COMPUTER SCIENCE (BA)

Program Description

The BA in Computer Science is a particularly good major if you wish to double-major or minor in another field. This major emphasizes problem-solving, organizing and synthesizing ideas, and applications of computing theory. Graduates are well-suited for projects that apply computing to other disciplines.

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 (BA)

90 Credits Minimum, Including 51 Upper Division (UD)

Code	Title	Credits
General Core		
CSC 1250	Introductory Problem Solving and Programming	5
CSC 1260	Structured Programming	5
CSC 2430	Object Oriented Programming	5
CSC 2431	Data Structures and Algorithms	5
CSC 3011	Living in a Digital World	3
CSC 3150	Systems Design	5
CSC 3220	Applications Programming	5
CSC 3221	Netcentric Computing	5
CSC 3310	Concepts in Programming Languages	4
CSC 3350	Operating Systems Programming	3
CSC 3430	Algorithm Design and Analysis	4
CSC 3750	Computer Architecture and Organization	5
CSC 4410	Database Systems	5
MAT 1221	Survey of Calculus	5
or MAT 1234	Calculus I	
MAT 1720	Mathematics for Computer Science	5
MAT 2360	Introduction to Statistics for the Sciences	5
Section Credits Required		74
Interview Preparation		
CSC 2099	Technical Interview Preparation I	1
CSC 3099	Technical Interview Preparation II	1
Section Credits Required		2
Project & Internship		
CSC 3000	Principles of Professional Practice	1
or GS 3001	Internship and Job Search Strategies	
CSC 4941	Computer Science Professional Experience [1]	1
CSC 4896	Software Engineering Capstone I	3
CSC 4897	Software Engineering Capstone II	3
CSC 4898	Software Engineering Capstone III	3
Section Credits Required		11
Technical Electives		
Select one of the following:		3
CSC 4210	Theory of Computation and Algorithm	
CSC 4220	Information Security 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 3380	Introduction to Data Science	
DAT 4380	Introduction to Machine Learning	
DAT 4500	Data and Society	
EE 3280	Microcontroller System Design	
EE 4770	Fundamentals of Advanced Embedded Systems	
PHI 2500	Science, Technology and Society	
PHI 3999	Minds and Machines	
Total Credits		**90**

[1] A technical internship, professional experience or approved certification 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		
MAT 1234	Calculus I	5
or MAT 1221	or Survey of Calculus	
TCOR 1000	The Christian Faith	5
WRI 1000	Academic Inquiry 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 1250	Introductory Problem Solving and Programming	5
FYS 1000	First Year Seminar	3
MAT 1141 & MAT 1142	Precalculus I and Precalculus II ((if needed))	10
	Credits	**18**
Winter		
CSC 1260	Structured Programming [1]	5
	Credits	**5**
Spring		
CSC 2430	Object Oriented Programming [1]	5
	Credits	**5**
Sophomore		
Variable		
MAT 2360	Introduction to Statistics for the Sciences	5
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/) courses as needed		
	Credits	**5**
Winter		
CSC 2431	Data Structures and Algorithms [1]	5
MAT 1720	Mathematics for Computer Science	5
	Credits	**10**
Spring		
CSC 2099	Technical Interview Preparation I	1
	Credits	**1**
Junior		
Variable		
Technical Elective Courses [3]		3
Select 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/) courses as needed		
	Credits	**3**
Autumn		
CSC 3310	Concepts in Programming Languages	4
GS 3001	Internship and Job Search Strategies	1
	Credits	**5**
Winter		
CSC 3011	Living in a Digital World	3
CSC 3220	Applications Programming	5
CSC 3430	Algorithm Design and Analysis	4
	Credits	**12**
Spring		
CSC 2099	Technical Interview Preparation I	1
CSC 3150	Systems Design	5
CSC 3221	Netcentric Computing	5
	Credits	**11**
Senior		
Variable		
Technical Elective Courses [4]		
	Credits	**0**
Autumn		
CSC 3750	Computer Architecture and Organization	5
CSC 4410	Database Systems	5
CSC 4896	Software Engineering Capstone I	3
CSC 4941	Computer Science Professional Experience [4]	1
	Credits	**14**
Winter		
CSC 4897	Software Engineering Capstone II	3
	Credits	**3**
Spring		
CSC 3099	Technical Interview Preparation II	1
CSC 3350	Operating Systems Programming	3
CSC 4898	Software Engineering Capstone III	3
	Credits	**7**
	Total Credits	**114-124**

