
College of Engineering

ADMINISTRATIVE OFFICER

Milton R. Bryant, *Dean*

ADMINISTRATIVE STAFF

Shield B. Lin, *Associate Dean*

FACULTY

Cajetan M. Akujuobi, *Electrical Engineering*
John Okyere Attia, *Electrical Engineering*
Paul O. Biney, *Mechanical Engineering*
Ronald D. Boyd, *Mechanical Engineering*
Ing Chang, *Mechanical Engineering*
Kamel H. Fotouh, *Chemical Engineering*
John H. Fuller, *Electrical Engineering*
Jorge F. Gabitto, *Chemical Engineering*
Michael Gyamerah, *Chemical Engineering*
Ziaul Huque, *Mechanical Engineering*
Kelvin K. Kirby, *Electrical Engineering*
Siew T. Koay, *Electrical Engineering*
Robert Lacovara, *Electrical Engineering*
Raghava R. Kommalapati, *Civil Engineering*
Anil A. Kumar, *Electrical Engineering*
Shield B. Lin, *Mechanical Engineering*
Kent Martin, *Computer Science*
Houshang Masudi, *Mechanical Engineering*
James O. Morgan, *Mechanical Engineering*
Irvin W. Osborne-Lee, *Chemical Engineering*
Kwang Paick, *Computer Science*
Ramalingam Radhakrishnan, *Civil Engineering*
K.M.A. Rahman, *Civil Engineering*
Gerald Rambally, *Computer Science*
Matthew Sadiku, *Electrical Engineering*
Charlie L. Tolliver, *Electrical Engineering*
Dhadesugoor R. Vaman, *Electrical Engineering*
Richard T. Wilkins, *Electrical Engineering*
Shuguang Yan, *Computer Science*
Feng-Jen Yang, *Computer Science*
Yonggao Yang, *Computer Science*
Hsiang Y. Yeh, *Civil Engineering*
Yukong Zhang, *Computer Science*
Jianren Zhou, *Mechanical Engineering*

PURPOSE AND GOALS

The graduate Engineering programs are designed to enhance the student's research capabilities and to make the student more competitive in the professional practice of engineering. They are the continuation of the intellectual, scholarly and professional development of the individual producing technological leaders and creative engineers devoted to the discovery, development, and refinement of knowledge and methodologies associated with the various engineering disciplines. Each degree candidate is expected to have demonstrated the highest degree of professional ethics and standards. The College of Engineering provides excellent facilities in support of its graduate programs.

INSTRUCTIONAL ORGANIZATION

The College of Engineering offers the following graduate degree programs:

Programs	Degree Offered
<i>Computer Information Systems</i>	M.S.C.I.S.
<i>Computer Science</i>	M.S.C.S.
<i>Engineering</i>	M.S.ENGR.
<i>Electrical Engineering</i>	M.S.E.E.
<i>Electrical Engineering</i>	Ph.D.

SUPPORTING FACILITIES

Chemical Engineering

The Chemical Engineering Department has research facilities available in the areas of Environmental, Transport Processes, Chemical Conversion, Bioengineering, and general purpose laboratories.

Civil Engineering

The Civil Engineering Department has a Dynamic and Cyclic Loading Equipment Laboratory, Materials Testing Laboratory, and Environmental Laboratory.

Computer Science

The Computer Science Department has a variety of computing facilities, including three MS Windows-based PC labs, a LINUX lab, and a HP UNIX lab.

Electrical Engineering

Research facilities are available in the Advanced Solid State Laboratory, the Power Laboratory, Logic and Digital Design Laboratory, Electronic Laboratory, Analog and Mixed Signal Testing Laboratory, Broadband Communication Laboratory, Digital Signal Processing Laboratory, and General Communication Laboratory. Additional research laboratories exist in the Center for Applied Radiation Research (CARR).

Mechanical Engineering

Research facilities are available in the Thermal Science Research Center, the Future Aerospace Science and Technology Center (FAST) on Lightweight Structural Materials and Processing, Material Testing and Characterization lab, Surface Coating facilities, the Computational Fluid Dynamics Institute, and Computer-Aided Design and Manufacturing facilities.

Environmental Engineering

Research facilities are available in Chemical Engineering and Civil Engineering.

