

## College of Engineering

### ADMINISTRATIVE OFFICER

Milton R. Bryant, *Dean*

### ADMINISTRATIVE STAFF

Shield B. Lin, *Associate Dean*

### PURPOSE AND GOALS

The modern mission of the College of Engineering, at the dawn of the new millennium, is to sustain an infrastructure that will attract and maintain a world-class faculty that can produce graduates with the highest level of professional standards. These graduates will be prepared for a career of life-long learning that will result in leaders, productive workers, innovators and entrepreneurs who will positively impact the increasingly multi-disciplinary and diverse national economy. The College serves as a value added partner within the University to meet the challenge to excellence in education and research in engineering and to service and relevance to regional, national, and global communities.

This mission is accomplished through the following six goals:

1. Strive for excellence in engineering education through the dissemination and interpretation of knowledge through the educational programs.
2. Recruit and retain students who have demonstrated a capacity to excel in an environment that integrates advanced information technology with creativity, critical thinking, and problem solving.
3. Recruit and retain a cadre of world-class faculty effective in every endeavor of student-faculty interaction and committed to maintaining an academic standard that will ensure the students are highly competitive for graduate or professional school or for employment in the private or public sectors.
4. Promote scholarly activities through the continual development of our research centers and other collaborations and further enhancing our incorporation of undergraduate and graduate research activities.
5. Continue a strong external relations component that cultivates and integrates our corporate and alumni constituents into a partnership with the College.
6. Maintain the appropriate infrastructure and support services necessary to provide an atmosphere conducive to learning.

### INSTRUCTIONAL ORGANIZATION

The College of Engineering is composed of six academic departments offering the degree programs listed below:

<b>Degree Programs</b>	<b>Degrees Offered</b>
<i>Chemical Engineering</i>	B.S.Ch.E.
<i>Civil Engineering</i>	B.S.C.E.
<i>Computer Science</i>	B.S.
<i>Electrical Engineering</i>	B.S.E.E.
<i>Mechanical Engineering</i>	B.S.M.E.

<b><i>Computer Engineering Technology</i></b>	B.S.CET.
<b><i>Electrical Engineering Technology</i></b>	B.S.EET.
<b><i>Computer-Aided Drafting and Design Technology</i></b>	B.S.I.T.

### **ACCREDITATION STATUS**

The Chemical Engineering, Civil Engineering, Electrical Engineering, and Mechanical Engineering programs are accredited by the Engineering Accreditation Commission of Accreditation Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202 – telephone: 410-347-7700.

The Computer Science program is accredited by the Computing Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202 – telephone: 410-347- 7700.

The Computer Engineering Technology and Electrical Engineering Technology programs are accredited by the Technology Accreditation Commission of ABET, 111 Market Place, Suite 1050, Baltimore, MD 21202 – telephone: 410-347-7700.

### **SPECIAL PROGRAMS**

*Engineering Internship/Cooperative Education.* The primary goal of an internship or cooperative education experience is to strengthen and enhance the theoretical knowledge gained through classroom or distance education-based experiences. The objectives of Internships and Cooperative Education are to:

1. Provide students with opportunities to obtain professional industrial/government internships.
2. Prepare graduates for immediate professional assignments without further on-the-job training.
3. Provide a closer partnership between employers and the College of Engineering.
4. Help students determine which type of organizational structure and corporate culture best suits them.

Students in the program are required to enroll in internship or cooperative education courses while they are employed in industry/government. They continue to be governed by college and university regulations concerning professional conduct during the employment period. Students are normally paid wages/salaries by the employing agency.

*The Engineering and Science Concepts Institute (ESCI)* is an innovative intensive eight-week freshman summer program that introduces recent high school graduates to the profession of engineering as a viable career choice. They will earn 10-11 hours of college course credits. The students must first be admitted to the university according to admission standards. The ESCI mission has made a paradigm shift to select students that not only meet many high academic standards, but who also have leadership skills and match the profiles of corporate interests.

The “team” concept is mirrored and students are placed in a “living-learning” environment. The program is committed to the beginning development of the whole individual. The goal is to develop individuals yet stress that much of the success of the individual is directly dependent upon the performance of the group. There is a saying in corporate America that the “family who works and plays together, stays together”-- a belief system that becomes invaluable to the concept of “team”. Each ESCI student must aspire to “getting along with others and learning how to build consensus”. First, this will be facilitated through the classroom experience and collaborative assignments where appropriate. Secondly, this will be accomplished through the living-learning center mentoring program that will facilitate team sports and group activities.

Finally, all students are provided with the necessary foundations in mathematics, engineering, and professional concepts for success in the field. Each course is augmented with a reinforcement seminar to

facilitate the learning process. ESCI is also designed to create a realistic awareness of the profession. Corporate partners, where feasible, are being incorporated into the learning process. This becomes an invaluable benefit to the student, to the University and to our partners.

### **COLLEGE PROFESSIONAL AND HONOR SOCIETIES**

Among the honor societies designed to support, augment, and supplement the educational and professional development of students are the departmental honor societies and *Tau Beta Pi, National Engineering Honor Society*, through the Texas Kappa Chapter. In addition, the College of Engineering sponsors the following chapters of national societies:

*The Society of Women Engineers*, Prairie View Student Branch, is a professional society open for membership to female students majoring in an engineering curriculum at the university. The chapter is affiliated with the national professional engineering body, the Society of Women Engineers. The society fosters the intellectual, professional, personal and social development of student members.

The Prairie View A&M chapter of the *National Society of Black Engineers* is a professional society open to all engineering students at the university. The chapter fosters intellectual and professional development among its members and promotes growth and entry of more minority persons into the engineering profession.

### **COLLEGE ACADEMIC REQUIREMENTS**

Along with meeting the general requirements of the university, students enrolled in the College of Engineering must maintain the following performance levels in order to satisfy degree requirements:

1. Earn an overall grade point average of 2.0 or better in courses taken outside of the college and earn a grade of C or better in English, mathematics, and science courses.
2. Earn a grade of C or better in each course taken within the college.
3. Earn a grade of C or better in the prerequisite before advancing to the next level course in a sequence for English, mathematics, and science courses.
4. Earn a grade of C or better in prerequisite courses before advancing to the next level course in college courses.
5. Demonstrate professional standards and ethical conduct.

Students who transfer from other colleges and universities should meet the University's scholastic regulations and additional core curriculum requirements for engineering.

### **ELIGIBILITY TO TAKE UPPER DIVISION COLLEGE COURSES**

The College of Engineering has an eligibility standard for the students to take upper division college courses. Students in the engineering programs must complete a prescribed set of courses listed in the catalog section outlining specific degree programs and have a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

## **CORE CURRICULUM FOR ENGINEERING**

The core curriculum concept provides for portability of a basic element of a college degree between higher education institutions. However, certain programs have specific requirements in their programs that must be satisfied for the purpose of accreditation. For a specific program, the core curriculum may look different to most efficiently satisfy both the core and program-specific requirements. For ABET-accredited engineering programs, for example, the math requirement in the core curriculum is best satisfied if the engineering student takes Differential Equations. The program-specific core curriculum requirements presented for degree programs in the College of Engineering represent the suggested University Core Curriculum designed for an engineering student to minimize the coursework required.

Students who undertake a more general core curriculum may require additional coursework. For example, the College of Engineering requires a programming language course so that some 3-hour courses that satisfy the University Core Curriculum may not be acceptable for the College of Engineering degree programs.

## **REQUIREMENTS FOR GENERAL ENGINEERING AS A MINOR FIELD**

Non-engineering majors may complete a minor in general engineering through satisfactory completion of 18 SCH from the following set of courses:

GNEG 1013 Modern Engineering  
GNEG 2013 Logical Reasoning and Decision Analysis  
GNEG 3113 Introduction to Engineering Project Management

Select three from the following courses:

CHEG 2123 Engineering Materials in Society  
MCEG 2123 Energy Systems  
CVEG 2123 Engineering and the Environment  
ELEG 2313 The Digital Information Age

## **Department of Chemical Engineering**

### **ADMINISTRATIVE OFFICER**

Irvin W. Osborne-Lee, *Department Head*

### **FACULTY**

Kamel H. Fotouh, *Chemical Engineering*  
Jorge F. Gabitto, *Chemical Engineering*  
Michael Gyamerah, *Biochemical Engineering*  
Felecia M. Nave, *Chemical Engineering*

### **PURPOSE AND GOALS**

Chemical engineering is unique in the engineering profession in that it requires a strong foundation in chemical principles, as well as in the physical and engineering sciences common to all branches of engineering. An education in chemical engineering is one of the broadest—the chemical engineer may find employment in all phases of technical operations. Chemical process industries supply society with a vast array of products, including chemicals, fuels, plastics, metals, foods, pharmaceuticals, textiles, and cryogenic materials. In recent years, chemical engineers have found employment in the microelectronics industry and in the advanced materials, biochemical and biomedical engineering fields. Chemical engineers also serve society by reducing and eliminating pollution.

The primary goal of the department is to prepare engineers who are well qualified to design and operate chemical processes. The goals of the department include the fostering of professional ethics, standards, and practices; the development of conceptual and analytical skills in problem solving; and the development of the student's perception and creative faculties. More specifically, the department has the following objectives, which are to:

1. Provide a curriculum of study that gives students a thorough background in the basic sciences, engineering sciences, and engineering design, and provide breadth through studies in the humanities and social sciences;
2. Provide students with a strong core of chemical engineering fundamentals in well-structured courses and to provide students with guidance in choosing technical electives;
3. Provide a broad enough base that graduates may pursue graduate studies if they so choose, and to ready graduates to pursue a successful professional career in new and emerging areas such as microelectronics, biochemical, pharmaceutical, and advanced materials areas, as well as traditional chemical engineering areas;
4. Prepare students for professional careers in chemical engineering and for leadership roles in the society which they serve by maintaining high levels of competence, ethics and safety consciousness;
5. Provide students with an ethical vision of life and the profession, so that they become a healthy and productive part of society, interacting in positive ways with colleagues and the public;
6. Enrich the profession and serve society by providing opportunities for faculty and students to contribute to the professional body of knowledge by engaging in research, scholarly consulting, and other creative activities which (1) support their interest, (2) serve the needs of society, and (3) are in agreement with the goals and objectives of the College and the University;
7. Raise the general level of engineering competence and achievement via the dissemination of knowledge developed or acquired through public service to citizens both state- and nationwide.

