

# Electrical & Computer Engineering/CENGR Department

The Department of Electrical and Computer Engineering offers undergraduate- and graduate-level programs and courses in electrical engineering, computer engineering, and associated subfields (e.g., artificial intelligence, cybersecurity, robotics).

Faculty research interests include cybersecurity, defense communications, energy systems, energy resources and the electric power grid, nuclear security, universal radio platforms, sustainable technology, unmanned aircraft system security, and wireless communication. Faculty receive honors for their teaching excellence in student mentoring and learning, as well as sponsored training grants for developing educational pipelines.

To explore all of the department's curricular offerings, click the "Programs" and "Courses" tabs above.

[Department Website](#)

## Programs

COMPEG:BS - Bachelor of Science in Computer Engineering

ECE:PHD - Doctor of Philosophy in Electrical and Computer Engineering

ELEG:MS - Master of Science in Electrical Engineering

IOT:MS - Master of Science in Internet of Things

COMPEG:MS - Master of Science in Computer Engineering

ELEG:BS - Bachelor of Science in Electrical Engineering

IOT:BS - Bachelor of Science in Internet of Things

## Courses

CDA3104 - Introduction to Computer Design

CNT3122 - Sensors for Internet of Things

CNT3143 - Analytics with Cloud Services in ECE

CNT4145 - Sensor IoT Analytics

CNT4149 - Deep Learning in ECE

CNT4153 - Machine Learning in ECE

CNT4165 - Network Protocols for Internet of Things

CNT4188 - Internet of Things Forensics

CNT6144 - Advanced Analytics with Cloud Services in ECE

CNT6150 - Advanced Deep Learning in ECE

CNT6154 - Advanced Machine Learning in ECE

CTS1120 - Fundamentals of Cybersecurity

EEE3394 - Electrical Engineering Science I - Electronic Materials

CIS5208 - Social, Economic, and Policy Aspects of Cybersecurity

CNT3142 - Microcontrollers for Internet of Things

CNT3162 - Wireless Communications for IoT

CNT4147 - Big Data Analytics in ECE

CNT4151 - Data Visualization in ECE

CNT4155 - Python Programming in ECE

CNT4185 - Internet of Things Privacy

CNT5415 - Practical Applied Security

CNT6148 - Advanced Big Data Analytics in ECE

CNT6152 - Advanced Data Visualization in ECE

CNT6156 - Advanced Python Programming in ECE

EEE3303C - Electronics I & Lab

EEE3396 - Introduction to Solid State Devices

## Florida International University

EEE4262 - IoT Design of Embedded Sensing, Network, and Signal Processing  
EEE4304L - Electronics II Lab  
EEE4314L - Integrated Circuits Laboratory  
EEE4393C - Wearable Electronics  
EEE4423 - Introduction to Quantum Computers  
EEE4464 - MEMS II  
EEE4550 - Introduction to Radar Systems  
EEE4750 - Introduction to Image and Video Forensics  
  
EEE4754 - Introduction to Mobile Forensics  
  
EEE4762 - Platform Design and Implementation for IoT Applications  
EEE4775 - Massive Storage and I/O for Big Data Computing  
EEE5425 - Introduction to Nanotechnology  
  
EEE5515 - Signal Detection Theory  
EEE5557 - Principles of Modern Radar  
EEE5772 - Intelligent Robotics, Vision, and Controls  
  
EEE6285 - Biosignal Processing I  
EEE6312 - Advanced Electronic Systems II  
EEE6318 - Semiconductor Material and Device Characterization  
EEE6395 - Superconductivity  
EEE6399C - Electronic Prop Mat  
EEE6434 - Colloidal and Nanoscale Engineering  
  
EEE6502 - Digital Signal Processing  
EEE6525 - Advanced Sensor Signal Processing  
EEE6751 - Advanced Image and Video Forensics  
  
EEE6755 - Advanced Mobile Forensics  
  
EEE6765 - Advanced Embedded Systems Design and Implementation for IoT Applications  
  
EEE6767 - Advanced Embedded Programming for IoT Sensing, Network, Control, and Applications  
EEL3110C - Circuit Analysis and Lab  
EEL3135 - Signals And Systems  
  