ADMISSION TO PROGRAMS

Master's Programs

The following are admission requirements to the master's programs in the College of Engineering. Students will be awarded graduate degree status admission if they satisfy all the admission requirements.

- 1) Meet the requirements for admission to the graduate school.
- 2) Have an undergraduate degree from an ABET (or equivalent) accredited program.
- 3) Have a cumulative Grade Point Average (GPA) of 3.00 on a 4.00 scale.
- 4) Have a minimum GRE General Test score of 900 (combined verbal and quantitative).
- 5) Have previous educational background in the intended area of study.

Students may be awarded provisional graduate degree status admission if they satisfy the following requirements.

- 1) Have a minimum cumulative Grade Point Average (GPA) of 2.75 on a 4.00 scale.
- 2) Have a minimum GRE General Test score of 700 (combined verbal and quantitative).

Provisional students must petition the Dean of Engineering for full status to the graduate program during the term in which the first 12 graduate semester credit hours will be completed. To be considered for full degree status provisional students must have earned a minimum GPA of 3.0 in all courses recommended by the faculty advisor and the head of the graduate program.

Students may be awarded non-degree status admission or special student status admission if they satisfy the requirements as outlined in the catalog section "Types of Admission" under Admissions Information and Requirements. Special students must petition the Dean of Engineering for full status to the graduate program during the term in which the first 12 graduate semester credit hours will be completed. To be considered for full degree status, special students must have earned a minimum GPA of 3.0 and have a minimum GRE General Test score of 700 (combined verbal and quantitative).

Doctoral Program

The following are admission requirements to the Doctor of Philosophy program in the Department of Electrical Engineering:

1. Hold a baccalaureate degree in engineering, mathematics or the physical sciences conferred by a regionally accredited institution.
2. Have a 3.0 Grade Point Average (GPA) on a four-point scale on all completed undergraduate course work.
3. Hold a Masters of Science degree in Electrical Engineering or one of the related disciplines and a regionally accredited institution should confer the degree.
4. Have a 3.2 GPA on all completed graduate work.
5. Produce original transcripts for all academic work completed at the undergraduate and graduate levels.
6. Have a minimum score of 500 in verbal section, 600 in quantitative section of the Graduate Record Examination (GRE).
7. Submit three letters of recommendation. These should preferably come from faculty sufficiently acquainted with the student to comment on the student's potential to successfully complete the doctoral program.
8. Submit a personal statement describing the applicant's academic or professional accomplishments, research interest and professional goals.
9. Foreign students are required to take the Test of English as a Foreign Language (TOEFL), a score of 550, or higher, is required.

MASTER OF SCIENCE IN ENGINEERING DEGREE PROGRAM

The Master of Science Degree in Engineering is a general engineering program with four areas of concentration:

Chemical Engineering,
Civil Engineering,
Environmental Engineering, and
Mechanical Engineering.

Each area of concentration has an option of a thesis or non-thesis degree plan. The thesis option requires 30 semester credit hours including 6 semester credit hours for the thesis and the “zero semester hour” for a research seminar. The non-thesis option requires 33 semester credit hours including 3 semester hours for a major project and the “zero semester hour” for a research seminar. Each option includes 12 semester credit hours of graduate courses in general engineering with the remaining hours to be determined by the student and his academic advisor during the first semester of acceptance to the graduate program as a degree status student.

During the first semester of graduate degree status, the student should select an advisory committee consisting of at least three members, two of whom must come from the engineering faculty, and the chairman of the committee who shall be a full member of the graduate faculty in engineering.

THESIS OPTION DEGREE PROGRAM REQUIREMENTS

General Requirements	6 SCH
GNEG 5086 Thesis	
*General Engineering Requirements	12 SCH
GNEG 5063 Engineering Analysis I	
GNEG 5073 Engineering Analysis II	
GNEG 5033 Engineering Probability and Statistics	
GNEG 5133 Numerical Methods in Engineering	
GNEG 5023 Operations Research	
GNEG 5193 Special Topics	
Technical Electives	12 SCH
Selection based on consent of student’s academic advisor.	
Total Degree Requirements	30 SCH

* The student must consult his/her academic advisor and take at least two courses in GNEG 5063, 5073, 5033, 5133 or 5023.

