

Electrical Engineering, BSEE

Bachelor of Science in Electrical Engineering Degree Program Requirements

Complete Core Curriculum Listing at <https://catalog.pvamu.edu/universitycorecurriculum/>

Core Curriculum 42 Credit Hours

Communication (Select Two)		6
Mathematics		3
MATH 2413	Calculus with Analytic Geometry I	
Life and Physical Sciences		6
PHYS 2325	University Physics I	
PHYS 2326	University Physics II	
Language, Philosophy, and Culture (Select One)		3
Creative Arts (Select One)		3
American History (Select Two)		6
Government/Political Science		6
POSC 2305	American Government	
POSC 2306	Texas Government	
Social and Behavioral Sciences		3
CHEG 2308	Eco Anal Technical Application	
Component Area Option One		3
CVEG 2304	Global Development Issues	
Component Area Option Two (Select One)		3

College and Support Area Requirements

MATH 2320	Differential Equations	3
MATH 2413	Calculus with Analytic Geometry I	1
MATH 2414	Calculus with Analytic Geometry II	4
MATH 3302	Probability and Statistics	3
MATH 4317	Advanced Math for Engineers	3
CHEM 1112	General Chemistry Lab II	1
CHEM 1403	Chemistry for Engineers	4
OR		
CHEM 1303 & CHEM 1304	General Inorganic Chemistry I and General Inorganic Chemistry II	
PHYS 2125	University Physics Lab I	1
PHYS 2126	University Physics Lab II	1
ELEG 1101	Intro Engr Computer Sci & Tech	1
ELEG 1102	Introduction to Electrical and Computer Engineering Laboratory	1
ELEG 2305	Network Theory I	3
MCEG 2301	Thermodynamics I	3
Select one of the following:		4

ELEG 4247 & ELEG 4248	Senior Design and Professionalism I and Senior Design and Professionalism II	
CHEG 4247 & CHEG 4248	Senior Design and Professionalism -I and Senior Design and Professionalism - II	
CVEG 4200 & CVEG 4201	Senior Design and Professionalism - I and Senior Design and Professionalism - II	
MCEG 4247 & MCEG 4248	Senior Design and Professionalism-1 and Senior Design and Professionalism II	

Major Requirements

ELEG 1304	Computer Applications in Engineering	3
ELEG 2101	Electric Circuits Laboratory	1

ELEG 2131	Logic Circuits Lab	1
ELEG 2311	Logic Circuits	3
ELEG 3301	Network Theory II	3
ELEG 3302	Signals and Systems	3
ELEG 3303	Physical Principles of Solid State Devices	3
ELEG 3304	Electronics I	3
ELEG 3107	Microprocessor Systems Design Laboratory	1
ELEG 3307	Microprocessor System Design	3
ELEG 4300	Communication Theory	3
ELEG 4101	Electronics Laboratory	1
ELEG 4301	Electromechanical Energy Conversion	3
ELEG 4305	Electromagnetic Field Theory I	3
ELEG 4304	Electronics II	3
ELEG 4307	Servomechanism and Control Systems	3
Technical Electives		9
Electrical and Computer Engineering Laboratory Elective		2
Total Hours		126

Electrical Engineering Suggested Technical Electives

At least one technical elective 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 for technical electives.

Microelectronics Area

ELEG 4322	Electronic and Photonic Materials and Devices	3
ELEG 4336	Introduction to High Performance Computing	3
ELEG 4339	Computer Organization and Design	3

Communications/Signal Processing Area

Computer Engineering Area

ELEG 4339	Computer Organization and Design	3
ELEG 4325	Computer Interfacing and Communications	3
ELEG 4336	Introduction to High Performance Computing	3
ELEG 4335	Advanced Logic Design	3

Power and Control Systems Area

ELEG 4324	Power Electronics	3
ELEG 4302	Power Systems Engineering	3

Electrical and Computer Engineering Laboratory Electives

ELEG 3104	Microelectronic Processing and Characterization Lab	1
ELEG 4102	Power Laboratory	1
ELEG 4131	Advanced Logic Design Laboratory	1

Other Technical Electives

CVEG 4304	Systems Engineering	3
MCEG 3302	Thermodynamics II	3
MCEG 3306	Fluid Mechanics	3
MATH 4306	Numerical Analysis	3
MATH 3307	Linear Algebra	3
ELEG 4310	Special Topics ¹	3

¹ Special topics courses vary in content and may cover areas such as artificial intelligence, machine learning, cybersecurity, and power systems.