EEE4304C - Electronics II and Lab  
  
EEE4314 - Integrated Circuits and Systems  
EEE4343 - Introduction to Digital Electronics  
EEE4421C - Introduction to Nanofabrication  
EEE4463 - MEMS I  
EEE4510 - Introduction to Digital Signal Processing  
EEE4717 - Introduction to IoT Security  
EEE4752 - Introduction to Network Forensics and Incident Response  
EEE4761 - Embedded Systems Design and Implementation for IoT applications  
EEE4763 - Embedded Programming for IoT Sensing, Network, Control, and Applications  
EEE5348 - Digital Electronics  
  
EEE5427C - Advanced Nanofabrication of Electronic Devices  
EEE5543 - Random Signal Principles  
EEE5718 - IoT Security and Privacy  
EEE5853 - Advanced AI and Neuromorphic Hardware: Design and Security  
EEE6311 - Advanced Electronic Systems I  
EEE6315 - Advanced Solid-State Electronics  
EEE6332 - Thin Film Engineering  
  
EEE6397 - Semiconductor Device Theory  
EEE6429 - Advanced Quantum Computers  
EEE6466 - Microsystems and MEMS: Chem/Bio Sensors and Microfabrication  
EEE6516 - Signal Estimation Theory  
EEE6719 - Cyberphysical Systems Security  
EEE6753 - Advanced Network Forensics and Incident Response  
EEE6764 - Platform Design, Testing, and Validation for IoT Applications  
EEE6766 - Algorithm Design and Firmware Implementation for IoT Sensing, Network Connectivity, Closed-Loop Control  
EEL2880 - C Programming for Embedded Systems  
  
EEL3120 - Introduction to Linear Systems in Engineering  
EEL3200 - Electrical Energy Systems

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EEL3370 - C++ Programming for Embedded Systems

EEL3514 - Communication Systems

EEL3580 - Introduction to Wireless Communication Systems

EEL3664 - Introduction to Autonomous Systems

EEL3712L - Logic Design I Lab

EEL4015 - Electrical Design in Buildings I

EEL4063 - Introduction to Business Decisions

EEL4140 - Filter Design

EEL4213 - Power Systems I

EEL4214 - Power Systems II

EEL4241 - Power Electronics

EEL4413 - Wave-Propagation for Wireless Communication

EEL4461C - Antennas

EEL4515 - Advanced Communication Systems

EEL4611 - Control Systems II

EEL4658 - Industrial Control Systems

EEL4689 - Hardware and Embedded Systems Security

EEL4730 - Programming Embedded Systems

EEL4740 - Embedded Computing Systems

EEL4746 - Microcomputers I

EEL4747 - Reduced Instruction Set Computing Processors

EEL4793 - Special Topics in Computer Engineering

EEL4804 - Introduction Malware Reverse Engineering

EEL4808L - Ethical Hacking and Countermeasures Lab

EEL4920 - Senior Design I: Ethics, Communications, and Constraints

EEL4930 - Special Topics in Electrical Engineering

EEL4949 - Co-Op Work Exp

EEL5076C - Emerging Hybrid Energy System Engineering

EEL5171 - Advanced Systems Theory

EEL5260 - Power System Optimization

EEL5275 - Power Systems Protection

EEL5285C - Sustainable and Renewable Energy Sources and Their Utilization

EEL3472 - Electrical Engineering Science II

EEL3514L - Communication Systems Lab

EEL3657 - Control Systems I

EEL3712 - Logic Design I

EEL4005 - Measurements and Instrumentation in Electrical Engineering

EEL4062 - Engineering Business Plan Development

EEL4090C - Technical Sales for Engineers

EEL4212 - High Voltage Engineering

EEL4213L - Energy Conversion Lab

EEL4215 - Power Systems III

EEL4410 - Introduction to Fields and Waves

EEL4421 - Introduction to RF Circuit Design

EEL4495 - Introduction to Applied Electromagnetics for Safety Analysis

EEL4583 - Basics of RF Systems

EEL4611L - Systems Laboratory

EEL4664 - Sensors, Perception, and Robotic Manipulation

EEL4709C - Computer Design

EEL4734 - Embedded Operating Systems

EEL4740L - Embedded Computing Systems Laboratory

EEL4746L - Microcomputers I Lab

EEL4747L - Microcomputers II (RISC) Lab

EEL4802 - Introduction to Digital Forensics Engineering

EEL4806 - Ethical Hacking and Countermeasures

EEL4831 - Embedded GUI Programming

EEL4921C - Senior Design II: Project Implementation

EEL4933 - Engineering Entrepreneurship

EEL5009 - Concepts in Electrical and Computer Engineering

EEL5125 - High Voltage Engineering

EEL5259 - Modeling and Analysis of Modern Distribution Grids

EEL5270 - Electrical Transients in Power Systems

EEL5278 - Smart Grid Cyber Security and Intelligent Electronic Devices

EEL5426 - RF Circuit Design

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EEL5427C - Electromagnetic Modeling of Radio Frequency (RF) Structures