Code	Title	Credits
Technical Elective Courses		**3**
CSC 4210	Theory of Computation and Algorithm	3
CSC 4220	Information Security 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 3380	Introduction to Data Science	5
DAT 4500	Data and Society	5
EE 3280	Microcontroller System Design	5
EE 4770	Fundamentals of Advanced Embedded Systems	3-5
Common Curriculum		
TCOR 2000	Christian Scripture	5
TCOR 3100	Christian Theology	5
UCOR 2100	World History, Faith, and Reconciliation	5
UCOR 3000	Faith, Philosophy, and Science	5
Exploratory Curriculum		
Cultural Understanding and Engagement (https://catalog.spu.edu/undergraduate/degree-requirements/baccalaureate-degree-requirements/exploratory-curriculum/#wetext)		3
Ways of Knowing		

1 At least a C+ must have been earned in the pre-requisite programming class.
2 This course can be taken at a different quarter, but should be taken in the Fall of the junior year or sooner.
3 See the Requirements (p. 1) tab for a complete list of technical electives. The technical elective can be taken in either year.
4 Must be taken AFTER completing or WHILE pursuing an approved internship or 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. It is fine to transfer at any time, but the prior coursework will determine the duration of the time at SPU.

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 Course [1]		3+
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/) courses as needed [2]		
	Credits	**0-3**
Autumn		
CSC 2330	Data Structures & Programming	5
GS 3001	Internship and Job Search Strategies	1
TCOR 3001	Christian Scripture for Transfer Students	5
	Credits	**11**
Winter		
CSC 2431	Data Structures and Algorithms [3]	5
CSC 3011	Living in a Digital World	3
CSC 3220	Applications Programming	5
MAT 1720	Mathematics for Computer Science	5
	Credits	**18**
Spring		
CSC 3099	Technical Interview Preparation II [4]	1
CSC 3150	Systems Design	5
CSC 3221	Netcentric Computing	5
	Credits	**11**
Second Year		
Variable		
Technical Elective Course [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/) courses as needed		
	Credits	**0**
Autumn		
CSC 3310	Concepts in Programming Languages	4
CSC 3750	Computer Architecture and Organization	5
CSC 4410	Database Systems	5
CSC 4896	Software Engineering Capstone I	3
CSC 4941	Computer Science Professional Experience [5]	1
	Credits	**18**
Winter		
CSC 3430	Algorithm Design and Analysis	4
CSC 4897	Software Engineering Capstone II	3
	Credits	**7**
Spring		
CSC 3099	Technical Interview Preparation II [4]	1
CSC 3350	Operating Systems Programming	3
CSC 4898	Software Engineering Capstone III	3
	Credits	**7**
	Total Credits	**72-75**

1. See the Requirements (p. 1) tab for a complete list of technical electives. The technical elective can be taken in either year.
2. These General Education requirements can be spread over both years.
3. At least a C+ must be earned in CSC 2330 or CSC 2430 in order to take this class.
4. This course must be taken twice.
5. Must be taken AFTER completing or WHILE pursuing an approved internship or 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. (It is fine to transfer without completing these courses, but the time at SPU will most likely require more than two years.)

Code	Title	Credits
Math courses equivalent to SPU's		**10**
MAT 1221	Survey of Calculus	
or MAT 1234	Calculus I	
MAT 2360	Introduction to Statistics for the Sciences	
Two Quarters of Object Oriented Programming in the Same Language [1]		**10**
Object oriented progamming 1		
Object oriented programming 2 with Data Structures		

1. The second course must include Data Structures.

Technical Electives List

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