

# 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
CHEM 1303	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	
<b>College Requirements</b>		
MATH 2413	Calculus with Analytic Geometry I	1
MATH 2414	Calculus with Analytic Geometry II	4
<b>Major Requirements</b>		
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
<b>Select one of the three concentration options below:</b>		<b>12</b>

**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 <sup>1</sup> 6**

CHEM 1111 General Chemistry Lab I

PHYS 2125 University Physics Lab I

Four (4) additional SCH from Natural Sciences

**Math Area Requirements**

MATH 3302 Probability and Statistics 3

MATH 3307 Linear Algebra 3

**Total Hours 121**

<sup>1</sup> Students meet the 12 SCH Science requirement by taking 6 SCH from the core curriculum and the remaining 6 SCH from the Natural Sciences area. Please note that one 3 SCH course and three 1 SCH lab courses will meet the requirements in the Natural Sciences area.

## 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 (<https://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
PHYS 2125	1		
COMP 1101	1		
COMP 1336	3		
COMP 1121	1		
<b>Total</b>	<b>15 Total</b>		<b>14</b>

**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
CHEM 1303		Science Sequence Lab	1
CHEM 1111	1		
<b>Total</b>	<b>16 Total</b>		<b>16</b>

**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
<b>Total</b>	<b>15 Total</b>	<b>15</b>

**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			
<b>Total</b>	<b>15 Total</b>		<b>14</b>

**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