## PROFESSIONAL AND HONOR SOCIETIES

Student organizations play an important role in helping students to adjust to the responsibilities of their profession and in recognizing high academic achievement. Students are encouraged to become active members of the organizations sponsored by the department. The department sponsors the following organizations:

*American Institute of Chemical Engineers (A.I.Ch.E.) - Student Chapter.* This chapter is a part of the national American Institute of Chemical Engineers organization, which is the premier professional society for chemical engineers nationwide. AIChE is the life-long home of chemical engineers nationwide. The student chapter promotes professionalism, professional development, and service to society.

*Iota Beta Chapter of Omega Chi Epsilon.* This is a chapter of the National Honorary Society Omega Chi Epsilon. The objectives of this organization are to promote and recognize chemical engineering academic excellence, graduate research, professionalism, sociability, character, and leadership among the chemical engineering students.

*American Chemical Society (A.C.S.) - Student Chapter.* This chapter is a part of the national professional society for chemists and chemical engineers, and is sponsored in cooperation with the Department of Chemistry.

*Society of Petroleum Engineers (S.P.E.) - Student Chapter.* This chapter is a part of the national Society of Petroleum Engineers organization. The SPE is an international technical/professional organization dedicated to the advancement of technology associated with oil and gas exploration, production, refining, and processing. Student membership provides students the opportunity to meet practicing professionals and active members in the industry while still attending school.

*National Organization of Black Chemists and Chemical Engineers (N.O.B.C.Ch.E.) - Student Chapter.* This chapter is part of the national NOBCCChE organization. Its goals are to promote professionalism and advance technical careers for African Americans, with chemistry and chemical engineers as a particular focus. Membership is open to all who share these objectives. This chapter is co-sponsored with the Department of Chemistry.

Students of chemical engineering are also eligible for membership in the other professional and honor societies of the college and the university.

## BACHELOR OF SCIENCE IN CHEMICAL ENGINEERING DEGREE PROGRAM REQUIREMENTS

**Core Curriculum** ..... 42 SCH

All core curriculum requirements are shown in the suggested degree program for majors in chemical engineering.

**College Requirements** ..... 47 SCH

MATH 1124, 2024, 3023, 4173 ..... 14 SCH

CHEM 1011, 1021, 1033, 1043 ..... 8 SCH

PHYS 2511, 2521 ..... 2 SCH

CHEG 2043, 3003 ..... 6 SCH

CVEG 2454 ..... 4 SCH

ELEG 2053 ..... 3 SCH

MCEG 1213 ..... 3 SCH

CHEG, CVEG, ELEG, or MCEG 3051 ..... 1 SCH

CHEG, CVEG, ELEG, or MCEG 4473, 4483 ..... 6 SCH

**Major Requirements** ..... 33 SCH  
CHEG 2013, 2053, 3011, 3013, 3023, 3043, 3053, 3063, 4011, 4031, 4033, 4043, 4183

**Support Area Requirements** ..... 14 SCH  
CHEM 2033, 2043, 3413, 3422, 3423

**Technical Electives** ..... 6 SCH

**Total Degree Requirements** ..... 142 SCH

**Chemical Engineering Suggested Technical Electives**

CHEG 4103 Special Topics in Chemical Engineering  
CHEG 4133 Process Modeling and Simulation  
CHEG 4153 Bioengineering  
CHEG 4163 Engineering Optimization  
MCEG 4123 Energy System Design  
MCEG 4093 Finite Element Design and Analysis  
MCEG 4173 Computer-Aided Manufacturing  
CHEM 4033 Biochemistry  
CHEM 4053 Instrumental Analysis  
CHEM 4063 Inorganic Chemistry  
CHEM 4073 Topics in Physical Chemistry  
CVEG 3013 Mechanics of Materials I  
CVEG 4193 Systems Engineering  
ELEG 3033 Physical Electronics  
MATH 3073 Linear Algebra  
MATH 4083 Advanced Calculus I  
MATH 4223 Introduction to Complex Analysis  
PHYS 3183 Modern Physics

Technical electives must be 3000 level or above. At least one technical elective must be taken in the department. Internship and co-op courses are not suitable as technical electives.

**Eligibility to Take Upper Division College Courses**

The College of Engineering requires an eligibility standard for the students to take upper division college courses. Students in the Chemical Engineering Program must complete a prescribed list of courses in the following with a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

CHEM 1033 General Inorganic Chemistry  
CHEM 1011 Inorganic Chemistry Lab  
ENGL 1143 Technical Writing  
PHYS 2513 University Physics I  
PHYS 2511 General Physics Lab I  
MATH 1124 Calculus with Analytic Geometry I  
MATH 2024 Calculus with Analytic Geometry II  
MCEG 1213 Creative Engineering I  
ELEG 1043 Computer Applications in Engineering

**Requirements For Chemical Engineering as a Minor Field**

Students must complete 27 semester credit hours as listed below to satisfy the requirements for a minor in the discipline of chemical engineering.

CHEG 2013 Material Science  
CHEG 2043 Chemical Engineering Thermodynamics I

CHEG 2053 Material and Energy Balances  
 CHEG 3013 Heat, Mass, and Momentum Transfer  
 CHEG 3023 Unit Operations  
 CHEG 3043 Equilibrium Stage Separation Processes  
 CHEG 3053 Chemical Engineering Thermodynamics II  
 CHEG 3063 Chemical Reaction Kinetics and Reactor Design  
 Technical Elective (any CHEG 3000-4000 level course)

**CHEMICAL ENGINEERING SUGGESTED DEGREE PROGRAM SEQUENCE**

**SUMMER SESSIONS**

<i>First Semester</i>	<i>Hours</i>
MATH 1124    Calculus I	4
MCEG 1213    Creative Engineering I	3
ELEG 1043    Computer Appl. in Engineering	3
<b>Total</b>	<b>10</b>

**FRESHMAN YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
MATH 2024    Calculus II	4	CHEM 1043    General Inorganic Chemistry II	3
CHEM 1033    General Inorganic Chemistry I	3	CHEM 1021    Inorganic Chemistry Laboratory II	1
CHEM 1011    Inorganic Chemistry Laboratory I	1	PHYS 2513    University Physics I	3
ENGL 1123    Freshman Composition I	3	PHYS 2511    General Physics Lab I	1
POSC 1113    American Government I	3	ENGL 1143    Technical Writing	3
SPCH 1003    Fund. of Speech Communication	3	POSC 1123    American Government II	3
		HIST 1313    U.S. to 1876	3
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>17</b>

**SOPHOMORE YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
CHEG 2013    Materials Science	3	CHEG 2053    Material and Energy Balances	3
CHEG 2043    Chemical Engin. Thermo. I	3	CHEM 2043    Organic Chemistry II	3
CHEM 2033    Organic Chemistry I	3	ELEG 2053    Introduction to Elect. Engineering	3
PHYS 2523    University Physics II	3	CVEG 2454    Statics and Dynamics	4
PHYS 2521    General Physics Lab II	1	CHEG 3053    Chemical Engin. Thermodynamics II	3
MATH 2043    Differential Equations	3		
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>16</b>

**SUMMER SESSIONS**

<i>First Semester</i>	<i>Hours</i>
*CHEG 2156    Chemical Engineering Internship I	6
<b>Total</b>	<b>6</b>

**JUNIOR YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
CHEG 3003    Engineering Economy	3	CHEG 3023    Unit Operations	3
CHEG 3011    Chemical Engineering Lab I	1	CHEG 3063    Chem. React. Kin./Reactor Design	3
CHEG 3013    Heat, Mass, and Momentum Trans.	3	CHEG 4011    Chemical Engineering Lab II	1
CHEG 3043    Equilibrium Staged Sep. Processes	3	CHEM 3423    Physical Chemistry II	3
CHEM 3413    Physical Chemistry I	3	MATH 3023    Probability and Statistics	3
CHEM 3422    Physical Chemistry Lab I	2	MATH 4173    Advanced Math for Engineers	3
		Humanities Elective	3
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>16</b>

**SUMMER SESSIONS**

<i>First Semester</i>		<i>Hours</i>
*CHEG 3156	Chemical Engineering Internship II	6
<b>Total</b>		<b>6</b>

**SENIOR YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>	
CHEG 3051	Professional Engineering I	1	CHEG 4031	Chemical Engineering Lab III	1
CHEG 4043	Process Design and Analysis	3	CHEG 4183	Design of Process Engin. Systems	3
CHEG 4033	Proc. Dynamics and Control	3	CHEG 4483	Senior Design and Professionalism II	3
CHEG 4473	Senior Design and Professionalism I	3		Technical Elective	3
HIST 1323	The U.S.-1876 to Present	3		Social or Other Behavioral Science Elective	3
	Technical Elective	3		Visual and Performing Arts Elective	3
<b>Total</b>		<b>16</b>	<b>Total</b>	<b>16</b>	

\* Course may be taken for credit during a summer internship, but is not required in degree plan.

## Department of Civil Engineering

### ADMINISTRATIVE OFFICER

Ramalingam Radhakrishnan, *Department Head*

### FACULTY

Raghava R. Kommalapati, *Civil Engineering*

Khandaker M.A. Rahman, *Civil Engineering*

Hsiang Y. Yeh, *Civil Engineering*

### PURPOSE AND GOALS

Civil engineers are involved in the planning, design, construction, and operation of facilities essential to modern life. These include environmental, transportation, structures, water and wastewater systems, urban development, flood control, space satellites and launching facilities, and many others.

The goal of the Civil Engineering program is to provide the highest quality education and training for qualified students to make them productive civil engineers. Through its curriculum, the department educates its students academically and socially so that they can make a significant contribution to the society in which they live and work.

The Department of Civil Engineering as a component of the College of Engineering subscribes to and supports the goals of the College and the University. The objective of the program is to produce civil engineers for leadership in the profession. The major role of the department is dissemination of excellent instruction, with the ultimate goal of promoting graduate research and encouraging excellence. Specific objectives of the civil engineering program are:

1. Provide learning experiences to students in civil engineering with an engineering education attributing technical knowledge and expertise in environmental, structural, transportation and water resources areas through a curriculum of study which gives students a sound background in basic sciences, the engineering sciences, and engineering design as well as breadth and depth experiences through studies in the humanities and in the social sciences.
2. Prepare students for professional careers in civil engineering through a curriculum of study leading to the baccalaureate degree in civil engineering (B.S.C.E.).
3. Produce civil engineers who observe professional ethics, maintain a high standard of practice, have the breadth of vision to solve problems of today and the future, and provide leadership in the profession.
4. Prepare students for entry into graduate studies.
5. Provide opportunities for faculty and students to engage in research, creative and scholarly activities that are consistent with their interests and are compatible with the goals and objectives of the University, the College, and societal needs.
6. Serve the society and contribute to the body of knowledge of the profession and to raise the general level of engineering competence and achievement via the dissemination of knowledge developed or acquired through public service to the citizens of the state and the nation.