NON-THESIS OPTION DEGREE PROGRAM REQUIREMENTS

General Requirements **3 SCH**

GNEG 5303 Graduate Project

or

GNEG 5203 Graduate Internship

***General Engineering Requirements**..... **12 SCH**

GNEG 5063 Engineering Analysis I

GNEG 5073 Engineering Analysis II

GNEG 5033 Engineering Probability and Statistics

GNEG 5133 Numerical Methods in Engineering

GNEG 5023 Operations Research

GNEG 5193 Special Topics

Technical Electives **18 SCH**

Selection based on consent of student's academic advisor.

Total Degree Requirements **33 SCH**

* The student must consult his/her academic advisor and take at least two courses in GNEG 5063, 5073, 5033, 5133 or 5023.

Department of Computer Science

ADMINISTRATIVE OFFICER

J.D. Oliver, *Interim Department Head*

FACULTY

Kent Martin, *Artificial Intelligence*

Kwang Paick, *Information Theory and Pattern Recognition*

Gerard Rambally, *Database Management Systems*

Shuguang Yan, *Computer Networks*

Feng-Jen Yang, *Artificial Intelligence*

Yonggao Yang, *Graphics and Computer Networks*

Yukong Zhang, *Compiler Optimization and Software Engineering*

PURPOSE AND GOALS

The Master's degree programs prepare graduate students for positions in business, industry, and research. They produce professionals capable of contributing to the core areas of Computer Information Systems and Computer Science. They also provide Master's degree graduates with a foundation for continuing their study at the doctoral level.

More specifically the major objectives of the programs are to:

1. Address the critical shortage of professionals in Computer Science and Information Technology in Texas and the nation;
2. Provide an avenue for computer professionals in industry to upgrade their professional skills; and
3. Prepare graduates to pursue the terminal degree in Computer Science and Computer Information Systems.

MASTER OF SCIENCE IN COMPUTER INFORMATION SYSTEMS DEGREE PROGRAM REQUIREMENTS

THESIS OPTION DEGREE PROGRAM REQUIREMENTS

General Requirements **6 SCH**
CINS 5906 Master's Thesis

Computer Information Systems Requirements **21 SCH**
CINS 5003 Research Methods and Graduate Seminars
CINS 5013 Information Resources Management
CINS 5033 Database Management Systems
CINS 5043 Data Communications and Computer Networks
CINS 5063 Data Structures and Algorithms
CINS 5073 Information Technology
CINS 5183 Software Engineering

Computer Information Systems Track Requirements **9 SCH**
Students are required to declare one of the tracks listed below and take the requirements under that track.

General Computer Information Systems Track
9 hours from the list of CINS Electives (no duplicates)

Internet Technologies Computer Information Systems Track

6 hours from the list of IT CINS Electives
3 hours from the list of CINS Electives (no duplicates)

Total Degree Requirements 36 SCH

NON-THESIS OPTION DEGREE PROGRAM REQUIREMENTS

General Requirements 3 SCH
CINS 5913 Master's Project

Computer Information Systems Requirements 21 SCH
CINS 5003 Research Methods and Graduate Seminars
CINS 5013 Information Resources Management
CINS 5033 Database Management Systems
CINS 5043 Data Communications and Computer Networks
CINS 5063 Data Structures and Algorithms
CINS 5073 Information Technology
CINS 5183 Software Engineering

Computer Information Systems Track Requirements 12 SCH
Students are required to declare one of the tracks listed below and take the requirements under that track.

General Computer Information Systems Track
12 hours from the list of CINS Electives (no duplicates)

Internet Technologies Computer Information Systems Track
6 hours from the list of IT CINS Electives
6 hours from the list of CINS Electives (no duplicates)

Total Degree Requirements 36 SCH

General CINS Electives
CINS 5103 Decision Support Systems
CINS 5143 Advanced Database Management Systems
CINS 5173 Information Storage and Retrieval
CINS 5213 Advanced Data Communication and Computer Networks
CINS 5223 Artificial Intelligence and Expert Systems
CINS 5233 Distributive Computing and Parallel Processing
CINS 5303 E-Commerce
CINS 5323 Multimedia Applications
CINS 5333 Reverse Logistics
CINS 5413 Object Oriented Analysis and Design
CINS 5463 Human Computer Interaction and Interface Design
CINS 5983 Special Topics in Computer Information Systems
CINS 5993 Independent Study

