

Computer Science, BS

Bachelor of Science in Computer Science Degree Program Requirements

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

Core Curriculum 42 Credit Hours

Communication Core		6
ENGL 1301	Freshman Composition I	
ENGL 2311	Technical and Business Writing	
Mathematics		3
MATH 2413	Calculus with Analytic Geometry I	
Life and Physical Sciences		6
BIOL 1308 or CHEM 1303	Biology for Non-Science Major I General Inorganic Chemistry I	
PHYS 2325	University Physics I	
Language, Philosophy, and Culture (Select One)		3
Creative Arts (Select One)		3
American History		6
HIST 1301	United States History I	
HIST 1302	United States History II	
Government/Political Science		6
POSC 2305	American Government	
POSC 2306	Texas Government	
Social and Behavioral Sciences (Select One)		3
Component Area Option One (Select One)		3
Component Area Option Two		3
COMM 1311	Introduction to Speech Communication	

College Requirements

MATH 2413	Calculus with Analytic Geometry I	1
MATH 2414	Calculus with Analytic Geometry II	4

Major Requirements

COMP 1101	Intro to Basic Engr & Comp Sci	1
COMP 1121	Computer Science Lab I	1
COMP 1336	Computer Science I	3
COMP 1122	Computer Science Lab II	1
COMP 1337	Computer Science II	3
COMP 2310	Discrete Structures	3
COMP 2319	Computer Organization	3
COMP 2336	Data Structures	3
COMP 3305	Analysis of Algorithms	3
COMP 3306	Operating Systems	3
COMP 3322	Software Engineering	3
COMP 3395	Database Management	3
COMP 4100	Ethics and Social Issues in Computing	1
COMP 4207	Senior Design Project I	2
COMP 4208	Senior Design Project II	2
COMP 4311	Programming Languages	3
COMP 4312	Computer Networks	3
COMP 4314	Introduction to Parallel Computing	3
COMP 4323	Network Security	3
General CS Elective		3

Select one of the three concentration options below: 12**Regular Program concentration requirements:**

Two CS Lower Level Electives

Two CS Upper Level Electives

Cybersecurity Concentration Requirements:

COMP 3332 Cryptography

COMP 4331 Computer Forensics

COMP 4333 Ethical Hacking and Penetration Testing

One of the Following Concentration Electives:

COMP 2313 Introduction to Information Security

COMP 3331 Information Privacy

COMP 4332 Mobile Security

Data Science Concentration Requirements:

COMP 3311 Introduction to Data Science

COMP 4315 Data Mining and Analytics

COMP 4316 Machine Learning

COMP 4318 Information Retrieval

Natural Sciences Area Requirements ¹

Select one of the following sequences: 6

Science Sequence 1

CHEM 1303 & CHEM 1111 General Inorganic Chemistry I and General Chemistry Lab I

CHEM 1304 & CHEM 1112 General Inorganic Chemistry II and General Chemistry Lab II

PHYS 2325 & PHYS 2125 University Physics I and University Physics Lab I

Science Sequence 2

CHEM 1303 & CHEM 1111 General Inorganic Chemistry I and General Chemistry Lab I

PHYS 2325 & PHYS 2125 University Physics I and University Physics Lab I

PHYS 2326 & PHYS 2126 University Physics II and University Physics Lab II

Science Sequence 3

BIOL 1308 & BIOL 1108 Biology for Non-Science Major I and Biology for Non-Science Major I Lab

PHYS 2325 & PHYS 2125 University Physics I and University Physics Lab I

PHYS 2326 & PHYS 2126 University Physics II and University Physics Lab II

Math Area Requirements

MATH 3302 Probability and Statistics 3

MATH 3307 Linear Algebra 3

Total Hours 121

¹ Students are required to take all courses in Sequence 1, or Sequence 2, or Sequence 3. The students meet the 12 hours Science requirement by taking 6 hours from the core curriculum and the remaining 6 hours from the Science Sequences. Please note that one 3 hour course and 3 - 1 hour lab courses will count in the 6 hours not included in the core curriculum.

