

Electrical Engineering

About the Program

- By talking to National Sun Yat-sen University (NSYSU) faculty and advisors apply to the Master of Science (M.S.) or Master of Engineering (M.E.) program in Electrical Engineering at the University of South Carolina (USC), USA for admission
- Get conditionally admitted
- Complete the eligibility requirements for full degree admission
 - Complete 12 credit hours of coursework at the 500 level (4 courses) within the first two semesters of study at USC
 - All academic credits earned at USC may be transferred to NSYSU for completion of the student's B.S. in Electrical Engineering degree
 - Once the student receives their B.S. degree from NSYSU, they will be fully admitted to the graduate program at USC
 - Up to 12 credit hours of the above-mentioned coursework could be applied to M.S. or M.E. program
- Master of Science degree requirements
 - 24 credit hours of course work; 6 thesis hours required
- Master of Engineering degree requirements
 - 30 credit hours of course work; no thesis

How to Apply

<https://www.applyweb.com/uscgrad/index.ftl>

Admission Requirements

- TOEFL(Minimum score of 80), IELTS(Minimum score of 6.5) or Duolingo(only through 2024-25 application cycle. Minimum score 115) scores
- Official Transcripts
- Curriculum Vitae or Resume
- Personal Statement
- At least 2 letters of recommendation
- Contact the Graduate Director about waiver of application fees Fall 2024 and Spring 2025 application fees are waived by the Graduate school

NSYSU and USC Joint Graduate Program

Electrical Engineering

Program Contact

Jenny Balestrero
Graduate Coordinator
balestrj@cec.sc.edu
(803) 777-4195

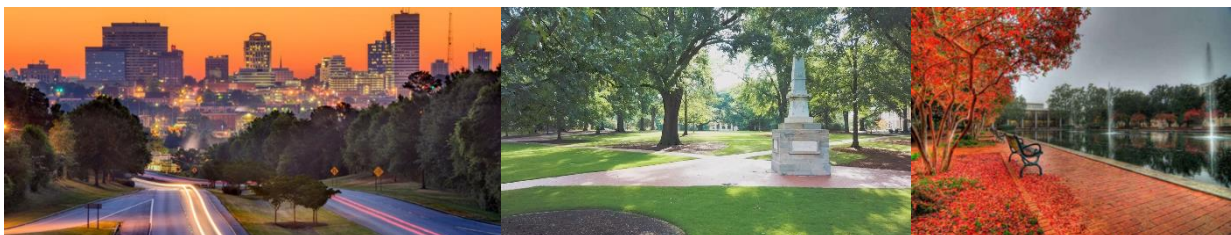
Guoan Wang
Graduate Director
gwang@cec.sc.edu
(803) 777-6303

Program Strengths

- World-class Research in Focused Areas
 - Communications and Electromagnetics
 - Decision and Control
 - Electronic Materials and Devices
 - Power and Energy Systems
- Highly Ranked Program
 - Ranked #10 in the 2010 National Research Council
 - Millions of dollars of research grants from various agencies
- Small Class-size Teaching

About the University

- Founded in 1801, a Public Research University in Columbia, SC
- R1: Doctoral Universities with Highest Research Activity
- Flagship University in the State of South Carolina with over 350 programs and has total enrollment of over 35,000 on the Columbia campus



Electrical Engineering

Our Faculty

Iftikhar Ahmad

Electronic Materials and Devices: Ultra-wide bandgap (UWBG) semiconductor; MOCVD growth of UWBG semiconductors, processing of grown device structures to electronics, and photonic devices for application in health/hygiene and sensing

Mohammad Ali

Communications and Electromagnetics: conformal and reconfigurable antennas, metamaterials, , MIMO (Multiple Input Multiple Output) and mmWave antennas, wireless power transfer, and wireless sensing/diagnostics.