IT CINS Electives
CINS 5143 Advanced Database Management Systems
CINS 5173 Information Storage and Retrieval
CINS 5303 E-Commerce
CINS 5323 Multimedia Applications

MASTER OF SCIENCE IN COMPUTER SCIENCE DEGREE PROGRAM REQUIREMENTS

THESIS OPTION DEGREE PROGRAM REQUIREMENTS

General Requirements **6 SCH**
COMP 5906 Master's Thesis

Computer Science Requirements **21 SCH**
COMP 5003 Research Methods and Graduate Seminars
COMP 5113 Fundamentals and Concepts of Programming
COMP 5123 Advanced Computer Architecture
COMP 5133 Advanced Operating Systems
COMP 5143 Advanced Database Management Systems
COMP 5153 Design and Analysis of Algorithms
COMP 5423 Software Engineering Processes

Computer Science Track Requirements **9 SCH**
Students are required to declare one of the tracks listed below and take the requirements under that track.

General Computer Science Track
9 hours from the list of Computer Science Electives (no duplicates)

Software Engineering Track
6 hours from the list of Software Engineering Electives
3 hours from the list of Computer Science Electives (no duplicates)

Total Degree Requirements **36 SCH**

NON-THESIS OPTION DEGREE PROGRAM REQUIREMENTS

General Requirements **3 SCH**
COMP 5913 Master's Project

Computer Science Requirements **21 SCH**
COMP 5003 Research Methods and Graduate Seminars
COMP 5113 Fundamentals and Concepts of Programming
COMP 5123 Advanced Computer Architecture
COMP 5133 Advanced Operating Systems
COMP 5143 Advanced Database Management Systems
COMP 5153 Design and Analysis of Algorithms
COMP 5423 Software Engineering Processes

Computer Science Track Requirements **12 SCH**
Students are required to declare one of the tracks listed below and take the requirements under that track.

General Computer Science Track
12 hours from the list of Computer Science Electives (no duplicates)

Software Engineering Track
6 hours from the list of Software Engineering Electives
6 hours from the list of Computer Science Electives (no duplicates)

Total Degree Requirements **36 SCH**

General Computer Science Electives

COMP 5183 Software Engineering
COMP 5213 Advanced Data Communications and Computer Networks
COMP 5223 Artificial Intelligence and Expert Systems
COMP 5233 Distributed Computing and Parallel Processing
COMP 5243 Numerical Analysis
COMP 5253 Theory of Computation
COMP 5263 Advanced Computer Graphics
COMP 5413 Object-Oriented Analysis and Design Methodology
COMP 5433 Software Project Planning and Management
COMP 5443 Advanced Software Quality Assurance
COMP 5463 Human Computer Interaction and Interface Design
COMP 5983 Special Topics in Computer Science
COMP 5993 Independent Study

Software Engineering Electives

COMP 5183 Software Engineering
COMP 5433 Software Project Planning and Management
COMP 5443 Advanced Software Quality Assurance
COMP 5463 Human Computer Interaction and Interface Design

Department of Electrical Engineering

ADMINISTRATIVE OFFICER

John O. Attia, *Department Head*

FACULTY

Cajetan Akujuobi, *Electrical Engineering*
John H. Fuller, *Electrical Engineering*
Kelvin K. Kirby, *Electrical Engineering*
Siew T. Koay, *Electrical Engineering*
A. Anil Kumar, *Electrical Engineering*
Robert Lacovara, *Electrical Engineering*
Matthew Sadiku, *Electrical Engineering*
Charlie L. Tolliver, *Electrical Engineering*
Dhadesugoor R. Vaman, *Electrical Engineering*
Richard Wilkins, *Electrical Engineering*

PURPOSE AND GOALS

The primary purpose of the Electrical Engineering Program is to enhance students' skills in specialized areas and provide opportunities for students to pursue careers in private industry, government research laboratories and design facilities.