Computer Science Suggested Electives**Lower-Level Electives**

COMP 2300 Introduction to Web Design and Multimedia 3

COMP 2302 Applications Development using C# 3

COMP 2313	Introduction to Information Security	3
COMP 2314	Introduction to Java	3
COMP 2315	Python Programming Language	3
Upper-Level Electives		
COMP 3301	Embedded Systems	3
COMP 3311	Introduction to Data Science	3
COMP 3321	Graphics and Visual Computing	3
COMP 3331	Information Privacy	3
COMP 3332	Cryptography	3
COMP 3333	Smart Device App Development	3
COMP 3343	Internet of Things	3
COMP 4307	Special Topics	1-3
COMP 4315	Data Mining and Analytics	3
COMP 4316	Machine Learning	3
COMP 4318	Information Retrieval	3
COMP 4331	Computer Forensics	3
COMP 4332	Mobile Security	3
COMP 4333	Ethical Hacking and Penetration Testing	3
COMP 4384	Human-Computer Interaction	3

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

Students may, upon approval to the Five-Year BS/MS Degree Plan Option (see Roy G. Perry College of Engineering Special Program (<http://catalog.pvamu.edu/academicprogramsanddegreeplans/roygperrycollegeofengineering/#specialprogramstext>)), apply up to six 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 been 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. Students in Computer Science Program must earn a "C" or better in each of the math, science, English, and computer science courses to be eligible to enroll in upper-division (3000 or 4000 level) courses in the College. Students transferring to the Roy G. Perry College of Engineering with 60 or more semester hours from another institution will be allowed a period of one semester to comply.

Bachelor of Science in Computer Science Degree Sequence

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

Freshman

Fall - Semester 1	Hours	Spring - Semester 2	Hours
Mathematics Core		3 Communication Core	3
MATH 2413		ENGL 1301	
Component Area Option Two Core		3 MATH 2414	4
COMM 1311		Component Area Option One Core	3
Life and Physical Sciences Core		3 COMP 1337	3
PHYS 2325		COMP 1122	1
Science Sequence Lab		1	
COMP 1101		1	
COMP 1336		3	
COMP 1121		1	
Total		15 Total	14

Total Hours: 29

Sophomore

Fall - Semester 1	Hours	Spring - Semester 2	Hours
COMP 2336		3 American History Core	3
Lower Level CS Elective		3 HIST 1301	
COMP 2310		3 COMP 2319	3
Communication Core		3 Lower Level CS Elective	3
ENGL 2311		Social and Behavioral Science Core	3
Life and Physical Sciences Core		3 Science Sequence Course	3
BIOL 1308		Science Sequence Lab	1
or CHEM 1303			
Science Sequence Lab		1	
Total		16 Total	16

Total Hours: 32**Junior**

Fall - Semester 1	Hours	Spring - Semester 2	Hours
Government/Political Science Core		3 American History Core	3
POSC 2305		HIST 1302	
COMP 3306		3 COMP 3305	3
COMP 3395		3 COMP 3322	3
MATH 3302		3 General CS Elective	3
MATH 3307		3 Creative Arts Core	3
Total		15 Total	15

Total Hours: 30**Senior**

Fall - Semester 1	Hours	Spring - Semester 2	Hours
COMP 4100		1 COMP 4208	2
COMP 4207		2 COMP 4311	3
COMP 4312		3 COMP 4323	3
Upper Level CS Elective		3 Upper Level CS Elective	3
COMP 4314		3 Language, Philosophy, and Culture Core	3
Government/Political Science Core		3	
POSC 2306			
Total		15 Total	14

Total Hours: 29

Name	Unit
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Total Semester Credit Hours: 121

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 Science***Degree Skills***

1. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions
2. Design, implement and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
3. Apply computer science theory and software development fundamentals to produce computing-based solutions

Concentration Skills

1. Apply security principles and practices to maintain operations in the presence of risks and threats
2. Understand the application of the crosscutting concepts of confidentiality, integrity, availability, risk, adversarial thinking, and systems thinking