Electrical Engineering (MSE)

The Master of Science (MS) in Electrical Engineering degree has a thesis option and a non-thesis option. Coursework is offered in areas including computer engineering, systems and controls, communications, digital systems, and electronics. Research opportunities are offered in computer architecture and performance evaluation, multimedia processors. VLSI design and implementation, microwave and antenna engineering, control systems and robotics, networks, and signal and image processing.

Admission Requirements

Apply to the UTRGV Graduate College:

Step #1: Submit a UTRGV Graduate Application at www.applytexas.org. The university application fee of $50 ($100 for International Applicants) can be paid online by credit card or electronic check (in the online application). All application fees are nonrefundable.

Step #2: Register on the UTRGV Recommenders and Document Upload Webpage (www.utrgv.edu/gradupload). This is where you will request recommenders and upload program requirement documents, and where the graduate office will upload your transcripts. If you do not complete this step, we will not be able to process your application.

Step #3: Request your transcripts and other supporting documentation to be mailed to:

The University of Texas Rio Grande Valley
The Graduate College
Marialice Shary Shivers Bldg. 1.158
1201 W. University Drive
Edinburg, TX 78539-2999

Review and submit all Program Requirements:

- Online application at www.applytexas.org. The university application fee of $50 ($100 for International Applicants) can be paid online by credit card or electronic check (in the online application). All application fees are non-refundable.
- Bachelor of Science in Electrical Engineering, Computer Engineering, or similarly named program with content equivalent to an ABET – accredited Bachelor of Science in Electrical Engineering.
- Undergraduate GPA of at least 3.0.
- Official transcripts from each institution attended (must be submitted directly to UTRGV).
- Letter of Intent detailing professional goals and reasons for pursuing the graduate degree.
- Resume.
- GRE General Test. GRE test scores are valid for 5 years.

Additional requirements domestic for applicants who attended foreign universities:

- TOEFL or IELTS Language Proficiency Test with minimum scores: 550 on paper-based, 213 on computer based, or 79 on internet-based for the TOEFL; 6.5 for the IELTS. For additional information, click here.
- English translation of educational records.
- Transcript Evaluation by the Foreign Credentials Service of America (FCSA). For additional information, click here.

Additional requirements for international applicants:

- TOEFL or IELTS Language Proficiency Test with minimum scores: 550 on paper-based, 213 on computer based, or 79 on internet-based for the TOEFL; 6.5 for the IELTS. For additional information, click here.
- English translation of educational records.
- Transcript Evaluation by the Foreign Credentials Service of America (FCSA). For additional information, click here.
- Financial Documentation showing sufficient funds (minimum of $25,000) to cover all expenses (living and academic) for the first year of study. For additional information, click here.
- Immigration documents, including a current copy of your valid passport. For additional information, click here.

Transcripts or any supporting documentation should be sent to:

The University of Texas Rio Grande Valley
The Graduate College
Marialice Shary Shivers Bldg. 1.158
1201 W. University Drive
Edinburg, TX 78539-2999

Program Contact

Program Director: Dr. Hasina Huq.
Phone: (956) 665-2609
E-Mail: hasina.huq@utrgv.edu

Deadlines

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Recommenders and Document Upload Page

Click here to request recommendations and upload documents that are required.

Last Revised February 2015

www.utrgv.edu/grad
Program Requirements

Thesis Option:

Elective Courses in Electrical Engineering 18
18 credit hours of graduate level standard courses in electrical engineering, with approval of graduate advisor. (Standard courses do not include independent study, thesis, internships, transfer courses, or courses in other disciplines)

Elective Courses in a Science or Engineering Discipline 6
6 credit hours of graduate level courses in a science or engineering discipline, with approval of graduate advisor. (May include standard electrical engineering courses as well as independent study, internships, transfer courses, or courses in other disciplines. Does not include thesis.)

Capstone Requirement
Thesis 6
ELEE 7300: Thesis I 3
ELEE 7301: Thesis II 3
Once taken, must be repeated each semester until thesis is successfully defended.
Oral Comprehensive Exam

Total graduate hours for degree: 30

Non-Thesis Option:

Elective Courses in Electrical Engineering 30
30 credit hours of graduate level standard courses in electrical engineering, with approval of graduate advisor. (Standard courses do not include independent study, thesis, internships, transfer courses, or courses in other disciplines)

Elective Courses in a Science or Engineering Discipline 6
6 credit hours of graduate level courses in a science or engineering discipline, with approval of graduate advisor. (May include standard electrical engineering courses as well as independent study, internships, transfer courses, or courses in other disciplines. Does not include thesis.)