The objectives of the program are:

1. To produce graduate students who have advanced training in one of the following areas of emphasis in Electrical Engineering: (i) Microelectronics, (ii) Computer Engineering, (iii) Telecommunications and Signal processing.
2. To produce a significant number of graduates with experience in research.
3. To prepare outstanding students to pursue doctoral degrees.
4. To produce post-graduates who have the technical, cognitive and interpersonal skills that will allow them to secure employment within the State of Texas, or in the nation.

MASTER OF SCIENCE IN ELECTRICAL ENGINEERING DEGREE PROGRAM REQUIREMENTS

THESIS OPTION DEGREE PROGRAM REQUIREMENTS

General Requirements **6 SCH**
ELEG 5996 Thesis

General Engineering Requirements..... **6 SCH**
GNEG 5033 Engineering Probability and Statistics
GNEG 5063 Engineering Analysis I
GNEG 5073 Engineering Analysis II
GNEG 5133 Numerical Methods in Engineering

Electrical Engineering Track Requirements..... **6 SCH**
Students are required to declare one of the tracks listed and take two courses under that track.

Technical Electives **12 SCH**

At least two technical electives must be taken in the Electrical Engineering department.

Total Degree Requirements **30 SCH**

NON-THESIS OPTION DEGREE PROGRAM REQUIREMENTS

Masters Project **3 SCH**
ELEG 5913 Engineering Project

General Engineering Requirements **6 SCH**
GNEG 5063 Engineering Analysis I
GNEG 5073 Engineering Analysis II
GNEG 5133 Numerical Methods in Engineering
GNEG 5033 Engineering Probability and Statistics

Electrical Engineering Track Requirements **9 SCH**
Students are required to declare one of the tracks listed and take two courses under that track.

Technical Electives **15 SCH**
At least two technical electives must be taken in the Electrical Engineering department.

Total Degree Requirements **33 SCH**

Courses for Electrical Engineering Tracks

(A) Computer Engineering Track

- ELEG 6103 Advanced Computer Systems Design
- ELEG 6113 Computer Architecture & Advanced Logic Design
- ELEG 6123 The Internet: Design and Implementation
- ELEG 6133 Fault Tolerant Computing
- ELEG 6143 Modeling and Performance of Computer Architectures
- ELEG 6153 Information Networks

(B) Communication and Signal Processing Track

- ELEG 6203 Wireless Networks
- ELEG 6213 Digital Communications
- ELEG 6223 Network Management
- ELEG 6243 Advanced Broadband Communications Systems
- ELEG 6313 Stochastic Processes
- ELEG 6323 DSP Hardware Systems Design
- ELEG 6333 Wavelets and Their Applications
- ELEG 6353 Advanced Digital Signal Processing

(C) Microelectronics Track

- ELEG 6403 Solid State Devices
- ELEG 6413 Integrated Circuits Fabrication
- ELEG 6423 VLSI and ULSI Design
- ELEG 6433 Semiconductor Devices
- ELEG 6543 Advanced Solid State
- ELEG 6553 Advanced Mixed Signal

Other Technical Electives

GNEG 5193-001 Special Topics – Advanced Heat Transfer
GNEG 5193-003 Special Topics – Dynamics of Mechanical Systems
GNEG 5193-015 Special Topics – Modern Control Systems
GNEG 5193-019 Special Topics – Advanced Analytic Basis Design
GNEG 5193-172 Special Topics - Environmental Modeling
GNEG 5193-175 Special Topics – Water Quality Management
GNEG 5193-179 Special Topics – Management of Engineering Projects
MCEG 5023 Advanced Thermodynamics
MCEG 5123 Advanced Computer Aided Engineering Design
CVEG 5123 Structured Dynamics
CVEG 5133 Advanced Mechanics of Materials
MATH 5033 Complex Analysis II
MATH 5343 Boundary Value Problem
MATH 5613 Theory of Matrices
MATH 5723 Partial Differential Equations
MATH 5773 Advanced Analysis
MATH 5903 Modern Algebra

DOCTOR OF PHILOSOPHY IN ELECTRICAL ENGINEERING DEGREE PROGRAM

PURPOSE AND GOALS

The Doctor of Philosophy program in Electrical Engineering is designed to prepare students to be scholars, to develop the students' capacities to understand issues and problems at the frontiers of knowledge and to make significant contributions to that knowledge. The Ph.D. program's overall educational goals are to provide doctoral training in Electrical Engineering research, to develop new knowledge in engineering, and to disseminate the knowledge gained.

