COMPUTING, BACHELOR OF SCIENCE (BS) - CONCENTRATION IN COMPUTER SCIENCE

Program Learning Outcomes

- Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
- Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program's discipline
- Communicate effectively in a variety of professional contexts.
- Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
- Function effectively as a member or leader of a team engaged in activities appropriate to the program's discipline.

Related Links

Computing - Computer Science, BS Flowchart (https://www.sru.edu/documents/academics/departments/computer-science/course-flowchart-compsci-computer-science-concentration.pdf)

Computing - Computer Science, BS Program Page (https://www.sru.edu/academics/majors-and-minors/computing-computer-science/)

Computer Science Department Page (https://www.sru.edu/academics/colleges-and-departments/ches/departments/computer-science/)

Professional Licensure/Certification Page (https://www.sru.edu/students/student-consumer-information/professional-licensures/)

Curriculum Guide

GPA Requirement

Major GPA: 2.0 or higher
Overall GPA: 2.0 or higher

Summary*

Code	Title	Hours
Rock Studies 2 Requirements		42-43
Other Basic Requirements		0-3
Computer Competency		0-3
Major/Concentration Requirements		54
Electives		24

* All undergraduate degree programs require a minimum of 120 credits. Some courses meet multiple requirements, but are only counted once toward the 120 credit total required to graduate.

Rock Studies 2 Requirements

Code	Title	Hours
The Rock		
SUBJ 139	Foundations of Academic Discovery [1]	3
ENGL 102	Critical Writing	3
ENGL 104	Critical Reading	3
Select one of the following:		3-4
MATH 125	Precalculus	
MATH 225	Calculus I	
MATH 230	Calculus II	
MATH 231	Calculus III	
STAT 152	Elementary Statistics I	
Select one of the following:		3
COMM 200	Civil Discourse: Theory & Practice	
PHIL 110	Ethics and Civil Discourse	
POLS 235	Civil Discourse and Democracy	
Subtotal		15-16
Integrated Inquiry		
Creative and Aesthetic Inquiry		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-quick-guide/)		3
Humanities Inquiry		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-quick-guide/)		3
Social Science Inquiry		
Select 3 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-quick-guide/)		3
Natural Science Inquiry		
SCI 101	Science of Life	3
Physical Science Inquiry		
SCI 102	Understanding the Physical World	3
Subtotal		15
Thematic Thread		
Select 12 Credits (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-quick-guide/) [2]		12
Total Hours		**42-43**

[1] Course offered in multiple subjects; cannot take course in first major subject.

[2] One course from each category; six credits must be 300-level or above; no more than 4 credits from one subject area; specific courses required in first major, regardless of prefix of course, cannot be used to satisfy thread requirements; any course with same prefix as first major cannot be used to satisfy thread requirements, even if it is not a course in the first major.

Basic Math Requirement

Check with your adviser or a current degree audit report to see if you have been exempted from this course. The credit earned in this course will not be counted toward the 120 credit hour minimum needed to earn a degree.

Code	Title	Hours
Complete one of the following:		0-3
Meet required minimum SAT or ACT math score OR		
ESAP 110	Beginning Algebra	
Total Hours		**0-3**

Computer Competency

Code	Title	Hours
Demonstrate "computer competency" by one of the following:		0-3
Pass Computer Competency Exam OR		
Select one of the following at SRU or another post-secondary institution:		
CPSC 100	Introduction to Computing for Liberal Arts	
CPSC 110	Computer Concepts	
CPSC 130	Introduction to Computing and Programming	
PE 202	Technology for Wellness	
Total Hours		**0-3**

DIVERSITY, EQUITY, AND INCLUSION REQUIREMENT

Students must take and pass a course with the Diversity, Equity, and Inclusion (DEI) designation prior to graduation. Students can meet this requirement by taking any DEI - designated course in any program at any time during their undergraduate career.

Major/Concentration Requirements

- 27 major credits must be taken at SRU or PASSHE
- 27 major credits must be taken at the 300 level or above

Code	Title	Hours
Required Core Courses		
CPSC 130	Introduction to Computing and Programming [1]	3
CPSC 146	Programming Principles [1]	3
CPSC 207	Shell Commands and Scripting [1]	3
CPSC 300	Challenges of Computer Technology [1]	3
CPSC 311	Discrete Computational Structures [1]	3
CPSC 323	Fundamentals of Database Systems [1]	3
CPSC 327	Administration and Security [1]	3
CPSC 423	Computer Networks [1]	3
STAT 152	Elementary Statistics I [1]	3
Subtotal		27
Computer Science Core Courses		
CPSC 246	Advanced Programming Principles [1]	3
CPSC 370	Computer Organization and Architecture [1]	3
CPSC 374	Algorithms and Data Structures [1]	3
CPSC 376	Programming Language and Theory [1]	3
CPSC 474	Advanced Architecture & Parallel Computing	3
CPSC 476	Artificial Intelligence [1]	3
CPSC 488	Software Engineering [1]	3
Subtotal		21
Computer Science Electives		
Choose one from the following:		3
CPSC 217	Advanced Web Programming [1]	
CPSC 236	Selected Computer Languages [1]	
CPSC 237	Mobile App Development for Smart Devices [1]	
CPSC 315	Internet of Things (IoT) [1]	
Choose one from the following:		3
CPSC 405	Data Mining and Data Analysis [1]	
CPSC 406	Data Visualization [1]	
CPSC 450	Internship [1]	
CPSC 456	Introduction to Computer Graphics [1]	
CPSC 478	Analysis of Algorithms	
CPSC 480	Topics in Computer Science: Machine Learning	
CPSC 485	Big Data Analytics [1]	
Subtotal		6
Total Hours		**54**

[1] Course counts for 50% of Major requirements and Major GPA

* Some courses may require pre-requisites. Please see course descriptions to determine if there are any pre-requisites for that specific course.