Kristin Booth

Power and Energy Systems: grid modernization and optimization, EVs

MVS Chandrashekhar

Electronic Materials and Devices: extreme electronic materials synthesis and devices for optoelectronics, electric vehicles and sensing applications

Yinchao Chen

Communications and Electromagnetics: signal integrity for high-speed circuits

Roger A. Dougal

Power and Energy Systems: DC microgrids, power electronics, hybrid power sources, software tools for design and analysis of systems involving multi-domain energy flows, naval and marine energy systems

Krishna Mandal

Electronic Materials and Devices: photovoltaic solar cells, semiconductor and scintillator crystal growth, radiation detector arrays (x-ray, gamma-ray, & neutron), spectrometer systems for nuclear monitoring, safeguard, and medical imaging, THz sources and detectors

David Matolak

Communications and Electromagnetics: wireless channel modeling, modulation, detection & multiple access for mobile communication systems (V2V, aeronautical, UAV-X), extreme/ultra-reliable communications

Adel Nasiri

Power and Energy Systems: energy conversion, storage, and grid resiliency

Alphan Sahin

Communications and Electromagnetics: broadband mobile communications, visible light communications

Enrico Santi

Power and Energy Systems: power electronics, control of power converter systems, DC microgrids, physics-based modeling of power semiconductor devices, naval and marine energy systems

Grigory Simin

Electronic Materials and Devices: power and microwave wide bandgap semiconductor devices

NSYSU and USC Joint Graduate Program

Electrical Engineering

Herbert L. Ginn III

Power and Energy Systems: the use of power electronics in power systems, advanced power electronics converter control and energy routing in microgrids, and special purpose power systems

Asif W. Khan

Electronic Materials and Devices: micro-devices for power electronics and ultraviolet light emitting diodes using ultra-wide bandgap (UWBG) AlGa_N materials

Guoan Wang (Graduate Director)

Communications and Electromagnetics: reconfigurable RF and microwave circuits and antennas, microwave devices and circuits, micro-electro-mechanical systems, sensors and wireless sensing

Xiaofeng Wang

Decision and Control: complex advanced control systems

Bin Zhang

Decision and Control: prognostics and health management, robotics, intelligent systems and control with applications to unmanned ground/aerial vehicles, li-ion batteries, rotating machinery, and multi-vehicle cooperation



Electrical Engineering

Typical Course List

- **Spring Semester**

- ELCT 510 - Photovoltaic Materials and Devices
- ELCT 521 - Introduction to Microwave Engineering
- ELCT 531 - Digital Control Systems
- ELCT 533 - System Health Management
- ELCT 553 - Electromechanical Energy Conversion
- ELCT 554 - Integration of Photovoltaics in Modern Power Systems
- ELCT 559 - Special Topics in Distributed Energy Resources for Electric Energy Systems
- ELCT 562 - Wireless Communications
- ELCT 574 - Semiconductor Materials and Device Characterization
- ELCT 772 - Advanced Power Electronics
- ELCT 837 - Modern Control Theory
- ELCT 838 - Optimal Control and Estimation
- ELCT 839 - Robust Adaptive Control
- ELCT 861 - Special Topics in Communications and Electromagnetics
- ELCT 862 - Antennas and Radiation
- ELCT 871 - Advances in Semiconductor Devices
- ELCT 874 - Advanced Semiconductor Materials
- ELCT 881 - Advances in Pulsed Power
- ELCT 882 - High-Speed Semiconductor Devices
- ELCT 883 - Power Systems Stability and Control
- ELCT 891 - Selected Topics in Electrical Engineering
- ELCT 897 - Directed Individual Study

NSYSU and USC Joint Graduate Program

Electrical Engineering

- **Fall Semester**

- ELCT 563 - Semiconductor Devices for Power, Communications and Lighting
- ELCT 564 - RF Circuit Design for Wireless Communications
- ELCT 572 - Power Electronic
- ELCT 732 - Radio Propagation & Wireless Channel Modeling
- ELCT 761 - Fundamental Electromagnetics
- ELCT 763 - Semiconductor Device Modeling and Simulation
- ELCT 774 - Advanced Semiconductor Characterization
- ELCT 782 - Power Semiconductor Devices
- ELCT 864 - Microwave Devices and Circuits
- ELCT 870 - Computing Methods for System Simulation
- ELCT 891 - Selected Topics in Electrical Engineering
- ELCT 897 - Directed Individual Study