The educational objectives of the Ph.D. in Electrical Engineering program are

- (i) to produce competent engineering researchers who can communicate new and innovative research findings to engineers and scientists,
- (ii) to train engineers who are well versed in the general body of knowledge in Electrical Engineering,
- (iii) to produce researchers with specialized knowledge in Electrical Engineering, and
- (iv) to increase the number of Electrical Engineering doctorates.

PROGRAM REQUIREMENTS

The minimum required coursework beyond the Master's degree is 53 semester credit hours (SCH). This credit hour requirement includes coursework prescribed for students in support of area of concentration (9 SCH), free electives in support of doctoral dissertation and specialization (15 SCH), doctoral research (12 SCH), dissertation (12 SCH), stochastic process course (3 SCH) and graduate seminars (2 SCH). Courses taken during a master's degree program may not be repeated for credit at the doctoral level

Student Advisement and Supervision

The Electrical Engineering Graduate Program Administrator will serve as the Graduate Advisor of each student upon admission into the Ph.D. program. Before the student completes nine hours of doctoral class work, the student will be required to choose a chairperson of the student's Ph.D. Advisory committee. The student will select the members of the student's Ph.D. committee in consultation with the Graduate Program Administrator and the chairperson of the student Ph.D. committee. The chair of the individual doctoral student's committee is responsible for advising that student for courses taken beyond the first nine credit hours.

Doctoral Advisory Committee

The Graduate Program Administrator will assist the graduate student in securing an Academic Advisor, who will act as the Chair of the Doctoral Advisory Committee and will be responsible for advising and supervising the student. Before the qualifying examination, the Chair of the Doctoral Advisory Committee and the Graduate Program Administrator will select the Doctoral Advisory Committee, consisting of five graduate faculty members. One member of the doctoral Advisory committee will be chosen from outside the department of Electrical Engineering. The choice of the outside faculty members will be based on the individual student needs and the selected dissertation topic. As soon as a student's program has been determined, the Graduate Program Administrator will recommend the Doctoral Advisory Committee to the Dean of the College of Engineering for approval. The Dean of the College of Engineering may change the Chair of the Doctoral Advisory committee upon request of the doctoral student.

The Doctoral Advisory Committee and the Graduate Program Administrator will develop a tentative timetable for completion of all requirements for the degree program; monitor the student's coursework and research; provide advice and feedback to the student; file an Annual Report of the student's progress with the Office of the Dean of the College of Engineering; approve a research topic; supervise the preparation of the research project; uphold the standards of the College and the University; inform the Dean of the College of Engineering, in writing, if a student's performance is inadequate and provide relevant advisory committee recommendations; and formulate and conduct the preliminary and qualifying examinations. The student's Advisory Committee Chair acts as head of the Doctoral Advisory Committee and takes the lead in completing these duties.

Graduate Plan of Study

Each doctoral student will be required to file a Graduate Study Plan (GSP) with the College of Engineering before completing 18 semester hours of course work. The GSP outlines the curriculum of study and a timetable to be followed by the doctoral student in meeting the graduate degree requirements. The student prepares the GSP in consultation with the Doctoral Advisory Committee.

Preliminary Examination

When the student has completed 9 semester hours of coursework in the doctoral program, he or she will be required to take a preliminary examination. The preliminary examination will be taken at the beginning of the second semester of the student's doctoral program. The preliminary examination will be a written test of knowledge in at least three areas of electrical engineering. The student will choose from the following areas: Microelectronics, Computer Engineering, Power Engineering, Control Systems, Communications and Signal Processing. The preliminary examination will be prepared and administered by the Graduate Program Administrator and the student's Doctoral Advisory Committee. Students failing any portion of the preliminary examinations must consult with the Graduate Program Administrator to determine the steps to be taken. Two consecutive failures on the examination will result in the student's dismissal from the Ph.D. program.

Qualifying Examination

A doctoral student will be required to successfully pass a qualifying examination. The qualifying examination consists of a research proposal and an oral examination on the student's area of research. The doctoral student must take a qualifying examination by the time he or she has completed 36 semester hours of coursework. The qualifying examination will be prepared and administered by the Graduate Program Administrator and the student's Doctoral Advisory Committee.

