COMPUTER SCIENCE (BS)

Program Description

The BS in Computer Science is the traditional degree in computer science, and prepares you for a professional career or graduate studies in the discipline. The major emphasizes scientific, quantitative, and engineering problem-solving.

Entering and Completing the Major

In order to earn a degree, you must complete at least one academic major. SPU encourages students to explore various academic paths, so if you change your mind about a major, or want to include an additional program, you are able to do so, as outlined below.

Note that the University encourages you to enter your chosen major(s) as soon as you have determined it and are eligible to join it, especially by the start of your junior year. Students who transfer as juniors and seniors should enter a major within their first two quarters at SPU.

- If this is your first quarter at SPU and you identified a major in this department as your first choice on your application for admission to the University, you have gained entry to the major. To change or add a major, follow these instructions (https://spu.atlassian.net/l/cp/a3th1keb/).
- If you are an SPU student with an SPU cumulative GPA of 2.0 or better, follow these instructions (https://spu.atlassian.net/l/cp/a3th1keb/) to enter a major in this department.
- The University requires a grade of C- or better in all classes that apply to a major; however, programs may require higher minimum grades in specific courses. You may repeat an SPU course only once for a higher grade.
- To advance in this program, meet with your faculty advisor regularly to discuss your grades, course progression, and other indicators of satisfactory academic progress. If your grades or other factors indicate that you may not be able to successfully complete the major or minor, your faculty advisor can work with you to explore options, which may include choosing a different major.
- You must complete the major requirements that are in effect in the SPU Undergraduate Catalog for the year you enter the major.

Computer Science (BS)

108 Credits Minimum, Including 40 Upper Division (UD)

Code	Title	Credits
General Core		
CSC 1230	Problem Solving and Programming	5
CSC 2430	Data Structures I	5
CSC 2431	Data Structures II	5
CSC 3150	Systems Design	4
CSC 3220	Applications Programming	4
CSC 3221	Netcentric Computing	4
CSC 3310	Concepts in Programming Languages	4
CSC 3350	Operating Systems Programming	3
CSC 3430	Algorithm Design and Analysis	4
CSC 4410	Database Management	5
MAT 1234	Calculus I	5
MAT 1235	Calculus II	5
MAT 1236	Calculus III	5
MAT 2200	Engineering Probability and Statistics	3
or MAT 2360	Introduction to Statistics for the Sciences	
MAT 2401	Linear Algebra	3
or MAT 3237	Differential Equations	
Section Credits Required		64
Science Requirement		
Select 15 credits of the following, 10 credits must be from same discipline:		15
BIO 2101	General Biology	
BIO 2102	General Biology	
BIO 2103	General Biology	
CHM 1310	Survey of General Chemistry	
CHM 1211	General Chemistry I	
CHM 1212	General Chemistry II	
CHM 1213	General Chemistry III	
CHM 2213	Inorganic Qualitative Analysis	
CHM 1330	Survey of Organic Chemistry	
PHY 1121	Physics for Science and Engineering	
PHY 1122	Physics for Science and Engineering	
PHY 1123	Physics for Science and Engineering	
Section Credits Required		15
Discrete Math and Computer Hardware		
Select one of the two sequences		10
MAT 1720 & CSC 3750	Mathematics for Computer Science and Computer Architecture and Organization	
MAT 1720 & EE 1210 & CSC 3760	Mathematics for Computer Science and Introduction to Logic System Design and Computer Organization and Assembly Language	
Section Credits Required		10
Project & Internship		
CSC 3000	Principles of Professional Practice	1
or GS 3001	Internship and Job Search Strategies	
CSC 4151	Software Engineering I	3
CSC 4152	Software Engineering II	3
CSC 4898	Senior Capstone Seminar	3
CSC 4941	Computer Science Professional Experience [1]	1
Section Credits Required		11
Technical Electives		
Select eight credits of the following:		8
CPE 3280	Microcontroller System Design	
CSC 4210	Theory of Computation and Algorithm	
CSC 4220	Cybersecurity Fundamentals	
CSC 4250	Introduction to Artificial Intelligence	
CSC 4310	Compiler Design	
CSC 4350	Advanced Operating Systems	
CSC 4430	Advanced Programming	
CSC 4750	Computer Networks	
CSC 4760	Advanced Computer Architecture	
CSC 4800	Advanced Issues in Computer Science	
DAT 4500	Data and Society	
EE 4770	Fundamentals of Advanced Embedded Systems	

