Electrical & Computer Engineering
master’s degree programs offered through UF EDGE

What is the University of Florida EDGE Program?
EDGE enables engineering professional, military members, and students worldwide to participate in courses, certificates, and degree programs from the UF College of Engineering. Engineers can earn a master’s degree at a time and place convenient to them through programs from UF EDGE. As an EDGE student, you view the same course lectures, complete the same assignments and exams as UF campus based engineering students. Since admissions, lecture materials, and assignments are the same for UF EDGE students and campus students, you will earn the same academic credentials participating as a distance student as you would participating on campus, there is no distinction between UF transcripts of online (EDGE) and campus students.

Learn Anywhere, Anytime
UF EDGE brings this exciting learning experience to a worldwide audience of place-bound engineers through a variety of distance learning technologies accessible at the workplace, home and other sites.

EDGE courses are delivered as streaming and downloadable video formats. These are the same courses instructed by University of Florida College of Engineering faculty on campus, taught in EDGE studio classrooms. Courses are supplemented by additional online course materials and interaction.

No campus visits or travel are required for EDGE participation. Degree programs can be completed in as little as 24 months. Distance master’s degree program students can take as many courses each semester as their jobs and family schedules permit (as long as degrees are completed within the UF graduate school time limit, currently 7 years). The EDGE Program can work with companies or the military that support direct payment of tuition for employees.

UF EDGE brings the classroom to you with online, worldwide course delivery!

"I always wanted to pursue an advanced engineering degree, but with my career as a tactical airlift pilot for the Air Force, I didn't think I'd be able to. Having an all-online degree program allows me to take my education with me on the road. My professors have been knowledgeable, accessible, and approachable. The EDGE staff has gone out of their way to ease my transition back into the academic world, and they stand ready at every turn to help me in whatever way they can. I highly recommend this program to both military members as well as working professionals - UF EDGE is exactly what you're looking for!" - Thom Klein, Electrical & Computer Engineering

Electrical & Computer Engineering Degree Program Admission
Admission for master’s degrees is coordinated by the Electrical & Computer Engineering department.

Applicants must have:

- A bachelor of science degree in electrical engineering with a cumulative undergraduate GPA of at least 3.0 on a 4.0 scale

- Satisfactory scores on the general portion of the Graduate Record Examination (GRE) with a minimum score of 1200. A GRE Analytical Writing Score of 3.5 is also required.
For international students whose first language is not English, a minimum score of 550 on the Test of English as a Foreign Language (TOEFL) is required to be excused from English language course requirements.

The Master's degree programs offered through UF EDGE are non-thesis. A non-thesis Master's degree in Electrical & Computer Engineering (ECE) requires the completion of 30 total credits (10 courses). A minimum of 21 ECE coursework credits are required for the degree. Up to nine credits of graduate level course work in other UF engineering departments can be counted toward the master's degree as elective credits. A minimum cumulative GPA of 3.0 is required for graduation. Typical course offerings for the ECE department are listed below (a distance student would work with the department to make an approved ‘program of study’ of 30 total credit for a master’s degree which can be from the courses below, or with up to 9 credits from other EDGE courses that are offered from a different department or are part of an EDGE graduate specialty certificate).

**Want to begin now, but the degree admission date has passed for next semester?**
Qualified students can begin classes by registering as a ‘non-degree’ student for your first semester to start faster. If you meet admission criteria for the master’s degree program and earn a B or better in your non-degree status courses, you can transfer them in to count towards your degree program. Consult your departmental graduate advisor about procedures to ensure you take correct non-degree status courses, and for transferring non-degree credits earned to a regular degree program.

**ECE EDGE Courses Emphasizing ‘Computer Engineering’**

EEL 5718 Computer Communications (3 credits)
Design of data communication networks; modems, terminals. Error control, multiplexing, message switching, and data concentration.

EEL 5764 Computer Architecture (3 credits)
Fundamentals in design and quantitative analysis of modern computer architecture and systems, including instruction set architecture, basic and advanced pipelining, superscalar and VLIW instruction-level parallelism, memory hierarchy, storage, and interconnects

EEL 5934 Reconfigurable Computing (3 credits)
Introductory graduate level concepts in reconfigurable computing based upon advanced technologies in field-programmable logic devices. Topics include general concepts, device architectures, design tools, metrics and kernels, system architectures, and application case studies.

EEL 6562 Image Processing/Computer Vision (3 credits)
Pictorial data representation; feature encoding; spatial filtering; image enhancement; image segmentation; cluster seeking; two-dimensional Z-transforms; scene analysis; picture description language; object recognition; pictorial database; interactive graphics; picture understanding machine

EEL 6591 Wireless Networks (3 credits)
Design and analysis of wireless networks including channel characteristics, physical layer, cellular concepts, multiple access control protocols, FEC and ARQ protocols, resource allocations, and wireless standards.

EEL 6763 Parallel Computer Architecture (3 credits)
Advanced architecture emphasizing design and quantitative analysis of parallel architecture and systems, including theory, hardware technologies, parallel and scalable architectures, and software constructs
EEL 6825 Pattern Recognition and Intelligent Systems (3 credits)
Decision functions; optimum decision criteria; training algorithms; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence.