### HONOR SOCIETIES, CLUBS, AND SERVICE ORGANIZATIONS

Student organizations play an important role in helping students to adjust to the responsibilities of their profession. They are encouraged to become active members of the organizations sponsored by the department.

The American Society of Civil Engineers (A.S.C.E.) - the student chapter is a part of the national professional society for civil engineers.

The objectives of the Civil Engineering Honors Club (C.E.H.C.) are to promote scholarship, professionalism, sociability, character, and leadership among civil engineering students.

Students in the department are also eligible for membership in the professional and honor societies of the college and the university.

**BACHELOR OF SCIENCE IN CIVIL ENGINEERING DEGREE PROGRAM REQUIREMENTS**

**Core Curriculum** ..... 42 SCH

All Civil Engineering Core Curriculum requirements are shown in the suggested degree program.

**College Requirements** ..... 49 SCH

MATH 1124, 2024, 3023, 4173 ..... 14 SCH

CHEM 1011, 1021, 1033, 1043 ..... 8 SCH

PHYS 2511, 2521 ..... 2 SCH

CHEG 3003 ..... 3 SCH

CVEG 2043, 2053 ..... 6 SCH

ELEG 2053 ..... 3 SCH

MCEG 1213, 2013 ..... 6 SCH

CVEG, CHEG, ELEG, or MCEG 3051 ..... 1 SCH

CVEG, CHEG, ELEG or MCEG 4473, 4483 ..... 6 SCH

**Major Requirements** ..... 38 SCH

CHEG 2013, CVEG 2061, 2063, 3024, 3031, 3041, 3063, 3073, 4013, 4024, 4053, 4063, 4083, 4093

**Technical Electives** ..... 6 SCH

**Total Degree Requirements** ..... 135 SCH

**Civil Engineering Suggested Technical Electives**

CVEG 4123 Hydrology

CVEG 4143 Engineering Construction

MCEG 4063 Design and Analysis of Dynamic Systems

MATH 3073 Linear Algebra

MATH 4063 Numerical Analysis

MATH 4083 Advanced Calculus I

MATH 4223 Introduction to Complex Analysis

CVEG 3223 Waste Management

CVEG 3233 Water Quality Management

CVEG 3243 Fundamentals of Air Pollution and Control

Technical elective must be 3000 level or above. At least one technical elective must be taken in the department. Internship and Co-op courses are not suitable as technical electives.

**Eligibility To Take Upper Division College Courses**

The College of Engineering requires an eligibility standard for students to take upper division college courses. Students in the Civil Engineering Program must complete the prescribed courses in the following list with a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

CHEM 1033 General Inorganic Chemistry  
CHEM 1011 Inorganic Chemistry Lab  
ENGL 1043 Technical Writing  
PHYS 2513 University Physics I  
PHYS 2511 General Physics Lab I  
MATH 1124 Calculus with Analytic Geometry I  
MATH 2024 Calculus with Analytic Geometry II  
MCEG 1213 Creative Engineering I  
ELEG 1043 Computer Applications in Engineering

**REQUIREMENTS FOR CIVIL ENGINEERING AS A MINOR FIELD**

**Option 1**

Students must complete 18 SCH to satisfy the minor requirements.

Required courses, 9 SCH:

CVEG 2043-Engineering Mechanics I  
CVEG 2053-Engineering Mechanics II  
CVEG 2063-Mechanics of Materials I

Technical Electives, 9 SCH:

Approved 3000 and 4000 level CVEG courses.

**Option 2: Environmental Engineering Concentration**

Students must complete 18 SCH to satisfy the minor requirements.

Required courses, 9 SCH:

CVEG 2123 Engineering and the Environment or an Engineering 2000 level course.  
CVEG 3213 Elements of Environmental Engineering  
CVEG 3233 Water Quality Management

Technical Electives, 9 SCH:

CVEG 3223 Waste Management  
CVEG 3243 Fundamentals of Air Pollution  
CVEG 3063 Hydraulics or MCEG 3063 Fluid Mechanics  
CVEG 4024 Environmental Engineering  
CVEG 4063 Water Resources Engineering  
CVEG 4123 Hydrology  
CHEG 3063 Chemical Reaction Kinetics and Reactor Design

**CIVIL ENGINEERING SUGGESTED DEGREE PROGRAM SEQUENCE**

**FRESHMAN YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
ENGL 1123 Freshman Composition I	3	ENGL 1143 Technical Writing	3
MATH 1124 Calculus I	4	MATH 2024 Calculus II	4
CHEM 1033 General Inorganic Chemistry I	3	CHEM 1043 General Inorganic Chemistry II	3
CHEM 1011 Inorganic Chemistry Lab I	1	CHEM 1021 Inorganic Chemistry Laboratory II	1
MCEG 1213 Creative Engineering I	3	ELEG 1043 Computer Appl. in Engineering	3
SPCH 1003 Fund. of Speech Communication	3	PHYS 2513 University Physics I	3
		PHYS 2511 General Physics Lab I	1
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>18</b>

**SUMMER SESSIONS**

<i>First Semester</i>	<i>Hours</i>
*GNEG Engineering Cooperative Education I 2156	6
<b>Total</b>	<b>6</b>

**SOPHOMORE YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
MATH 2043 Differential Equations I	3	MCEG 2013 Thermodynamics I	3
PHYS 2523 University Physics II	3	ELEG 2053 Intro. to Electrical Engineering	3
PHYS 2521 General Physics Lab II	1	CVEG 2053 Engineering Mechanics II	3
POSC 1113 American Government I	3	CVEG 2061 Mechanics of Materials Lab I	1
CHEG 2013 Materials Science	3	CVEG 2063 Mechanics of Materials I	3
CVEG 2043 Engineering Mechanics I	3	MATH 3023 Probability and Statistics	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>16</b>

**SUMMER SESSIONS**

<i>First Semester</i>	<i>Hours</i>
*CVEG Civil Engineering Internship I 3156	6
<b>Total</b>	<b>6</b>

**JUNIOR YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
MATH 4173 Advanced Engineers Math for	3	HIST 1323 The U.S.-1876 to Present	3
CVEG 3041 Surveying	1	CVEG 3024 Geotechnical Engineering	4
CVEG 3063 Hydraulics	3	CVEG 3031 Concrete Lab	1
CHEG 3003 Engineering Economy	3	CVEG 3073 Structural Analysis I	3
POSC 1123 American Government II	3	CVEG 3051 Professional Engineering I	1
HIST 1313 U.S. to 1876	3	Behavioral or Social science Elective	3
		Humanities Elective	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>18</b>

**SUMMER SESSIONS**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>
*CVEG 4156 Civil Engineering Internship II	6
<b>Total</b>	<b>6</b>

**SENIOR YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
CVEG 4013 Reinforced Concrete	3	CVEG 4024 Environmental Engineering	4
CVEG 4063 Water Resources Engineering	3	CVEG 4053 Transportation Engineering	3
CVEG 4083 Structural Design	3	CVEG 4093 Systems Engineering	3
CVEG 4473 Senior Design and Professionalism I	3	CVEG 4483 Senior Design and Professionalism II	3
Visual and Performing Arts Elective	3	Technical Elective	3
Technical Elective	3		
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>16</b>

\* Course may be taken for credit during a summer internship, but is not required in degree plan.

## **Department of Computer Science**

### **ADMINISTRATIVE OFFICER**

J.D Oliver, *Interim Department Head*

### **FACULTY**

S. Frizell, *Computer Science*  
R. Iyengar, *Computer Science*  
J.K. Martin, *Computer Science*  
K. Paick, *Computer Science*  
G. Rambally, *Computer Science*  
S.H. Shakir, *Computer Science*  
M. Tompkins, *Computer Science*  
S. Yan, *Computer Science*  
F. Yang, *Computer Science*  
Y. Yang, *Computer Science*  
Y. Zhang, *Computer Science*

The mission of the Department of Computer Science in the College of Engineering at Prairie View A&M (PVAMU) consists of three interrelated components: providing the highest quality instruction to the students, conducting leading-edge research in computer science and engineering, and providing leadership and service to our professional communities. Computer Science's faculty and staff are committed to excellence and updating the program to meet the present and future needs of industry and the society.

The Computer Science Department and program at Prairie View A & M University is accredited by the Computing Sciences Accreditation Board (CSAB). The Curriculum is designed and evaluated using the recommendations of the Association for Computing Machinery (ACM).

### **PURPOSE AND GOALS**

The Bachelor of Science in Computer Science Program is designed:

1. To provide a high quality degree program in computer science that will prepare students for lifelong learning as they pursue professional careers in computer science and leadership roles in the society in which they serve.
2. To provide our students with a strong foundational base, state-of-the art techniques, methodologies, and tools to specify, design and develop computer-based solutions to complex systems problems.
3. To provide opportunities for faculty and students to contribute to the body of knowledge that serves the profession, by engaging in research, scholarly and other activities which support their interests and are in agreement with the goals and objectives of the College, and the University.
4. To prepare our students to communicate well, both orally and in writing, on moral and ethical development, in a knowledge of the liberal arts, and on commitment to services to others.

### **PROFESSIONAL AND HONOR SOCIETIES**

The department sponsors a certified student chapter of the Association for Computing Machinery. Membership (local and national) is open to all fulltime computer science majors. The department also sponsors Upsilon Pi Epsilon (Computer Science Honor Society) for all computer science majors with a GPA of 3.0 or above. Any students having completed 64 semester hours of course work (18 hours of core computer science courses) is eligible for induction into the society.

**BACHELOR OF SCIENCE IN COMPUTER SCIENCE DEGREE PROGRAM REQUIREMENTS**

**Core Curriculum** ..... **42 SCH**  
 All Computer Science Core Curriculum are shown in the suggested degree program.

**College Requirements** ..... **20 SCH**  
 MATH 1124, 2024, 2053, 3073 ..... 14 SCH  
 PHYS 2523, 2511, 2521 ..... 5 SCH  
 CHEM 1011 ..... 1 SCH

**Major Requirements** ..... **49 SCH**  
 COMP 1211, 1221, 1223, 2013, 2033, 2103, 3043, 3053, 3063, 3113, 3223, 4001, 4072,  
 3033, 4082, 4113, 4123, 4133, 4953

**Computer Science Electives** (Department approved Computer Science Elective)..... **3 SCH**  
**Computer Science Electives** (All upper division courses) ..... **3 SCH**  
**Free Electives** (Department approved upper division courses) ..... **6 SCH**

**Support Area Requirements**..... **4 SCH**  
 TECH 3203; HUPF 1011/2151

**Total Degree Requirements** ..... **127 SCH**

**Computer Science Suggested Electives**

Electives must be 3000 level or above.