Co-curricular and Experiential Learning

Students are encouraged to explore additional curricular and co-curricular opportunities. There is a strong correlation between long-term student success and participation in the following types of programs and activities:

1. High-Impact Practice (HIP) designated classes (Learning Community, Cap-Stone Course, Semester Projects)
2. Student-faculty research
3. Service Learning Courses
4. Internships
5. Volunteering (Summer Day Camps, Semester Workshops for K-12 students, Robot demos for visitors/local school districts)
6. Industry Awareness Night

Important Curriculum Guide Notes

This Curriculum Guide is provided to help SRU students and prospective students better understand their intended major curriculum. Enrolled SRU students should note that the My Rock Audit may place already-earned and/or in progress courses in different, yet valid, curriculum categories. Enrolled SRU students should use the My Rock Audit Report and materials and information provided by their faculty advisers to ensure accurate progress towards degree completion. *The information on this guide is current as of the date listed. Students are responsible for curriculum requirements at the time of enrollment at the University.*

PASSHE - Pennsylvania State System of Higher Education Institutions

COMPUTING - BS (6420)
Concentration in Computer Science (642C)
This program is effective as of Fall 2022
Revised 06.10.2022
UCC 03.01.2022

Recommended Four-Year Plan

Course	Title	Hours
First Year		
Fall		
CPSC 130	Introduction to Computing and Programming	3
ENGL 102	Critical Writing	3
ESAP 101	FYRST Seminar *	1

MATH 120 or SCI 101	Intermediate Algebra or Science of Life	3
SUBJ 139	Foundations of Academic Discovery [1]	3
Creative & Aesthetic Inquiry (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
	Hours	**16**
Spring		
CPSC 146	Programming Principles	3
Select one of the following:		3-4
MATH 125	Precalculus	
MATH 225	Calculus I	
MATH 230	Calculus II	
MATH 231	Calculus III	
STAT 152	Elementary Statistics I	
ENGL 104	Critical Reading	3
Select one of the following:		3
COMM 200	Civil Discourse: Theory & Practice	
PHIL 110	Ethics and Civil Discourse	
POLS 235	Civil Discourse and Democracy	
Social Science Inquiry (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
	Hours	**15-16**
Second Year		
Fall		
CPSC 207	Shell Commands and Scripting	3
CPSC 246	Advanced Programming Principles	3
STAT 152	Elementary Statistics I	3
SCI 101	Science of Life (or CS Elective)	3
Computer Science Elective or Free Elective [3]		3
Declare a Thematic Thread [2]		
	Hours	**15**
Spring		
CPSC 323	Fundamentals of Database Systems	3
CPSC 370	Computer Organization and Architecture (S)	3
Humanities Inquiry (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
SCI 102	Understanding the Physical World	3
Computer Science Elective or Free Elective [3]		3
	Hours	**15**
Third Year		
Fall		
CPSC 311	Discrete Computational Structures	3
CPSC 300	Challenges of Computer Technology	3
CPSC 376	Programming Language and Theory (F)	3
Thematic Thread Requirement (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
Computer Science Elective or Free Elective [3]		3
	Hours	**15**
Spring		
CPSC 327	Administration and Security (S)	3
CPSC 374	Algorithms and Data Structures (S)	3

Thematic Thread Requirement (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
Computer Science Elective or Free Elective [3]		3
Computer Science Elective or Free Elective [3]		3
	Hours	**15**
Fourth Year		
Fall		
CPSC 423	Computer Networks (F)	3
CPSC 474	Advanced Architecture & Parallel Computing (F)	3
Thematic Thread Requirement (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
Computer Science Elective or Free Elective [3]		3
Computer Science Elective or Free Elective [3]		3
	Hours	**15**
Spring		
CPSC 488	Software Engineering (S)	3
CPSC 476	Artificial Intelligence	3
Thematic Thread Requirement (https://catalog.sru.edu/undergraduate/rock-studies/rock-studies-program/)		3
Computer Science Elective or Free Elective [3]		4
	Hours	**13**
	Total Hours**	**119-120**

[1] Course offered in multiple subjects; cannot take course in first major subject

[2] Work with your Academic Adviser to declare a Thematic Thread by the end of your fall semester in your second year.

[3] Computer Science Electives - 9 Credits required:
Select one of the following: CPSC 217, CPSC 236, CPSC 237, CPSC 315
Select one of the following: CPSC 405, CPSC 476
Select one of the following: CPSC 406, CPSC 450, CPSC 456, CPSC 478, CPSC 480, CPSC 485

* Students are encouraged to take ESAP 101 as a Free Elective.

*** This document is meant to serve as a guide. Some planners may show more than 120 credits because faculty have created flexibility in choosing courses. However, only 120 credits are required to obtain a degree. Please consult with your academic adviser and refer to your curriculum guide prior to registering for courses. This plan should be reviewed, and verified, by you and your academic adviser at least once each academic year.*

Major Code: 6420
Concentration: 642C
Revised date: 06.10.2022