Sensing, or Nanotechnology.
- At least 30 of Electrical Engineering graduate courses
- At most 10 units of independent study (EE 297, EE299).

At the end of the first year, students admitted to the PhD program must take a written exam covering basic knowledge in Electrical Engineering. This oral examination is a defense of the student's thesis prospectus and a test of the students knowledge in advanced technical areas of relevance to the dissertation topic. The Ph.D. dissertation must show the results of in-depth research, be an original contribution of significant knowledge to the student's field of study and include material worthy of publication.

## What salary (on top of tuition and fees) do first-year Graduate Student Researchers in your program earn?

Our GSRs earn between \$5,400-5,900 per quarter.

## When are graduate applications due for your program?

Ph.D. Applications Due: January 3rd

M.S. Applications Due (Silicon Valley & UCSC Campus):

Fall Quarter - June 1st

Winter Quarter - November 1st

Spring Quarter - February 1st

## Who can I contact for more information?

**Hamid Sadjadpour, Graduate Program Director**

(831) 459-1483, hamid@soe.ucsc.edu

**Emily Gregg, Graduate Student Adviser**

(831) 459-2576, egregg@soe.ucsc.edu



# Electrical Engineering Faculty

**Benjamin Friedlander** Digital communications, wireless communication system, array processing, adaptive signal processing

**Michael Isaacson** Co-Director of the Center for Sustainable Energy and Power Systems, Nano- and microfabrication technology and applications to biomedical and diagnostic devices, nanocharacterization of materials with emphasis on the development of microscopy tools, novel modes of imaging, electron and light optics. Renewable energy systems, STEM education

**Alyson "Allie" Fletcher** Statistical signal processing, information theory, computational neuroscience.

**Gretchen Kalonji** Symmetry constraints on the structure and properties of crystalline defects, phase transformations and microstructural evolution, atomistic computer simulation techniques applied to materials, innovations in science and engineering education, new models for multinational collaboration in research and education

**Sung-Mo "Steve" Kang** Low-power, high-speed VLSI circuit design and synthesis, RF circuits, biological circuits, mixed technology, mixed signal CAD

**Nobuhiko Kobayashi** Science Director of Advanced Studies Laboratories, UCSC and NASA Ames Research Center, Physics and chemistry of complex functional materials, group III-V compound semiconductor nanometer-scale structures and devices, mixed oxide nanometer-scale structures and devices, tailored nano-micrometer-scale hybrid semiconductor structures for energy conversion devices and advanced electronics

**Joel Kubby** Micro-Electro-Mechanical-Systems (MEMS), adaptive optics (AO), optical-MEMS, bio-MEMS, bio-imaging, AO microscopy, AO astronomy signal, image, and video processing, computer vision; modeling and inverse problems in imaging, detection and estimation theory

**Ken Pedrotti** Integrated circuit design for communications, analog electronics, radio frequency integrated circuits, low-phase-noise oscillators, frequency synthesis, VLSI clock distribution, optical communications, high-speed electronics for lightwave systems, devices for all optical networking and imaging

**Arthur Ramirez** Experimental materials physics encompassing a broad range of systems including semiconductors, superconductors, magnets, thermoelectrics, and dielectrics, research that connects materials and devices, with a focus on oxides and organics, many-body physics that arises from geometrical frustration of low energy degrees of freedom, techniques include ultra-low temperatures and high magnetic fields, thermodynamic and transport measurements, defect spectroscopy, and device characterization

**Hamid R. Sadjadpour** Wireless communication systems, network information theory and scaling laws, performance analysis of wireless and social networks, routing and MAC protocol design for wireless networks

**Holger Schmidt** Director of the W.M. Keck Center for Nanoscale Optofluidics, Optofluidics, atom photonics, hollow-core photonics for biomedicine and quantum optics, nano-magnetism, nano-magneto-optics, single-particle spectroscopy, ultrafast optics

**John Vesecky** HF radar design and construction and observation of ocean surface winds, waves and currents with applications to coastal and deep water ocean processes, project MEDSAT

**Donald Wiberg** Control systems, Kalman filtering, system parameter estimation, adaptive optics for large telescopes, and biomedical system modeling

**Ali A. Yanik** Nanoplasmonics & Metamaterials. Lab-on-Chip Systems: Optofluidic BioNEMS, Nanofluidics & Label Free BioSensors. Nanospectroscopy: Plasmonic NanoAntennas & Single Molecule Vibrational Dynamics. Rare Cell Isolation & Single Cell Analysis: Circulating Tumor Cells, Plasmonic NanoTweezers & Phononic Crystals for Flow Cytometry. Nanofabrication, Soft Lithography & Biopatterning. Nanoelectronics, Spintronics & Thermoelectricity