COMP 3003 Introduction to Web design and Multimedia (**Cannot be used as Upper level CS Course**)

COMP 3143 Introduction to Java (**Cannot be used as Upper level CS Course**)

COMP 3203 System Analysis and Design

COMP 3213 Graphics and Visual Computing

COMP 4053 Parallel Algorithm Design

COMP 4063 Artificial intelligence

COMP 4073 Special Problems

COMP 4953 Simulation and Modeling & Analysis

COMP 4843 Human-Computer Interaction

COMP 4993 Independent Study

**Eligibility To Take Upper Division College Courses**

The college of Engineering requires an eligibility standard for the students to take upper division college courses. Students in Computer Science Program must complete a prescribed list of courses in the following with a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

CHEM 1033 General Chemistry

CHEM 1011 Inorganic Chemistry Laboratory

MATH 1124 Calculus with Analytic Geometry I

MATH 2024 Calculus with Analytic Geometry II

COMP 1213 Computer Science I

COMP 1211 Computer Science Laboratory I

COMP 1223 Computer Science II

COMP 1221 Computer Science Laboratory II

ENGL 1133 Freshman Composition II

**Requirements for Computer Science as a Minor Field** ..... **31 SCH**

COMP 1211, 1213, 1221, 1223, 2013, and twelve semester hours of upper-division courses..... 23 SCH

**MATH 1124, 2024** ..... **8 SCH**

**COMPUTER SCIENCE SUGGESTED DEGREE PROGRAM SEQUENCE**

**FRESHMAN YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
ENGL 1123	Freshman Composition I	3	ENGL 1133	Freshman Composition II	3
MATH 1124	Calculus I	4	HIST 1313	U.S. to 1876	3
CHEM 1033	General Chemistry	3	MATH 2024	Calculus II	4
CHEM 1011	Inorganic Chemistry Laboratory	1	SPCH 1003	Fund. of Speech Communication	3
COMP 1211	Computer Science Laboratory I	1	COMP 1221	Computer Science Laboratory II	1
COMP 1213	Computer Science I	3	COMP 1223	Computer Science II	3
<b>Total</b>		<b>15</b>	<b>Total</b>		<b>17</b>

**SOPHOMORE YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
COMP 2013	Data Structures	3	COMP 2033	Assembly Language	3
MATH 2053	Discrete Mathematics	3	HIST 1323	The U.S.-1876 to Present	3
COMP	Elective	3	COMP 2103	Discrete Structures	3
POSC 1113	American Government I	3	POSC 1123	American Government II	3
PHYS 2513	Engineering Physics I	3	PHYS 2523	Engineering Physics II	3
PHYS 2511	Physics Laboratory I	1	PHYS 2521	Physics Laboratory II	1
<b>Total</b>		<b>16</b>	<b>Total</b>		<b>16</b>

**JUNIOR YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
TECH 3203	Eng./Tech. Communications	3	COMP 3063	Operating Systems	3
	Upper-level Free Elective	3	COMP3053	Analysis of Algorithms	3
MATH 3073	Linear Algebra	3		Humanities	3
COMP 3033	Digital Logic Circuit	3	COMP 3223	Software Engineering	3
COMP 3043	Computer Organization	3	COMP 3113	Object-Oriented Analy. and Design	3
MATH 3023	Probability and Statistics	3			
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>15</b>

**SENIOR YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
COMP 4133	Formal Languages Automata	3	COMP 4113	Programming Languages Design	3
COMP 4001	Ethics and Soc. Issues in Computing	1	COMP	Upper-level Computer Science	3
	Social and Behavioral Science	3		Upper-level Free Elective	3
COMP 4072	Senior Design Project I	2	COMP 4082	Senior Design Project II	2
COMP 4123	Computer Networks	3	HUPF 1011/1251	Human Performance	1
COMP 4953	Database Management	3		Visual and Performing Arts	3
<b>Total</b>		<b>15</b>	<b>Total</b>		<b>15</b>

## **Department of Electrical Engineering**

### **ADMINISTRATIVE OFFICER**

John O. Attia, *Department Head*

### **FACULTY**

Cajetan Akujuobi, *Electrical Engineering*  
Warsame H. Ali, *Electrical Engineering*  
Penrose S. Cofie, *Electrical Engineering*  
John H. Fuller, *Electrical Engineering*  
Kelvin K. Kirby, *Electrical Engineering*  
Robert Lacovara, *Electrical Engineering*  
Matthew Sadiku, *Electrical Engineering*  
Siew T. Koay, *Electrical Engineering*  
A. Anil Kumar, *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 prepare students for a successful professional career in electrical engineering. The curriculum is structured to provide each student with a sound background in mathematics, physical sciences, engineering sciences and a thorough foundation in electrical engineering for the analysis and design of electrical and electronic circuits and systems.

The objectives of the Electrical Engineering program at Prairie View A&M University are to:

1. Produce graduates who will practice Electrical Engineering in one of the following areas of emphasis (i) microelectronics, (ii) computer engineering, (iii) communications and signal processing, (iv) power engineering and control systems.
2. Produce graduates who are prepared for engineering practice including understanding and appreciation for business practices, oral and written communications skills, professional integrity and ethical, social and political responsibility.
3. Produce graduates who have conceptual understanding to apply engineering science and mathematics to the analysis and design of electrical or electronic devices, circuits and systems.
4. Produce 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.
5. Prepare outstanding students to pursue graduate degrees.
6. Produce significant number graduates with experience in research.

### **PROFESSIONAL AND HONOR SOCIETIES**

The *Eta Kappa Nu Electrical Engineering Honor Society* and the *Institute of Electrical and Electronic Engineer*. The two electrical engineering organizations have student chapters in the department. Additional organizations are listed in the section on college requirements. Electrical engineering majors are eligible for membership in the professional and honor societies of the college and university.

*Institute of Electrical and Electronic Engineers (IEEE)*. A professional society open for membership to engineering students who are majoring in electrical engineering and to other students who have interests in electrical engineering. The chapter is affiliated with the national professional engineering society of the Institute of Electrical and Electronic Engineers.

*Eta Kappa Nu Electrical Engineering Honor Society.* A national honor society recognizing academic excellence in future engineers and those engineers who have made outstanding contributions to society. Membership is by invitation to the top junior and senior students majoring in electrical engineering.

**BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING DEGREE PROGRAM  
REQUIREMENTS**

<b>Core Curriculum</b> .....	<b>42 SCH</b>
All Electrical Engineering Core Curriculum requirements are shown in the suggested degree program.	
<b>College and Support Area Requirements</b> .....	<b>46 SCH</b>
MATH 1124, 2024, 3023, 4173 .....	14 SCH
CHEM 1011, 1021, 1033, 1043 .....	8 SCH
PHYS 2511, 2521 .....	2 SCH
CHEG 3003 .....	3 SCH
CVEG 2454 .....	4 SCH
ELEG 1022, 2023 .....	3 SCH
MCEG 2013 .....	6 SCH
ELEG, CHEG, CVEG, or MCEG 3051 .....	1 SCH
ELEG, CHEG, CVEG, or MCEG 4473, 4483 .....	6 SCH
<b>Major Requirements</b> .....	<b>36 SCH</b>
ELEG 3011, 3013, 3021, 3033, 3023, 3043, 3063, 4003, 4011, 4013, 4033, 4043, 4073, 4303	
<b>Technical Electives</b> .....	<b>9 SCH</b>
<b>Electrical Engineering Laboratory Elective</b> .....	<b>1 SCH</b>
<b>Total Degree Requirements</b> .....	<b>134 SCH</b>

**ELECTRICAL ENGINEERING SUGGESTED TECHNICAL ELECTIVES**

At least two technical electives must be taken in the Electrical Engineering department. In addition, one Electrical Engineering Laboratory elective should be taken to satisfy degree requirements. Internship and co-op courses are not suitable as technical electives.

**Microelectronics Area**

- ELEG 4223 Electronic and Photonic Materials and Devices
- ELEG 4263 VLSI Circuit Design
- ELEG 4273 Analog and Mixed Signal Techniques I
- ELEG 4393 Analog and Mixed Signal Techniques II

**Communications/Signal Processing Area:**

- ELEG 4053 Digital Signal Processing
- ELEG 4163 Digital Signal Processing Design and Testing Techniques
- ELEG 4313 Broadband Communication Systems I
- ELEG 4323 Broadband Communication Systems II

**Computer Engineering Area:**

- ELEG 4393 Computer Organization and Design
- ELEG 4253 Computer Interfacing and Communications
- ELEG 4263 VLSI Circuit Design

**Power and Control Systems Area:**

ELEG 4243 Power Electronics  
ELEG 4023 Power Systems Engineering  
ELEG 4283 Reliability Analysis of Electrical Facilities

**Electrical Engineering Laboratory Electives:**

ELEG 3041 Microelectronics Processing and Characterization Lab  
ELEG 4031 Communication Laboratory  
ELEG 4021 Power Laboratory  
ELEG 4151 Digital Signal Processing Solutions Laboratory  
ELEG 4291 Mixed Signal Testing Techniques Laboratory

**Other Technical Electives:**

CVEG 4093 Systems Engineering  
MCEG 3023 Thermodynamics II  
MCEG 3063 Fluid Mechanics  
MATH 4063 Numerical Analysis  
MATH 3073 Linear Algebra

**Eligibility to Take Upper Division College Courses**

The College of Engineering requires an eligibility standard for the students to take upper division college courses. Students in the Electrical Engineering Program must complete a prescribed list of courses in the following with a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

CHEM 1033 General Inorganic Chemistry  
CHEM 1011 Inorganic Chemistry Lab  
ENGL 1143 Technical Writing  
PHYS 2513 University Physics I  
PHYS 2511 General Physics Lab I  
MATH 1124 Calculus with Analytic Geometry I  
MATH 2024 Calculus with Analytic Geometry II  
ELEG 1022 Fundamentals of Electrical and Computer Engineering  
ELEG 1043 Computer Applications in Engineering

**Requirements For Electrical Engineering as a Minor Field**

Students must complete the following 23 SCH of courses to satisfy the minor requirements:

ELEG 2023 Network Theory I  
ELEG 3011 Circuits Laboratory  
ELEG 3013 Network Theory II  
ELEG 3033 Physical Electronics  
ELEG 3043 Electronics I  
ELEG 3063 Logic Circuits  
ELEG 3021 Logic Circuits Laboratory  
ELEG 3023 Signals and Systems  
ELEG 4013 Electromechanical Energy Conversion

**ELECTRICAL ENGINEERING SUGGESTED DEGREE PROGRAM SEQUENCE**

**FRESHMAN YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
ENGL 1123 Freshman Composition I	3	ENGL 1143 Technical Writing	3
MATH 1124 Calculus I	4	MATH 2024 Calculus II	4
CHEM 1033 General Inorganic Chemistry I	3	CHEM 1043 General Inorganic Chemistry II	3
CHEM 1011 Inorganic Chemistry Laboratory	1	PHYS 2513 University Physics I	3
ELEG 1022 Fund. of Elect. and Comp. Engr.	2	PHYS 2511 General Physics Lab I	1
SPCH 1003 Fund. of Speech Communication	3	ELEG 1043 Computer Appl. in Engineering	3
		CHEM 1021 Inorganic Chemistry Laboratory	1
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>18</b>

**SOPHOMORE YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
MATH 2043 Differential Equations	3	ELEG 2023 Network Theory I	3
PHYS 2523 University Physics II	3	ELEG 3011 Circuits Lab	1
PHYS 2521 General Physics Lab II	1	MCEG 2013 Thermodynamics I	3
HIST 1313 U.S. to 1876	3	CVEG 2454 Statics and Dynamics	4
POSC 1113 American Government I	3	POSC 1123 American Government II	3
		HIST 1323 The U.S.-1876 to Present	3
		Visual and Performing Arts Elective	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>17</b>

**JUNIOR YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
MATH 3023 Probability and Statistics	3	ELEG 3023 Signals and Systems	3
MATH 4173 Advanced Math for Engineers	3	ELEG 3043 Electronics I	3
ELEG 3013 Network Theory II	3	ELEG 4011 Electronics Lab	1
ELEG 3063 Logic Circuits	3	ELEG 3051 Professional Engineering I	1
ELEG 3021 Logic Circuits Lab	1	CHEG 3003 Engineering Economy	3
ELEG 3033 Physical Electronics	3		
		Behavioral or Soc. Science Elective	3
		ELEG 4303 Digital Design	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>17</b>

**SENIOR YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
ELEG 4043 Electronics II	3	ELEG 4073 Control Systems	3
		Humanities Elective	3
ELEG 4003 Communication Theory	3	ELEG 4483 Senior Design II	3
ELEG 4473 Senior Design I	3	ELEG 4033 Electro Field Theory	3
ELEG 4013 Energy Conversion	3		
		Technical Electives	6
		Electrical Engin. Lab Elective	1
		Technical Elective	3
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>16</b>

## **Department of Electrical Engineering Computer Engineering Program**

### **ADMINISTRATIVE OFFICER**

John O. Attia, *Department Head*

### **FACULTY**

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

### **PURPOSE AND GOALS**

Computer Engineering is a field of engineering that is mainly concerned with applying computer hardware and software to solve practical problems. The primary purpose of the Computer Engineering Program is to prepare students for a successful professional career in the field of computer engineering. The curriculum is structured to provide each student with a strong foundation in the basic sciences of chemistry, mathematics, and physics. In addition, Computer Engineering students will take courses in the following areas: electric circuits, electronics, digital logic circuits, computer organization and architecture, computer interfacing, programming languages, data structures, operating systems, software engineering and microprocessor systems.

The objectives of the Computer Engineering program at Prairie View A&M University are to:

1. Produce graduates who are well prepared to practice in the Computer Engineering area.
2. Produce graduates who are well prepared for engineering practice including understanding an appreciation for business practices, oral and written communications skills, professional integrity and ethical, social, and political responsibility.
3. Produce graduates who have conceptual understanding to apply engineering science and mathematics to the analysis and design of electrical or electronic devices, circuits and systems.
4. Produce 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.
5. Prepare outstanding students to pursue graduate degrees.

**PROFESSIONAL AND HONOR SOCIETIES**

The *Eta Kappa Nu Electrical Engineering Honor Society* and the *Institute of Electrical and Electronic Engineers*. The two electrical engineering organizations have student chapters in the department. Additional organizations are listed in the section on college requirements. Electrical engineering majors are eligible for membership in the professional and honor societies of the college and university.

*Institute of Electrical and Electronic Engineers (IEEE)*. A professional society open for membership to engineering students who are majoring in electrical engineering and to other students who have interests in electrical engineering. The chapter is affiliated with the national professional engineering society of the Institute of Electrical and Electronic Engineers.

*Eta Kappa Nu Electrical Engineering Honor Society*. A national honor society recognizing academic excellence in future engineers and those engineers who have made outstanding contributions to society. Membership is by invitation to the top junior and senior students majoring in electrical engineering.

**BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING DEGREE PROGRAM REQUIREMENTS**

<b>Core Curriculum</b> .....	<b>42 SCH</b>
All Electrical Engineering Core Curriculum requirements are shown in the suggested degree program.	
<b>College and Support Area Requirements</b> .....	<b>46 SCH</b>
MATH 1124, 2024, 2053, 3023 .....	14 SCH
CHEM 1011, 1021, 1033, 1043 .....	8 SCH
PHYS 2511, 2521 .....	2 SCH
CHEG 3003 .....	3 SCH
CVEG 2454 .....	4 SCH
ELEG 1022, 2023 .....	5 SCH
MCEG 2013 .....	3 SCH
ELEG, CHEG, CVEG, or MCEG 3051 .....	1 SCH
ELEG, CHEG, CVEG, or MCEG 4473, 4483 .....	6 SCH
<b>Major Requirements</b> .....	<b>40 SCH</b>
ELEG 3011, 3013, 3021, 3043, 3063, 3071, 3073, 4253, 4303, 4311, 4353, 4393	
COMP 1223, 2013, 3223, 3063	
<b>Technical Electives</b> .....	<b>6 SCH</b>
<b>Total Degree Requirements</b> .....	<b>134 SCH</b>

**COMPUTER ENGINEERING SUGGESTED TECHNICAL ELECTIVES**

At least one technical elective must be taken in the Electrical Engineering department. Internship and co-op courses are not suitable as technical electives.

- Electrical Engineering Courses:**  
ELEG 4263 VLSI Circuit Design  
ELEG 4053 Digital Signal Processing  
ELEG 4273 Analog and Mixed Signal Techniques I  
ELEG 4333 Communication Network Engineering  
ELEG 4343 Microcontroller Applications

**Other Technical Electives:**

- MATH 4063 Numerical Analysis
- MATH 3073 Linear Algebra
- COMP 3113 Object-oriented Analysis and Design
- COMP 3143 Introduction to Java
- COMP 4953 Data Base Management

**Eligibility to Take Upper Division College Courses**

The College of Engineering requires an eligibility standard for the students to take upper division college courses. Students in the Electrical Engineering Program must complete a prescribed list of courses in the following with a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

- CHEM 1033 General Inorganic Chemistry
- CHEM 1011 Inorganic Chemistry Lab
- ENGL 1143 Technical Writing
- PHYS 2513 University Physics I
- PHYS 2511 General Physics Lab I
- MATH 1124 Calculus with Analytic Geometry I
- MATH 2024 Calculus with Analytic Geometry II
- ELEG 1022 Fundamentals of Electrical and Computer Engineering
- ELEG 1043 Computer Applications in Engineering

**COMPUTER ENGINEERING SUGGESTED DEGREE PROGRAM SEQUENCE**

<b>FRESHMAN YEAR</b>					
<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
ENGL 1123	Freshman Composition I	3	ENGL 1143	Technical Writing	3
MATH 1124	Calculus I	4	MATH 2024	Calculus II	4
CHEM 1033	General Inorganic Chemistry I	3	CHEM 1043	General Inorganic Chemistry II	3
CHEM 1011	Inorganic Chemistry Laboratory	1	CHEM 1021	Inorganic Chemistry Laboratory	1
ELEG 1022	Fund of Elect. and Comp. Engr.	2	PHYS 2513	University Physics I	3
SPCH 1003	Fund. of Speech Communication	3	PHYS 2511	General Physics Lab I	1
			ELEG 1043	Computer Appl. in Engineering	3
<b>Total</b>		<b>16</b>	<b>Total</b>		<b>18</b>

<b>SOPHOMORE YEAR</b>					
<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
MATH 2043	Differential Equations	3	ELEG 2023	Network Theory I	3
PHYS 2523	University Physics II	3	MATH 2053	Discrete Math	3
PHYS 2521	General Physics Lab II	1	MCEG 2013	Thermodynamics I	3
COMP 1223	Computer Science II	3	COMP 2013	Data Structures	3
CVEG 2454	Statics and Dynamics	4	POSC 1113	American Government I	3
HIST 1313	U.S. to 1876	3	HIST 1323	The U.S.-1876 to Present	3
<b>Total</b>		<b>17</b>	<b>Total</b>		<b>18</b>

**JUNIOR YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
MATH 3023    Probability and Statistics	3	COMP 3223    Software Engineering	3
ELEG 3013    Network Theory II	3	ELEG 3073    Microprocessor System Design	3
ELEG 3063    Logic Circuits	3	ELEG 3071    Microprocessor System Design Lab	1
ELEG 3021    Logic Circuits Lab	1	ELEG 4303    Introduction to Digital Design	3
ELEG 3011    Circuits Lab	1	ELEG 3043    Electronics I	3
POSC 1123    American Government II	3	ELEG 3051    Professional Engineering I	1
		CHEG 3003    Engineering Economy	3
<i><b>Total</b></i>	<i><b>17</b></i>	<i><b>Total</b></i>	<i><b>17</b></i>

**SENIOR YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
ELEG 4253    Computer Interfacing and Comm.	3	ELEG 4353    Advanced Logic Design	3
ELEG 4393    Computer Organization and Design	3	ELEG 4311    Advanced Logic Design Lab	1
ELEG 4473    Senior Design I	3	ELEG 4483    Senior Design II	3
COMP 3063    Operating Systems	3		6
	3	Technical Electives	
	3		
	3		
<i><b>Total</b></i>	<i><b>18</b></i>	<i><b>Total</b></i>	<i><b>13</b></i>

## **Department of Engineering Technology**

### **ADMINISTRATIVE OFFICER**

Mohammed T. Hussein, *Interim Department Head*

### **FACULTY**

Suxia Cui, *Computer Engineering Technology*  
Faizul Islam, *Electrical Engineering Technology*  
Bobby Kennard, *Computer-Aided Drafting and Design*  
Mohan A. Ketkar, *Electrical Engineering Technology*  
David A. Kirkpatrick, *Electrical Engineering Technology*  
Sarhan M. Musa, *Computer Engineering Technology*  
David Perez, *Computer Engineering Technology*  
N.N. Sarker, *Computer Engineering Technology*

### **PURPOSE AND GOALS**

The Department of Engineering Technology offers educational programs and experiences designed to prepare students to meet the challenging demands of industry, society, and the nation as a whole. The department is organized to offer instruction in computer engineering technology, electrical engineering technology, and computer-aided drafting and design. Each program prepares students to work as engineering technologists capable of applying engineering principles to design, construction, operation, and industrial production.

