Computer Engineering, BS

Bachelor of Science in Computer 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 Science		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 2305	Discrete Mathematics	3
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
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
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 1301	Programming for Computer Engineering I	3
ELEG 1321	Programming for Computer Engineering II	3
ELEG 2101	Electric Circuits Laboratory	1

ELEG 2321	Data Structure and Algorithm with Python	3
ELEG 2331	Advanced Programming and Applications	3
ELEG 3301	Network Theory II	3
ELEG 2131	Logic Circuits Lab	1
ELEG 2311	Logic Circuits	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 4325	Computer Interfacing and Communications	3
ELEG 4330	Introduction to Digital Design	3
ELEG 4333	Communication Network Engineering	3
ELEG 4339	Computer Organization and Design	3
Technical Electives		**9**
Total Hours		**126**

Computer Engineering Suggested Technical Electives

All computer engineering majors must select one technical elective. Internship and co-op courses are not acceptable as technical electives.

COMP 3306	Operating Systems	3
COMP 3322	Software Engineering	3
COMP 3395	Database Management	3
ELEG 4335	Advanced Logic Design	3
MATH 3307	Linear Algebra	3
ELEG 4310	Special Topics [1]	3
ELEG 4361	Design of Digital System Applications Using Field Programmable Gate Array Devices	3
ELEG 4371	Foundation and Application of Internet of Things	3
ELEG 4377	Machine Learning for Engineering Applications	3
ELEG 4378	Mobile Edge Computing	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 courses must be completed or currently enrolled in prior to enrolling in upper-division courses:

CHEG 2308	Eco Anal Technical Application	3
CHEM 1403	Chemistry for Engineers	4
CHEM 1112	General Chemistry Lab II	1
ELEG 1301	Programming for Computer Engineering I	3
ELEG 1321	Programming for Computer Engineering II	3
ELEG 2321	Data Structure and Algorithm with Python	3
ELEG 2331	Advanced Programming and Applications	3
ELEG 1101	Intro Engr Computer Sci & Tech	1
ELEG 1102	Introduction to Electrical and Computer Engineering Laboratory	1
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
MATH 2305	Discrete Mathematics	3
PHYS 2125	University Physics Lab I	1
PHYS 2325	University Physics I	3
PHYS 2126	University Physics Lab II	1
PHYS 2326	University Physics II	3

Bachelor of Science in Computer 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		ELEG 1321	3
ELEG 1101	1	Component Area Option One	3
ELEG 1102	1	CVEG 2304	
ELEG 1301	3	Life and Physical Sciences Core	3
Component Area Option Two Core	3	PHYS 2325	
		PHYS 2125	1
Total	**15**	**Total**	**17**

Total Hours: 32

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 2131	1
PHYS 2126	1	ELEG 2311	3
CHEM 1403	4	ELEG 2331	3
CHEM 1112	1	Social and Behavioral Science Core	3
ELEG 2321	3	CHEG 2308	
		Creative Arts Core	3
Total	**15**	**Total**	**17**

Total Hours: 32

Junior

Fall - Semester 1	Hours	Spring - Semester 2	Hours
MATH 3302	3	ELEG 3302	3
MATH 2305	3	ELEG 3307	3
ELEG 3301	3	ELEG 3107	1
ELEG 4330	3	ELEG 3304	3
ELEG 3303	3	ELEG 4339	3
American History Core	3	American History Core	3
Total	**18**	**Total**	**16**

Total Hours: 34

Senior			
Fall - Semester 1	**Hours**	**Spring - Semester 2**	**Hours**
ELEG 4325	3	ELEG 4333	3
ELEG 4247	2	ELEG 4248	2
Government/Political Science Core	3	Government/Political Science Core	3
POSC 2305		POSC 2306	
Technical Elective	3	Technical Elective	3
Technical Elective	3	Language, Philosophy, and Culture Core	3
Total	**14**	**Total**	**14**

Total Hours: 28

Name	Unit

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.

BS Computer 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. Data analytics
2. Cybersecurity
3. Machine learning

Co-curricular and Extracurricular Skills

1. Teamwork
2. Communication skills
3. Problem solving and logical thinking