MAT/DAT 3380	Introduction to Data Science	
Section Credits Required		8
Total Credits		**108**

1

A tech internship or professional experience must be approved before enrolling in CSC 4941 and must be completed before passing CSC 4941.

Suggested Course Sequences

Four Year Plan

Check the quarter, day and time in the current time schedule as course offerings may change.

Course	Title	Credits
Freshman		
Variable		
UFDN 1000	The Christian Faith	5
WRI 1000	Academic Inquiry and Writing Seminar	5
WRI 1100	Disciplinary Research and Writing Seminar	5
Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/)		0-10
	Credits	**15-25**
Autumn		
CSC 1230	Problem Solving and Programming	5
MAT 1234	Calculus I	5
UCOL 1000	University Colloquium	1
	Credits	**11**
Winter		
CSC 2430	Data Structures I	5
MAT 1235	Calculus II	5
	Credits	**10**
Spring		
CSC 2431	Data Structures II	5
MAT 1236	Calculus III	5
	Credits	**10**
Sophomore		
Variable		
MAT 2360 or MAT 2200	Introduction to Statistics for the Sciences or Engineering Probability and Statistics	5
GS 3001	Internship and Job Search Strategies [1]	1
Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed		
	Credits	**6**
Autumn		
Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/)		15
	Credits	**15**
Winter		
CSC 3220	Applications Programming	4
MAT 1720	Mathematics for Computer Science	5
	Credits	**9**
Spring		
CSC 3221	Netcentric Computing	4
MAT 2401	Linear Algebra	3
	Credits	**7**
Junior		
Variable		
Technical Elective Courses [2]		
Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed		
	Credits	**0**
Autumn		
CSC 3310	Concepts in Programming Languages	4
GS 3001	Internship and Job Search Strategies [3]	1
PHY 1121	Physics for Science and Engineering	5
	Credits	**10**
Winter		
CSC 3430	Algorithm Design and Analysis	4
CSC 3750	Computer Architecture and Organization	5
PHY 1122	Physics for Science and Engineering	5
	Credits	**14**
Spring		
CSC 3150	Systems Design	4
CSC 3350	Operating Systems Programming	3
PHY 1123	Physics for Science and Engineering	5
	Credits	**12**
Senior		
Variable		
CSC 4410	Database Management	5
CSC 4941	Computer Science Professional Experience [4]	1
Technical Elective Courses [2]		
	Credits	**6**
Autumn		
CSC 4151	Software Engineering I	3
	Credits	**3**
Winter		
CSC 4152	Software Engineering II	3
	Credits	**3**
Spring		
CSC 4898	Senior Capstone Seminar	3
	Credits	**3**
	Total Credits	**134-144**

Code	Title	Credits
Technical Elective Courses		**8**
CPE 3280	Microcontroller System Design	5
CSC 4210	Theory of Computation and Algorithm	3
CSC 4220	Cybersecurity Fundamentals	3
CSC 4250	Introduction to Artificial Intelligence	3
CSC 4310	Compiler Design	3
CSC 4350	Advanced Operating Systems	3
CSC 4430	Advanced Programming	3-5
CSC 4750	Computer Networks	5
CSC 4760	Advanced Computer Architecture	5
CSC 4800	Advanced Issues in Computer Science	3-5
DAT 4500	Data and Society	5
EE 4770	Fundamentals of Advanced Embedded Systems	3-5
MAT 3380	Introduction to Data Science	5
DAT 3380	Introduction to Data Science	5
Common Curriculum		
UCOR 2000	The Emergence of the Modern Global System	5