The goal of the Department of Engineering Technology is to provide students with the skills, knowledge, and experience that will produce competent engineering technologists. The technologist must be able to produce practical workable results quickly, install and operate technical systems, devise hardware from proven concepts, develop and produce products, manage construction processes, and provide sales support for products and systems.

### **SPECIAL EMPHASIS OPTIONS**

In addition to the degree programs, students may select special options available in the electrical engineering technology and computer engineering technology degree programs.

### **ELIGIBILITY TO TAKE UPPER DIVISION COLLEGE COURSES**

The College of Engineering requires an eligibility standard for the students to take upper division college courses. Students in the Engineering Technology Programs must complete a prescribed list of courses in the following with a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

MATH 1113 College Algebra  
MATH 1123 Trigonometry  
CPET 1013 Computer Application to Engineering Technology I  
CPET 1023 Computer Application to Engineering Technology II  
ELET 1111 Direct Current Circuits Laboratory  
ELET 1113 Direct Current Circuits  
ELET 1141 Alternating Current Circuits Laboratory  
ELET 1143 Alternating Current Circuits

**HONOR SOCIETIES, CLUB AND SERVICE ORGANIZATIONS**

The *Computer Engineering Technology Association* is an academic organization. Membership is open to all students in computer engineering technology and any student in the College of Engineering. Members must maintain a 2.50 grade point average and must be in good standing at the University. The association’s objective is to provide students with the opportunity to become more familiar with technical and scientific development; to share information, ideas and experiences; and to re-design on up-to-date computers and the many possible peripherals they may control.

The *Engineering Technology Association (ETA)* helps to increase and deepen the interest and knowledge of students enrolled in the electrical engineering technology program. It provides professional orientation in an effort to enlarge students’ perspectives and makes them more aware of job opportunities in their field. Membership is open to all students enrolled in the electrical engineering technology program.

*Institute of Electrical and Electronic Engineers (IEEE)*, Engineering Technology Chapter. A professional society open to membership by engineering technology students who are majoring in electrical engineering and by other engineering technology students who have interests in electrical engineering. The chapter is affiliated with the national professional engineering society of the Institute of Electrical and Electronic Engineers.

The *American Drafting and Design Association, (ADDA)* is open to students enrolled in drafting classes. Student chapter members are eligible to participate in all functions sponsored by ADDA.

**BACHELOR OF SCIENCE IN COMPUTER ENGINEERING TECHNOLOGY PROGRAM**

The Bachelor of Science degree program in computer engineering technology is designed to give students a solid foundation in mathematics, basic science, computer hardware and software. Students are provided with a sound technical foundation employing the latest techniques of the discipline. The program is designed to prepare students to assemble, calibrate, install, maintain, troubleshoot, and redesign modern computers, and the variety peripherals they may control, and network design, administration and management.

Graduates of the computer engineering technology program are in high demand because of the current expansion of computer and computer-related industries. Demand is heightened by the increasing application of computer technology to all aspects of engineering and industrial development, as well as to consumer and consumer-oriented industries. As a result, there is an increasing need for well-trained microprocessor application designers, interface designers, software specialists, and sales representatives.

**COMPUTER ENGINEERING TECHNOLOGY DEGREE PROGRAM REQUIREMENTS**

**Core Curriculum** ..... 42 SCH

All Engineering Technology Core Curriculum requirements are shown in the suggested degree program.

**College Requirements** ..... 24 SCH

PHYS 2111, 2113, 2121, 2123 ..... 8 SCH

TECH 1002, 3203 ..... 5 SCH

MATH 1123, 1124, 2024 ..... 11 SCH

**Major Requirements** ..... 49 SCH

CPET 1023, 2111, 2113, 3161, 3163, 3231, 3233, 4061, 4063, 4082, 4092, 4111, 4113, 4151, 4153, 4361, 4363, MCET 3103 and 11 semester credit hours from the software technology or computer hardware special emphasis option.

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<b>Support Area Requirements</b> .....	<b>21 SCH</b>
CHEM 1011, 1021 .....	2 SCH
TECH 1103.....	3 SCH
ELET 1111, 1113, 1141, 1143, 2221, 2223, 2251, 2253.....	16 SCH

**Total Degree Requirements** ..... **136 SCH**

**Requirements for Computer Engineering Technology as a Minor Field** ..... **25 SCH**

Students must complete the following 25 SCH of courses to satisfy the requirements of the Minor of Computer Engineering Technology.

CPET 1013 Computer Application to Engineering Technology I  
CPET 1023 Computer Application to Engineering Technology II  
CPET 2111 Digital Logic Laboratory  
CPET 2113 Digital Logic Circuits  
CPET 3013 Software Engineering Technology I  
CPET 3251 Digital Hardware Design Laboratory  
CPET 3253 Digital Hardware Design  
CPET 4061 Data Communication Methods Laboratory  
CPET 4063 Data Communication Methods  
CPET 4361 Computer Networking Laboratory  
CPET 4363 Computer Networking

#### **TECHNICAL ELECTIVES FOR SPECIAL EMPHASIS OPTIONS**

##### **Computer Hardware**

The computer hardware special emphasis option is designed to cover the electronics, hardware, and software aspects of computers in order to provide a graduate of the computer hardware option with a total computer systems perspective. Specific areas covered in the curriculum are electronics, digital circuits, computer architecture, programming languages ranging from assemblies to high level and microcomputer systems. The program interfaces with associate degree programs in computer engineering technology and related programs.

CPET 3251 Digital Hardware Design Laboratory  
CPET 3253 Digital Hardware Design  
CPET 4381 Digital Signal Processing Applications Laboratory  
CPET 4383 Digital Signal Processing Applications  
CPET 4391 Programmable Microcontrollers Laboratory  
CPET 4393 Programmable Microcontrollers

##### **Software Technology**

The software technology special emphasis option curriculum is designed to cover both hardware and software concepts of computers in order to provide a graduate of the program a comprehensive computer system background. Specific areas covered in the curriculum are software for microprocessor based system management, microprocessor real-time systems, computer networks and software engineering technology management. Throughout this special emphasis option program, the student works with modern laboratory test equipment, state of the art computers and microprocessor trainers, and peripherals. The program interfaces with associate degree programs in computer engineering technology and related programs.

##### **Software Technology**

CPET 3013 Software Engineering Technology I  
CPET 3031 Modern Programming Techniques Laboratory  
CPET 3033 Modern Programming Techniques  
CPET 4013 Software Engineering Technology II  
ELET 3023 Computer Applications to Electrical Problems

Technical electives require departmental approval.

#### **COMPUTER ENGINEERING TECHNOLOGY SUGGESTED DEGREE PROGRAM SEQUENCE**

**FRESHMAN YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
ENGL 1123 Freshman Composition I	3	ENGL 1133 Freshman Composition II	3
MATH 1113 Algebra	3	MATH 1123 Trigonometry	3
SPCH 1003 Fund. of Speech Communication	3	TECH 1103 Computer-Aided Drafting	3
ELET 1113 DC Circuits	3	ELET 1143 AC Circuits	3
ELET 1111 DC Circuits Laboratory	1	ELET 1141 AC Circuits Laboratory	1
TECH 1002 Applied Sciences Seminar	2	CPET 1023 Computer Applications II	3
CPET 1013 Computer Applications I	3		
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>16</b>

**SOPHOMORE YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
ELET 2223 Basic Electronics I	3	MATH 2024 Calculus and Analytical Geom. II	4
ELET 2221 Basic Electronics Lab	1	PHYS 2123 General Physics II	3
MATH 1124 Calculus and Analytical Geom. I	4	PHYS 2121 General Physics II Lab	1
PHYS 2111 General Physics I Lab	1	ELET 2253 Basic Electronics II Lab	3
PHYS 2113 General Physics I	3	ELET 2251 Basic Electronics II Lab	1
POSC 1113 American Government I	3	CPET 2113 Digital Logic Circuits	3
	3	CPET 2111 Logic Laboratory	1
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>16</b>

**JUNIOR YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
POSC 1123 American Government II	3	Social and Behavioral Science	3
CHEM 1013 General Inorganic Chemistry	3	CPET 3233 Micropro Assembly Lang	3
CHEM 1011 Inorganic Chemistry Laboratory	1	CPET 3231 Micropro Assembly Lang Lab	1
HIST 1313 U.S. to 1876	3	Technical Elective	1
CPET 3163 CPU Arch. Hardware	3	TECH 3203 Engin./Tech. Communication	3
CPET 3161 CPU Arch Hardware	1	CHEM 1023 General Inorganic Chemistry II	3
MCET 3103 Math Applications for Technology	3	CHEM 1021 Inorganic Chemistry Laboratory II	1
		Visual and Performing Arts	3
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>17</b>

**SENIOR YEAR**

<i><b>First Semester</b></i>	<i><b>Hours</b></i>	<i><b>Second Semester</b></i>	<i><b>Hours</b></i>
CPET 4063 Data Communication Methods	3	CPET 4363 Computer Networking	3
CPET 4061 Data Communication Methods Lab	1	CPET 4361 Computer Network Lab	1
Technical Electives	6	CPET 4153 Micro Peripheral Hdw Lab	3
CPET 4113 Appl. Micropro Software	3	HIST 1323 The U.S.-1876 to Present	3
CPET 1111 Appl. Micropro Software Lab	1	CPET 4151 Micro peripheral Hardware Lab	1
CPET 4082 Senior Project I	2	Technical Elective	5
		CPET 4092 Senior Project II	2
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>18</b>

**BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING TECHNOLOGY PROGRAM**

The Electrical Engineering Technology Program offers a Bachelor of Science degree in electrical engineering technology. Students in this program may choose to concentrate either in communication electronics or digital electronics.

The communication electronics option is designed to prepare graduates who are highly skilled in the use of science, mathematics, computers, and electronics for the communications electronics industry. Graduates with a background in communication electronics are in high demand because of the impact of satellites and computers on the communication industry. This demand is heightened by the increasing development of new and advanced methods of transmitting and receiving of digital data in all areas of the industry.