EEL 6935 Embedded Systems (3 credits)
An embedded system is any computing system other than traditional computer systems. Embedded system examples include set-top boxes, digital cameras, toaster ovens, alarm systems, automotive systems, cell phones, etc. Embedded systems is one of the fastest growing areas in computing and one of the most exciting given the vast variety of applications, many of which have high impact on human life such as improved pace makers and artificial limbs.

ECE EDGE Courses Emphasizing ‘Devices’
EEE 5400 Future of Microelectronics Technology (3 credits)
Survey of state-of-the-art microelectronics technology and prospects for future technologies. Nanoscale MOSFETs, strained Si, high-K gate dielectrics, carbon nanotubes, molecular electronics, and single-electron devices

EEE 5320 Bipolar Analog IC Design (3 credits)
Amplified states, active loads, output stages, op-amps, feedback, frequency response, compensation.

EEE 5322 VLSI Circuits and Technology (3 credits)
Introduction to VLSI circuit technology and manufacturing. Fabrication, device models, layout, parasitic, and simple gate circuits.

EEE 6321 MOS Analog IC Design (3 credits)
Design of analog circuits in CMOS IC technology, MOS switches, MOS op amp circuits, circuit simulation using SPICE.

EEE 6374 RF Circuits and Systems (3 credits)
Requirements for RF integrated circuits. Design and implementation. Interdependence of RF circuit performance with devices, parasitics, packages, and process technology.

ECE EDGE Courses Emphasizing ‘Electronics’
EEE 5544 Noise in Linear Systems (3 credits)
Passage of electrical noise and signals through linear systems. Statistical representation of random signals, electrical noise, and spectra.

EEL 5525 Foundations of Digital Signal Processing (3 credits)
Analysis and design of digital filters for discrete signal processing; spectral analysis; fast Fourier transform.

EEL 6509 Wireless Communications (3 credits)
Introduction. Satellite and cellular systems, propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EEL 6535 Digital Communications (3 credits)
Digital modulation techniques, analysis of digital communication systems in presence of noise; optimum principles, synchronization, equalization.
Sample Program of Study for:
Master of Science Degree in Electrical Engineering
completed through the EDGE Program

10 courses; 30 credits for master’s degree; non-thesis, no campus visits required

(Note: this is just a typical sample program of study, course substitutions can be made to tune the degree program to your education needs by making a ‘program of study’ with an academic advisor, so if you need a few computer or systems courses, etc. there is flexibility and room to substitute a few electives)

EEE 5320 Bipolar Analog IC Design (3 credits)
Amplified states, active loads, output stages, op-amps, feedback, frequency response, compensation.

EEL 5544 Noise in Linear Systems (3 credits)
Passage of electrical noise and signals though linear systems. Statistical representation of random signals, electrical noise, and spectra.

EEE 6321 MOS Analog IC Design (3 credits)
Design of analog circuits in CMOS IC technology, MOS switches, MOS op amp circuits, circuit simulation using SPICE

EEL 6535 Digital Communications (3 credits)
Digital modulation techniques, analysis of digital communication systems in presence of noise; optimum principles, synchronization; equalization.

EEL 5525 Foundations of Digital Signal Processing (3 credits)
Analysis and design of digital filters for discrete signal processing; spectral analysis; fast Fourier transform.

EEL 5718 Computer Communications (3 credits)
Design of data communication networks; modems, terminals. Error control, multiplexing, message switching, and data concentration

EEE 5322 VLSI Circuits and Technology (3 credits)
Introduction to VLSI circuit technology and manufacturing. Fabrication, device models, layout, parasitic, and simple gate circuits.

EEL 6509 Wireless Communication (3 credits)
Introduction to Wireless, Satellite and cellular systems, propagation, modulation techniques, multiple access techniques, channel coding, speech and video coding, and wireless computer networks.

EEL 6591 Wireless Networks (3 credits)
Design and analysis of wireless networks including channel characteristics, physical layer, cellular concepts, multiple access control protocols, FEC and ARQ protocols, resource allocations, and wireless standards.

EEL 6825 Pattern Recognition and Intelligent Systems (3 credits)
Decision functions; optimum decision criteria; training algorithms; unsupervised learning; feature extraction, data reduction; potential functions; syntactic pattern description; recognition grammars; machine intelligence
Want to earn a specialty certificate while working on your master’s degree?
There is room to substitute out up to three elective courses from other UF EDGE offerings, if you want to earn a three course EDGE specialty certificate (http://www.ufedge.ufl.edu/programs/certificates.php ) while working on your master’s degree. To do this you would work with your academic advisor to plan your ‘program of study’ of 10 total courses to count simultaneously for both a master’s degree and certificate!

Who do I contact with questions?
For general questions about the University of Florida EDGE Program, how EDGE works, what to expect as an EDGE student, how distance exam proctoring works, non-degree status to begin soon, etc. Contact the UF EDGE office directly:

Pamela Simon
UF EDGE Student Assistance & Registration
email: phs@ufl.edu
phone: 352-392-9670
www.ufedge.ufl.edu

For questions about the UF Electrical & Computer Engineering (ECE) Curriculum, how to apply for admission to the master’s degree program in the ECE Department, contact the ECE department directly at:

Electrical & Computer Engineering
Department email: office@ece.ufl.edu
phone: 352-392-9758