UCOR 3000	Faith, Philosophy, and Science	5
UFDN 2000	Christian Scripture	5
UFDN 3100	Christian Theology	5
Exploratory Curriculum		
WK and WE		35
CUE		3
Check Catalog under year which you entered SPU Foreign Language if needed		0-15

1

Or can be taken Fall of Junior year.

2

Select one or two. Can be taken any quarter after satisfying pre-req(s). Electives must add up to at least 8 credits. See link at the bottom of this page for a list of Technical Elective Courses.

3

If not already completed.

4

Must be taken AFTER completing an approved internship or pursuing an approved certification.

Two Year Plan for a Transfer Student with or without a DTA

See below for the pre-requisite courses required to complete the degree in two years. Note also that without a DTA, it will depend on how many of the General Education Courses (Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/), Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/), etc (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/graduation-requirements-policies/).) are completed before transferring as to whether or not the degree can be completed in two years.

Check the quarter, day and time in the current schedule as course offerings may change. Pay close attention to the pre-requisites of the courses.

Course	Title	Credits
First Year		
Variable		
Technical Elective Courses [1]		3-8
Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed [2]		
	Credits	**3-8**
Autumn		
CSC 2330	Data Structures Programming	5
GS 3001	Internship and Job Search Strategies	1
UFDN 3001	Christian Scripture for Transfer Students	5
	Credits	**11**
Winter		
CSC 3220	Applications Programming	4
MAT 1720	Mathematics for Computer Science	5
	Credits	**9**
Spring		
CSC 3150	Systems Design	4
CSC 3221	Netcentric Computing	4
CSC 2431	Data Structures II	5
	Credits	**13**
Second Year		
Variable		
CSC 4410	Database Management	5
CSC 4941	Computer Science Professional Experience [3]	1
UFDN 3100	Christian Theology	5
Technical Elective Courses [1]		
Common Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/common-curriculum/) and Exploratory Curriculum (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/) as needed		
	Credits	**11**
Autumn		
CSC 4151	Software Engineering I	3
CSC 3310	Concepts in Programming Languages	4
CSC 4410	Database Management	5
	Credits	**12**
Winter		
CSC 4152	Software Engineering II	3
CSC 3430	Algorithm Design and Analysis	4
CSC 3750	Computer Architecture and Organization	5
	Credits	**12**
Spring		
CSC 4898	Senior Capstone Seminar	3
CSC 3350	Operating Systems Programming	3
MAT 2401	Linear Algebra	3
	Credits	**9**
	Total Credits	**80-85**

1

Select one or two. Can be taken any quarter after satisfying pre-req(s). Electives must add up to at least 8 credits. See link at the bottom of this page for a list of Technical Elective Courses.

2

Spread between first and second year

3

Must be taken AFTER completing an approved internship or pursuing an approved certification.

Prerequisites for the Two Year Plan

The following courses must be completed before coming to SPU in order to finish at SPU in two years.

Code	Title	Credits
Two Quarters of Object Oriented Programming in the Same Language [1]		**10**
Object oriented progamming 1		
Object oriented programming 2 with Data Structures		
Math Courses Equivalent to SPU's		**20**
MAT 1234	Calculus I	
MAT 1235	Calculus II	
MAT 1236	Calculus III	
MAT 2360	Introduction to Statistics for the Sciences	
Physics Courses Equivalent to SPU's		**15**
PHY 1121	Physics for Science and Engineering	

PHY 1122	Physics for Science and Engineering
PHY 1123	Physics for Science and Engineering

1 The second must include data structures concepts.

Technical Electives List

See the Requirements (p. 1) tab for a complete list of technical electives.