The student must pass either unconditionally or conditionally. A conditional pass indicates specific weaknesses in the student's background that must be remedied before degree requirements are completed. All remedies should be completed within a year after the first attempt at passing the Qualifying examination. Two consecutive failures on the examination will result in the student's dismissal from the Ph.D. program. The Graduate Program Administrator will recommend the doctoral students who pass the qualifying examinations to the Dean of the College of Engineering for admission to candidacy.

Advancement to Candidacy

Following successful completion of the qualifying examinations, it is the student's responsibility to petition for advancement to candidacy. To be advanced to candidacy, students must have completed all of the following requirements and/or procedures:

1. Achieved a cumulative grade-point average of 3.0 or above in program course work.
2. Successfully passed the preliminary examination.
3. Successfully passed the qualifying examination.

The doctoral student is required to submit the application for advancement to candidacy at least one semester before the doctoral degree is awarded. The admission to graduate study does not imply "advancement to candidacy" for the doctoral degree.

Doctoral Dissertation

Successful completion of the doctoral dissertation is required. Every doctoral student would be required to pass an oral defense of the dissertation project. Two attempts at passing the dissertation defense are permitted. Failure to pass the dissertation defense will result in the student's dismissal from the program.

Having met other requirement for the degree, students who successfully defend their dissertations and complete the submission process will be granted the degree of Doctor of Philosophy in Electrical Engineering. The determination of completion requirements for the Doctor of Philosophy degree in Electrical Engineering is solely the province of the program faculty.

The dissertation will not be recommended for final submission to the Dean of the College of Engineering until it has been successfully defended and approved by at least four members of the student's Doctoral Advisory Committee.

Transfer of Graduate Courses from Other Universities

A maximum of six (6) units of electrical engineering related course work may be transferred from other accredited universities. A minimum grade of "B" is required in any such courses. Transfer credit is granted by petition to, and approval by, the Doctoral Advisory Committee, with final approval by the Dean of the College of Engineering. It is the student's responsibility to initiate the petition and justify the acceptance of the course. Courses presented for transfer credit must be the equivalent of courses in the doctoral program.

Special Requirements: Residency and Refereed Papers

Every doctoral student will be required to complete, on campus, at least nine (9) months of graduate study beyond the master's degree. The residence requirement is fulfilled through completion of a full schedule (at least 9 semester hours) of graduate course work in each of two consecutive semesters (excluding summer months).

Each candidate is required to have submitted at least two papers for publication in refereed journals. The candidate should be the first author of the one of the papers submitted for publication. The papers should be based on results of the candidate's doctoral research.

Good Standing

Ph.D. students remain in good standing when they maintain a minimum cumulative GPA of 3.0 for graded courses in the doctoral program. Only grades of "B" or better count toward required course work of the program. Any grade lower than "B" in a required course will necessitate that the course be retaken and passed with a grade of "B" or higher. If a second grade of C or less is earned, the student will be dismissed from the program, but may petition the Graduate Program Administrator and Doctoral Advisory Committee for readmission. After reviewing the petition, the committee may allow readmission under such conditions, as it deems appropriate. A third grade lower than "B" will result in permanent dismissal from the program with no recourse to petition.

Time Limit

A student must complete all requirements for the Ph.D. degree within nine (9) consecutive years after the first date of enrollment in the program. Any exception to this policy requires the approval of the Graduate Program Administrator and the Dean of the College of Engineering.

Financial Assistance

The Graduate Programs of the Electrical Engineering Department offer a limited number of graduate assistantships to qualified full-time students. Students who receive such an award are required to assist faculty in research projects and/or teach courses in the undergraduate program. Criteria for assignment of master’s assistantships include quantitative information (GPA, GRE score) and qualitative information (undergraduate preparation, publications, and letters of recommendation). Criteria for assignment of doctoral assistantships to new students include quantitative information (graduate GPA, GRE scores and TOEFL scores) and qualitative and/or supplemental information (letters of recommendation, applicant’s statement of interest and intent, preparation in the fields of study, academic publications, previous college-level teaching experience, research work in the field, and grant-writing experience). No standardized test scores will be used as the sole criterion for awarding assistantships or for rejecting applicants for assistantships. Student loans are available to graduate students at Prairie View A&M University on the basis of need. For more information about loans and other sources of aid, contact the Office of Student Financial Services, Evans Hall, Room 201, Prairie View A&M University, Prairie View, TX 77446.