Capstone Requirement
Written Comprehensive Exam in three subject areas selected by candidate

Total graduate hours for degree: 36

Course Descriptions

ELEE 6310: Radio Communication Circuits and Systems [3-0]
Principles, analysis, and design of radio frequency and microwave circuits and systems. Subjects include s-parameters, noise generation and noise figure, harmonic and intermodulation distortion, and high frequency active devices; with applications to amplifiers, oscillators and frequency synthesis.

ELEE 6315: Applied Electromagnetics [3-0]
Applications of electromagnetic fields and waves, with subjects varying from semester to semester. Topics could include: electromagnetic compatibility (EMC), electromagnetics in satellite and wireless communications, and electromagnetic measurements. May be repeated for credit as topics vary.

ELEE 6320: Semiconductor Devices [3-0]
Theory and application of advanced semiconductor devices including heterostructures, integrated circuits, semiconductor memories, charge transfer devices and microwave devices.

ELEE 6330: Linear Dynamic Systems [3-0]
Introduction to linear dynamic systems; state-space analysis; stability theory; applications to feedback control; elements of optimal control.

ELEE 6331: Nonlinear Systems [3-0]


ELEE 6335: Advanced Computer Architecture [3-0] Covers trends and measuring and reporting of improvements in computer technology; instruction set principles, hardware techniques for instruction level parallelism (ILP) as applied to reduced instruction set architecture (RISC) such as dynamic scheduling and thread-level parallelism; loop unrolling and enhancing loop level parallelism; memory hierarchy mapping and miss rate reduction techniques and performance calculations; and interconnection networks and clusters related issues. This course is equivalent to CSCI 6335.


ELEE 6347: Image Processing [3-0] This course covers topics in image processing. The course covers vision strategies, perception, color image processing, image segmentation, morphology and texture analysis.

ELEE 6350: Microprocessor System Design and Applications [3-0] Microprocessor design fundamentals, design methods, interfacing, bus architectures, peripherals, embedded applications, development systems, software.

ELEE 6360: High Speed Networks [3-0] Introduction to networking concepts, latest networking architecture and protocols for high-speed communications. Local Area Networks (LANs), Wide Area Networks (WANs), IP/ATM, SONET.


ELEE 6362: Internet Protocols [3-0] This course introduces students to the architecture and the protocols of the Internet. This course focuses on the protocols used by the Internet and investigates how the Internet works and where it will possibly go. Some of the important topics include application protocols, transport protocols, routing protocols, management protocols, quality of service, domain name services and mail services. Basic knowledge of computer networks is required for students taking this course.

ELEE 6372: Parallel and Distributed Systems [3-0] Study of parallel and distributed computing, including models algorithms, languages, compilers, interconnection networks and architectures. Distributed data, formal models of concurrency, protection and security in computer networks. **Prerequisites:** ELEE 6335 or equivalent.

ELEE 6374: Advanced Digital System Design [3-0] Modern logic design methodologies of large digital systems with standard SSI, MSI and LSI,
including CPLD’s and microprocessors. Multilevel digital simulation and hardware language description; principles and techniques of testability design and testing of digital logic circuits.

ELEE 6375: VLSI System Design [3-0]
Fundamentals of VLSI design, VLSI design strategies. Chip design options, design methods, design capture tools and design verification tools. Topics include area-optimization, floor-plan and functional block placement, routing and functional testing for large systems, subsystem design and system design examples.

ELEE 6385: Independent Study [3-0]
Individual research, design, or analysis in advanced topics in electrical and computer engineering, conducted under the direct supervision of a faculty member.

ELEE 6399: Topics in Electrical Engineering [3-0]
Advanced topics of contemporary interest in electrical or computer engineering. May be repeated for credit when topic varies.

ELEE 7300: Thesis I [3-0]
First part of two course sequence.

ELEE 7301: Thesis II [3-0]
Second part of two course sequence.

Prerequisite: ELEE 7300