EEL5467 - Antennas for Wireless Communication Systems

EEL5500 - Digital Communication Systems I

EEL5669 - Autonomous Systems and Controls

EEL5725 - Hardware Description Languages (VHDL or Verilog)

EEL5757 - Real-Time Digital Signal Processing Implementations

EEL5807 - Advanced Ethical Hacking

EEL5813 - Neural Networks

EEL5856 - Advanced Hardware and Embedded Systems Security

EEL5935 - Advanced Special Topics

EEL5945 - Electrical and Computer Engineering Teaching Practicum

EEL6141 - Advanced Network Analysis

EEL6219 - Electric Power Qual

EEL6261 - Power Systems Engineering

EEL6292 - Power Systems Economics and Markets

EEL6437C - Advanced Active Microwave Circuits

EEL6439 - RF System Design for Wireless Communications

EEL6468 - Adaptive and Smart Antennas

EEL6509 - Digital Communications by Satellite

EEL6538 - Introduction to Electronic Warfare

EEL6619 - Industrial Control System Security

EEL6681 - Fuzzy Systems Design

EEL6751 - Wavelet Theory Applied to Signal Processing

EEL6787 - Network Security

EEL6803 - Advanced Digital Forensics

EEL6812 - Adv In Neural Nets

EEL6825 - Pattern Recognition

EEL5437 - Microwave Engineering

EEL5482 - Fields and Waves Engineering

EEL5501 - Digital Communication Systems II

EEL5718 - Computer-Communication Network Engineering

EEL5741 - Advanced Microprocessor Systems

EEL5799 - Advanced Concepts in Computer Engineering

EEL5809 - Advanced Concepts in Electrical and Computer Engineering

EEL5820 - Digital Image Processing

EEL5914 - Advanced Research Methods in Engineering and Computing

EEL5941 - Graduate Electrical and Computer Engineering Internship

EEL6020 - Numerical Analysis of Electrical Devices

EEL6167 - VLSI Design

EEL6254 - Power Systems Reliability

EEL6267 - Application of Intelligent Systems to Power System Operations

EEL6297 - Introduction to Smart Grid and its Applications

EEL6438 - RF and Microwave Photonics

EEL6463 - Antenna Theory and Design

EEL6479 - Electromagnetic Interference and Electromagnetic Compatibility

EEL6536 - Spectral Analysis

EEL6615 - Modern Control Systems, Theory, and IoT Applications

EEL6673 - Cyber-Physical Systems Identification and IoT Applications

EEL6726 - Advanced VLSI Design

EEL6758 - Engineering Design of Microprocessor Based Operating Systems

EEL6795 - Power Aware Computing

EEL6805 - Advanced Malware Reverse Engineering

EEL6821 - Computer Vision

EEL6836 - Computer Visualization of Brain Electrical Activity

## Florida International University

EEL6894 - Real-Time Computing and Applications

EEL6916 - Graduate Project

EEL6971 - Research Master's Thesis

EEL7980 - Ph.D. Dissertation

EGN2271 - Introduction to Circuits and Electronic Hardware

ESI4244 - Evaluation of Engineering Data II

TCN2720 - Introduction to Internet of Things

TCN4211 - Telecommunication Networks

TCN4940 - Senior Project

TCN5271 - Advanced IoT Communications and Networking

EEL6905 - Individual Work

EEL6931 - Special Topics in Electrical and Computer Engineering

EEL7910 - Advanced Research

EGN1002 - Engineering Orientation

ESI3215 - Evaluation of Engineering Data I

OSE6492 - Nanophotonics

TCN4081 - Telecommunication Network Security

TCN4212 - Telecommunication Network Analysis and Design

TCN5155 - Wireless Communications with Multimedia Applications

TCN6276 - Antennas for Wireless and Body-Centric Communications