DEGREE PROGRAM REQUIREMENTS

Courses Required for all students **29 SCH**

- ELEG 6011 Graduate Seminar I
- ELEG 6021 Graduate Seminar II
- ELEG 6313 Stochastic Processes
- ELEG 7016 Doctoral Research I
- ELEG 7026 Doctoral Research II
- ELEG 7916 Doctoral Dissertation I
- ELEG 7926 Doctoral Dissertation II

Elective Courses Prescribed for Students **9 SCH**

6000 or 7000 level Electrical Engineering courses selected from one of the Electrical Engineering tracks.

Free Electives **15 SCH**

5000 to 7000 level graduate courses, but not more than 9 SCH course at the 5000 level will be accepted.

Degree Requirements **53 SCH**

Courses for Electrical Engineering Tracks

(A) Computer Engineering Track

- ELEG 6103 Advanced Computer Systems Design
- ELEG 6113 Computer Architecture & Advanced Logic Design
- ELEG 6123 The Internet: Design and Implementation
- ELEG 6133 Fault Tolerant Computing
- ELEG 6143 Modeling and Performance of Computer Architectures
- ELEG 6153 Information Networks
- ELEG 7103 Advanced Topics in Computer Engineering

(B) Communication and Signal Processing Track

ELEG 6203 Wireless Networks
ELEG 6213 Digital Communications
ELEG 6223 Network Management
ELEG 6233 Coding Theory
ELEG 6243 Advanced Broadband Communications Systems
ELEG 6253 Telecommunications Network Security
ELEG 6303 Signal Detection and Estimation
ELEG 6313 Stochastic Processes
ELEG 6323 DSP Hardware Systems Design
ELEG 6333 Wavelets and Their Applications
ELEG 6343 Advanced Signal and System
ELEG 6353 Advanced Digital Signal Processing
ELEG 7123 Advanced Topics in Telecommunications and Signal Processing

(C) Microelectronics Track

ELEG 6403 Solid State Devices
ELEG 6413 Integrated Circuits Fabrication
ELEG 6423 VLSI and ULSI Design
ELEG 6433 Semiconductor Devices
ELEG 6503 Advanced Photonics Materials and Devices
ELEG 6513 Advanced Quantum Devices
ELEG 6523 Advanced Characterization of Materials and Devices
ELEG 6533 Advanced VLSI Design
ELEG 6543 Advanced Solid State
ELEG 6553 Advanced Mixed Signal
ELEG 7143 Advanced Topics in Microelectronics

Other Technical Electives

GNEG 5063 Engineering Analysis I
GNEG 5073 Engineering Analysis II
GNEG 5033 Engineering Probability & Statistics
GNEG 5133 Numerical methods in Engineering
CVEG 5173 Finite Element Analysis
CHEG 5023 Microelectronics Materials
MCEG 5253 Advanced Engineering Materials
GNEG 5193-001 Special Topics – Advanced Heat Transfer
GNEG 5193-003 Special Topics – Dynamics of Mechanical Systems
GNEG 5193-015 Special Topics – Modern Control Systems
GNEG 5193-172 Special Topics - Environmental Modeling
GNEG 5193-175 Special Topics – Water Quality Management
GNEG 5193-179 Special Topics – Management of Engineering Projects

MATH 5033 Complex Analysis II
MATH 5133 General Topology II
MATH 5343 Boundary Value Problem
MATH 5613 Theory of Matrices
MATH 5723 Partial Differential Equations
MATH 5773 Advanced Analysis
MATH 5903 Modern Algebra

CINS 5033 Database Management Systems
CINS 5063 Data Structures and Algorithms
CINS 5413 Object Oriented Analysis and Design Methodologies
CINS 5323 Multimedia Applications
COMP 5153 Design and Analysis of Algorithms
COMP 5183 Software Engineering
COMP 5223 Artificial Intelligence and Expert Systems
COMP 5233 Distributed Computing and Parallel Processing
COMP5263 Computer Graphics