The digital electronics option is concerned with the design, fabrication, and utilization of integrated circuits, discrete components, and semiconductors used in various electronic products. Also, students majoring in electrical engineering technology will have an opportunity to enroll in robotic and laser technology courses.

Opportunities are excellent and graduates are qualified to apply their knowledge in a number of electronics and related positions. With the increased use of communications and digital electronic products in the United States, job opportunities for graduates of this program are likely to grow faster than those in any other area.

**ELECTRICAL ENGINEERING TECHNOLOGY DEGREE PROGRAM REQUIREMENTS**

**Core Curriculum** ..... **42 SCH**

All Engineering Technology Core Curriculum requirements are shown in the suggested degree program.

**College Requirements** ..... **24 SCH**

PHYS 2111, 2113, 2121, 2123 ..... 8 SCH

TECH 1002, 3203 ..... 5 SCH

MATH 1123, 1124, 2024 ..... 11 SCH

**Major Requirements** ..... **53 SCH**

ELET 1111, 1113, 1141, 1143, 2221, 2223, 2251, 2253, 3023, 3241, 3243, 3451, 3453, 3521, 3523, 4082, 4092, 4241, 4243, MCET 3103 and 11 semester credit hours from the communications electronics or digital electronics special emphasis option.

**Support Area Requirements** ..... **16 SCH**

CPET 1023, 2111, 2113, 4181, 4183 ..... 11 SCH

CHEM 1011, 1021 ..... 2 SCH

TECH 1103 ..... 3 SCH

**Total Degree Requirements** ..... **135 SCH**

**Requirements for Electrical Engineering Technology as a Minor Field** ..... **24 SCH**

Students must complete at least 24 SCH of courses from the following list to satisfy the requirements of the Minor of Electrical Engineering Technology.

ELET 1111 Direct Current Circuits Laboratory

ELET 1113 Direct Current Circuits

ELET 1141 Alternating Current Circuits Laboratory

ELET 1143 Alternating Current Circuits

ELET 2221 Basic Electronics Laboratory I

ELET 2223 Basic Electronics I

ELET 2251 Basic Electronics Laboratory II

ELET 2253 Basic Electronics II

ELET 3241 Network Analysis Laboratory  
ELET 3243 Network Analysis  
ELET 3701 Communication Circuits Laboratory I  
ELET 3703 Communication Circuits I  
ELET 4801 Communication Circuits II Laboratory  
ELET 4803 Communication Circuits II  
ELET 4241 Operational Amplifier Theory and Applications Laboratory  
ELET 4243 Operational Amplifier Theory and Applications

### **TECHNICAL ELECTIVES FOR SPECIAL EMPHASIS OPTIONS**

#### **Communication Systems**

The communications electronics special emphasis option is designed to provide students with a strong background in all aspects of electrical/electronics that are involved the transmission, reception, and production of audio, video, and digital data. Students in the communications electronics option will be exposed to state-of-the-art equipment, including satellite transmission/reception systems and analog/digital information transmission technology. Graduates will be prepared to work in the communications industry as broadcast engineers, production engineers, technical directors, and transmission systems specialists. The program interfaces with associate degree programs in electrical/electronics engineering technology and with related programs.

ELET 3003 Antennas and Transmission Systems  
ELET 3701 Communication Circuits I Laboratory  
ELET 3703 Communication Circuits I  
ELET 4801 Communication Circuits II Laboratory  
ELET 4803 Communication Circuits II  
CPET 4061 Data Communication Methods Laboratory  
CPET 4063 Data Communication Methods  
ELET 4903 Communication Circuits III  
ELET 4901 Communication Circuits III

#### **Digital Electronics**

The digital electronics special emphasis option is available to students interested in applications of digital electronics in automation and robotics, and electrical/electronics products and the industrial and electrical systems. This option combines elements of the design and development of digital electronics and the fabrication and manufacture of printed circuits, components, and microelectronics. Graduates of this program find career opportunities in government and industry, particularly in high technology companies utilizing digital electronics technology. The program is designed to interface with associate degree programs in electrical/electronics engineering technology and with related programs.

ELET 3603 Digital Integrated Circuit Devices and Applications  
ELET 4241 Operational Amplifier Theory and Applications Laboratory  
ELET 4243 Operational Amplifier Theory and Applications  
ELET 4513 Advanced Integrated Circuits

Technical electives require departmental approval.

**ELECTRICAL ENGINEERING TECHNOLOGY SUGGESTED DEGREE PROGRAM SEQUENCE**

**FRESHMAN YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
ENGL 1123	Freshman Composition I	3	ENGL 1133	Freshman Composition II	3
MATH 1113	Algebra	3	MATH 1123	Trigonometry	3
SPCH 1003	Fund. of Speech Communication	3	TECH 1103	Computer-Aided Drafting	3
ELET 1113	DC Circuits	3	ELET 1143	AC Circuits	3
ELET 1111	DC Circuits Laboratory	1	ELET 1141	AC Circuits Laboratory	1
TECH 1002	Applied Sciences Seminar	2	CPET 1023	Computer Applications II	3
CPET 1013	Computer Applications I	3			
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>16</b>

**SOPHOMORE YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
ELET 2223	Basic Electronics I	3	PHYS 2121	General Physics II Lab	1
ELET 2221	Basic Electronics Lab	1	PHYS 2123	General Physics II	3
MATH 1124	Calculus and Analytical Geom. I	4	ELET 2253	Basic Electronics II	3
PHYS 2113	General Physics I	3	ELET 2251	Basic Electronics II Lab	1
PHYS 2111	General Physics Lab I	1	MATH 2024	Calculus and Analytical Geom. II	4
POSC 1113	American Government I Humanities	3 3	CPET 2113	Digital Logic Circuits	3
			CPET 2111	Logic Laboratory	1
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>16</b>

**JUNIOR YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
POSC 1123	American Government II	3		Social and Behavioral Science	3
ELET 3521	Instrument and I/O Transducers Lab	1	TECH 3203	Engin./Tech. Communication	3
ELET 3523	Instrument and I/O Transducers	3	CHEM 1023	General Inorganic Chemistry II	3
MCET 3103	Math Apps for Tech	3	CHEM 1021	Inorganic Chemistry Laboratory II	1
ELET 3453	Robotics I	3	ELET 3203	Computer Applications Elect. Prob.	3
ELET 3451	Robotics I Laboratory	1	ELET 3243	Network Analysis	3
CHEM 1013	General Inorganic Chemistry	3	ELET 3241	Network Analysis Lab	1
CHEM 1011	Inorganic Chemistry Laboratory	1			
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>17</b>

		<b>SENIOR YEAR</b>			
<i><b>First Semester</b></i>		<i><b>Hours</b></i>	<i><b>Second Semester</b></i>		<i><b>Hours</b></i>
ELET 4241	Operat. Amp Thry. and Apps. Lab	1	CPET 4181	Single Chip Microprocessor Lab	1
ELET 4243	Operat. Amp Thry. and Apps.	3	CPET 4183	Single Chip Microprocessor	3
HIST 1313	U.S. to 1876	3	HIST 1323	The U.S.-1876 to Present	3
	Technical Elective	6		Technical Elective	5
ELET 4082	Senior Project I	2	ELET 4092	Senior Project II	2
	Visual and Performing Arts	3			
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>14</b>

**BACHELOR OF SCIENCE IN INDUSTRIAL TECHNOLOGY PROGRAM  
(COMPUTER-AIDED DRAFTING AND DESIGN)**

This program prepares students for design, manufacturing, and management positions in industry. Industrial technologists are involved with the applied professional functions of industry rather than its theoretical aspects. Scientific and engineering principles are used to solve technical problems or to coordinate personnel-oriented needs at the supervisory or production management levels. The degree program prepares students for employment in the various design areas of computer-aided drafting and design, and engineering.

**INDUSTRIAL TECHNOLOGY DEGREE PROGRAM REQUIREMENTS**

<b>Core Curriculum</b> .....	<b>42 SCH</b>
All Industrial Technology Core Curriculum requirements are shown in the suggested degree program. .	
<b>College Requirements</b> .....	<b>7 SCH</b>
MATH 1123, 1124	
<b>Major Requirements</b> .....	<b>54 SCH</b>
TECH 1002, 1033, 1103, 2003, 2103, 2163, 2313, 3013, 3203, 3223, 3233, 3383, 4072, 4082, 4103, 4273, 4403 and 6 semester credit hours of technical electives.	
<b>Support Area Requirements</b> .....	<b>27 SCH</b>
CPET 1023, 2111, 2113 .....	7 SCH
ELET 1111, 1113 .....	4 SCH
CHEM 1011, 1021 .....	2 SCH
PHYS 2111, 2113, 2121, 2123 .....	8 SCH
Management Electives.....	6 SCH
<b>Total Degree Requirements</b> .....	<b>130 SCH</b>

**INDUSTRIAL TECHNOLOGY SUGGESTED DEGREE PROGRAM SEQUENCE**

**FRESHMAN YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
ENGL 1123 Freshman Composition I	3	ENGL 1133 Freshman Composition II	3
MATH 1113 College Algebra	3	MATH 1123 Trigonometry	3
CPET 1013 Computer Applications I	3	TECH 1103 Computer-Aided Drafting I	3
SPCH 1003 Fund. of Speech Communication	3	TECH 2003 Basic CAM	3
TECH 1002 Engineering/Tech Seminar	2	CPET 1023 Computer Appl. II	3
TECH 1033 Engineering Graphics	3		
<b>Total</b>	<b>17</b>	<b>Total</b>	<b>15</b>

**SOPHOMORE YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
HIST 1313 U.S. to 1876	3	HIST 1323 The U.S.-1876 to Present	3
Management Elective	3	MATH 1124 Calculus and Analytical Geom. I	4
ELET 1113 DC Circuits	3	TECH 2163 Architectural Drafting	1
ELET 1111 DC Circuits Lab	1	CPET 2111 Digital Logic Lab	3
Visual and Performing Arts	3	CPET 2113 Digital Logic Circuits	3
TECH 2103 Computer-Aided Draft II	3	Humanities	3
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>17</b>

**JUNIOR YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
PHYS 2113 General Physics I	3	TECH 3223 Electromechanical Drafting	3
PHYS 2111 General Physics II Lab	1	POSC 1123 American Government II	3
TECH 3383 Piping Drafting	3	TECH 3233 Industrial Mgmt. and Supervision	3
TECH 2313 Quality Assurance	3	TECH 3203 Engin./Tech. Communication	3
POSC 1113 American Government I	3	PHYS 2123 General Physics II	3
TECH 3013 Industrial Design	3	PHYS 2121 General Physics II Lab	1
<b>Total</b>	<b>16</b>	<b>Total</b>	<b>16</b>