Technical Electives through Five-Year BS/MS Degree Plan Option

Students may, upon approval to the Five-Year BS/MS Degree Plan (<https://www.pvamu.edu/engineering/departments/five-year-bsms-programs/>) Option, apply up to six semester credit hours of graduate courses toward technical electives requirements.

Eligibility to Take Upper Division College Courses

The Roy G. Perry College of Engineering requires an eligibility standard for the students to take upper-division college courses. Students must have completed or be currently enrolled in all lower division (1000 and 2000 level) courses in English, Mathematics, Science, and Engineering to be eligible to enroll in upper-division (3000 or 4000 level) courses in the Roy G. Perry College of Engineering. The following course must be completed or currently enrolled in prior to enrolling in upper division courses:

CHEG 2308	Engineering Economics	3
CHEM 1112	General Chemistry Lab II	1
CHEM 1403	Chemistry for Engineers	4
COMM 1311	Introduction to Speech Communication	3
ELEG 1101	Intro Engr Computer Sci & Tech	1
ELEG 1102	Introduction to Electrical and Computer Engineering Laboratory	1
ELEG 1304	Computer Applications in Engineering	3
ELEG 2101	Electric Circuits Laboratory	1
ELEG 2305	Network Theory I	3
ENGL 1301	Freshman Composition I	3
ENGL 2311	Technical and Business Writing	3
MATH 2413	Calculus with Analytic Geometry I	4
MATH 2414	Calculus with Analytic Geometry II	4
MATH 2320	Differential Equations	3
MCEG 2301	Thermodynamics I	3
PHYS 2125	University Physics Lab I	1
PHYS 2126	University Physics Lab II	1
PHYS 2325	University Physics I	3
PHYS 2326	University Physics II	3

Total Hours **48**

Bachelor of Science in Electrical Engineering Degree Sequence

Core: <https://catalog.pvamu.edu/universitycorecurriculum/>

Freshman

Fall - Semester 1	Hours	Spring - Semester 2	Hours
Communication Core		3 Communication Core	3
Mathematics Core		4 MATH 2414	4
MATH 2413		CHEM 1403	4
ELEG 1101		1 CHEM 1112	1
ELEG 1102		1 Life and Physical Sciences Core	3
ELEG 1304		3 PHYS 2325	
Component Area Option Two Core		3 PHYS 2125	1
Total		15 Total	16

Total Hours: 31

Sophomore

Fall - Semester 1	Hours	Spring - Semester 2	Hours
MATH 2320		3 ELEG 2305	3
Life and Physical Sciences Core		3 ELEG 2101	1
PHYS 2326		ELEG 2311	3
PHYS 2126		1 ELEG 2131	1
Government/Political Science Core		3 Social and Behavioral Science Core	3
POSC 2305		CHEG 2308	
American History Core		3 Government/Political Science Core	3
MCEG 2301		3 POSC 2306	

	Language, Philosophy, and Culture Core	3
Total	16 Total	17

Total Hours: 33

Junior

Fall - Semester 1	Hours	Spring - Semester 2	Hours
MATH 4317		3 ELEG 3302	3
MATH 3302		3 ELEG 3307	3
ELEG 3301		3 ELEG 3107	1
ELEG 3303		3 ELEG 3304	3
American History Core		3 ELEG 4101	1
		CVEG 2304	3
Total		15 Total	14

Total Hours: 29

Senior

Fall - Semester 1	Hours	Spring - Semester 2	Hours
ELEG 4304		3 ELEG 4307	3
ELEG 4300		3 Electrical and Computer Engineering Laboratory Elective	1
ELEG 4301		3 ELEG 4248	2
ELEG 4305		3 Technical Elective	3
ELEG 4247		2 Technical Elective	3
Technical Elective		3 Creative Arts Core	3
		Electrical and Computer Engineering Laboratory Elective	1
Total		17 Total	16

Total Hours: 33

Name	Unit
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Total Semester Credit Hours: 126

Marketable Skills

Marketable skills, as defined by the Texas Higher Education Coordinating Board's 60x30TX Plan (<http://www.60x30tx.com/>), include interpersonal, cognitive, and applied skill areas, are valued by employers, and can be either primary or complementary to a major. Marketable skills are acquired by students through education, including curricular, co-curricular, and extracurricular activities.

BSEE Electrical Engineering

Degree Skills

1. Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
3. Ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts

Concentration Skills

1. Microelectronics
2. Communications/Signal processing and power systems
3. Computer engineering

Co-curricular and Extracurricular Skills

1. Project management
2. Communications
3. Teamwork