**SENIOR YEAR**

<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>	<i>Hours</i>
TECH 4403 Machine Drafting	3	Technical Electives	6
TECH 4103 Advanced Comp-Aid Design	3	TECH 4082 Senior Project II	2
Social and Behavioral Science	3	CHEM 1023 General Inorganic Chemistry II	3
TECH 4273 Industrial Safety Management	3	CHEM 1021 Inorganic Chemistry Laboratory II	1
TECH 4072 Senior Project I	2	Management Elective	3
CHEM 1013 General Inorganic Chemistry	3		
CHEM 1011 Inorganic Chemistry Laboratory	1		
<b>Total</b>	<b>18</b>	<b>Total</b>	<b>15</b>

## **Department of Mechanical Engineering**

### **ADMINISTRATIVE OFFICER**

Shield B. Lin, *Department Head, Mechanical Engineering*

### **FACULTY**

Paul O. Biney, *Mechanical Engineering*  
Ronald D. Boyd, *Mechanical Engineering*  
Ing Chang, *Mechanical Engineering*  
Ali E. Ekhlassi, *Mechanical Engineering*  
Surjit S. Grewal, *Mechanical Engineering*  
Ziaul Huque, *Mechanical Engineering*  
James O. Morgan, *Mechanical Engineering*  
Jianren Zhou, *Mechanical Engineering*

### **PURPOSE AND GOALS**

As one of the broadest engineering branches, mechanical engineering includes design, analysis, and manufacturing associated with (1) energy, and (2) structures and motion in mechanical systems. Mechanical engineers design machines, processes, and systems utilizing mechanical and thermal power. The work of mechanical engineers includes, but is not limited to, the following areas: machinery design and construction, design and analysis of thermal systems, manufacturing, instrumentation and controls, fluid and solid mechanics, plant engineering, materials specification and evaluation, research and development, and technical sales. Many mechanical engineers are promoted to management and administrative positions.

Because of the global consequences of many engineering endeavors, and because of the continually changing technological climate, the department emphasizes an integrated curriculum that overlaps other engineering branches and the physical sciences. Graduates of the mechanical engineering curriculum will be prepared to be technical leaders in tomorrow's society.

The goal of the Mechanical Engineering Program is to produce industrial, scientific, and technological leaders capable of systematically identifying, addressing, and solving technical problems whose solutions will benefit society. Specific objectives of the Mechanical Engineering Program are to produce graduates who have:

1. the techniques and skills necessary for modern mechanical engineering practices, and an ability to function effectively in multi-disciplinary teams;
2. an ability in life-long learning skills, a knowledge of contemporary issues, and an ability to communicate effectively;
3. an understanding of global and societal context in the aspects of professional and ethical responsibility and the impact of engineering solutions on society;
4. the qualifications to be employed by public and private sectors in the State of Texas and the nation; and
5. the qualifications to pursue graduate degrees.

## ELIGIBILITY TO TAKE UPPER DIVISION COLLEGE COURSES

The College of Engineering requires an eligibility standard for the students to take upper division college courses. Students in the Mechanical Engineering Program must complete a prescribed list of courses in the following with a minimum Grade Point Average (GPA) of 2.5 to be eligible to enroll in upper division (3000 or 4000 level) courses in the College. Students transferring to the College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

CHEM 1033 General Inorganic Chemistry  
CHEM 1011 Inorganic Chemistry Lab  
ENGL 1143 Technical Writing  
PHYS 2513 University Physics I  
PHYS 2511 General Physics Lab I  
MATH 1124 Calculus with Analytic Geometry I  
MATH 2024 Calculus with Analytic Geometry II  
MCEG 1213 Creative Engineering I  
ELEG 1043 Computer Applications in Engineering

## PROFESSIONAL AND HONOR SOCIETIES

*American Society of Mechanical Engineers (ASME).* The department sponsors the student chapter of American Society of Mechanical Engineers, the national professional society for mechanical engineering that seeks to develop professional integrity, ethics, and organization skills among the mechanical engineering students on the campus.

*Pi Tau Sigma National Honor Society.* The mechanical engineering department has a chapter of Pi Tau Sigma, the National Mechanical Engineering Honor Society to recognize and honor outstanding mechanical engineering students on the campus.

## BACHELOR OF SCIENCE IN MECHANICAL ENGINEERING DEGREE PROGRAM REQUIREMENTS

<b>Core Curriculum</b> .....	<b>42 SCH</b>
All Mechanical Engineering Core Curriculum requirements are shown in the suggested degree program.	
<b>College and Support Area Requirements</b> .....	<b>49 SCH</b>
MATH 1124, 2024, 3023, 4173 .....	14 SCH
CHEM 1011, 1021, 1033, 1043 .....	8 SCH
PHYS 2511, 2521 .....	2 SCH
CHEG 3003 .....	3 SCH
CVEG 2043, 2053 .....	6 SCH
ELEG 2053 .....	3 SCH
MCEG 1213, 2013 .....	6 SCH
MCEG, CHEG, CVEG, or ELEG 3051 .....	1 SCH
MCEG, CHEG, CVEG, or ELEG 4473, 4483 .....	6 SCH
<b>Major Requirements</b> .....	<b>39 SCH</b>
MCEG 2023, 3011, 3013, 3021, 3023, 3031, 3033, 3043, 3053, 3063, 4043, 4063, 4093, 4123; CVEG 2063	
<b>Technical Electives</b> .....	<b>6 SCH</b>
<b>Total Degree Requirements</b> .....	<b>136 SCH</b>

**Mechanical Engineering Suggested Technical Electives**

Technical electives must be 3000 level or above. At least one technical elective must be taken in the department. Internship and co-op courses are not suitable for technical electives.

- MCEG 3073 Automatic Controls
- MCEG 3193 Introduction to Robotics
- MCEG 4143 Engineering Information Technology
- MCEG 4163 Special Topics
- MCEG 4183 Gas Dynamics
- CHEG 4153 Bioengineering
- CHEG 4163 Engineering Optimization
- CVEG 3073 Structural Analysis I
- CVEG 4024 Environmental Engineering
- CVEG 4063 Water Resources Engineering
- CVEG 4093 Systems Engineering
- ELEG 3033 Physical Electronics
- ELEG 3063 Logic Circuits
- MATH 3073 Linear Algebra
- MATH 4063 Numerical Analysis

**Requirements For Mechanical Engineering as a Minor Field**

Students must complete the following 18 SCH of courses to satisfy the Minor requirements.

- MCEG 3023 Thermodynamics II
  - MCEG 3033 Manufacturing Processes
  - MCEG 3043 Machine Design I
  - MCEG 3063 Fluid Mechanics
- and 6 semester hours of approved 3000 or 4000 level MCEG courses.

**MECHANICAL ENGINEERING SUGGESTED DEGREE PROGRAM SEQUENCE**

		<b>FRESHMAN YEAR</b>			
<i>First Semester</i>	<i>Hours</i>	<i>Second Semester</i>			<i>Hours</i>
MATH 1124	Calculus I	4	MATH 2024	Calculus II	4
MCEG 1213	Creative Engineering I	3	ELEG 1043	Computer Engineering	3
SPCH 1003	Fund. of Speech Communication	3	PHYS 2513	University Physics I	3
ENGL 1123	Freshman Composition I	3	PHYS 2511	General Physics Lab	1
CHEM 1033	General Inorganic Chemistry I	3	ENGL 1143	Technical Writing	3
CHEM 1011	Inorganic Chemistry Laboratory	1	CHEM 1043	General Inorganic Chemistry II	3
			CHEM 1021	Inorganic Chemistry Laboratory	1
<b>Total</b>		<b>17</b>	<b>Total</b>		<b>18</b>

**SOPHOMORE YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
HIST 1313	U.S. to 1876	3	MATH 2043	Differential Equations	3
CVEG 2043	Engineering Mechanics I	3	CVEG 2053	Engineering Mechanics II	3
POSC 1113	American Government I	3	CVEG 2063	Mechanics of Materials I	3
	Social and Behavioral Sciences Elective	3	MCEG 2013	Thermodynamics I	3
PHYS 2523	University Physics II	3	HIST 1323	The U.S.-1876 to Present	3
PHYS 2521	General Physics Lab II	1	POSC 1123	American Government II	3
<b>Total</b>		<b>16</b>	<b>Total</b>		<b>18</b>

**SUMMER SESSIONS**

<i>First Semester</i>		<i>Hours</i>
*MCEG 3156	Mechanical Engineering Internship I	6
<b>Total</b>		<b>6</b>

**JUNIOR YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
MCEG 3043	Machine Design I	3	MCEG 3013	Heat Transfer	3
MCEG 3023	Thermodynamics II	3	ELEG 2053	Introduction to Electrical Engin.	3
MCEG 2023	Materials Science and Engineering	3	MCEG 3033	Manufacturing Processes	3
MCEG 3053	Kinematic Design and Analysis	3	MCEG 3031	Manufacturing Processes Lab	1
MCEG 3063	Fluid Mechanics	3	MCEG 3021	Thermal Science Lab	1
MCEG 3011	Measurement/Instrumentation Lab	1	MATH 3023	Probability and Statistics	3
				Visual and Performing Arts Elective	3
			MCEG 3051	Professional Engineering I	1
<b>Total</b>		<b>16</b>	<b>Total</b>		<b>18</b>

**SUMMER SESSIONS**

<i>First Semester</i>			<i>Hours</i>
*MCEG 4156	Mechanical Engineering	Internship II	6
<b>Total</b>			<b>6</b>

**SENIOR YEAR**

<i>First Semester</i>		<i>Hours</i>	<i>Second Semester</i>		<i>Hours</i>
MCEG 4473	Senior Design and Professionalism I	3	MCEG 4483	Senior Design and Professionalism II	3
MCEG 4093	Finite Element Analysis and Design	3	MCEG 4123	Energy System Design	3
MCEG 4043	Machine Design II	3	MCEG 4063	Dynamic Systems and Controls	3
CHEG 3003	Engineering Economy	3		Technical Elective	3
MATH 4173	Advanced Math for Engineers	3		Humanities Elective	3
	Technical Elective	3			
<b>Total</b>		<b>18</b>	<b>Total</b>		<b>15</b>

\* Course may be taken for credit during a summer internship, but is not required in degree plan.