COMPUTER SCIENCE, B.A.

Computer science is an exciting, rapidly developing field with vast influence on modern society. Computer science encompasses a broad range of theories and applications. The computer science major at Saint Louis University is excellent for students going into many fields, including technology, business, medicine and law, due to the emphasis on problem-solving skills.

The Department of Computer Science at SLU offers both a Bachelor of Arts and a Bachelor of Science in Computer Science. The B.A. curriculum includes a broad liberal arts study and can be combined with a second major or minor in fields such as art, criminal science or psychology.

SLU's accelerated master's program allows SLU undergraduate computer science majors to earn both a bachelor's degree and a master's degree in five years. Students combine a B.A. or B.S. in computer science with a master's degree in computer science, software engineering, artificial intelligence or bioinformatics and computational biology.

Program Highlights

- A choice of engaging introductory courses, allowing students to better connect the application of computer science to their interests.
- Courses are taught in computer labs, allowing for hands-on learning.
- Small class sizes allow for rich student-faculty interactions.
- A curriculum that allows students to see the impact and application of computing throughout society.

Curriculum Overview

Students completing the Bachelor of Arts curriculum in computer science obtain a rigorous, comprehensive background in the discipline. This curriculum allows them time to delve into other academic interests, including pre-professional studies or a minor or major in another discipline. Students should consult with their advisors to tailor their computer science electives to their individual goals.

Fieldwork and Research Opportunities

Because of our location in the Midtown area of St. Louis, our students have access to a robust technology community, with operations for many Fortune 500 companies and a vibrant startup community. This provides outstanding opportunities for summer internships, part-time work during the academic year, and future jobs after graduation.

Our campus is within walking distance of the Cortex Innovation Community (https://www.cortexstl.org/), a vibrant 200-acre (and growing) innovation hub and technology district. Cortex houses SLU's Research Innovation Group (https://www.slu.edu/research/faculty-resources/research-innovation-group/), which works on technology transfer and commercial partnerships. Cortex is also home to the weekly Venture Cafe (https://venturecafestl.org) (every Thursday from 3-8 p.m.), an excellent place for students to connect with tech community members in a friendly and informal setting. Also in downtown St. Louis is the T-REX Technology Entrepreneur Center (http://www.downtowntrex.org/), a coworking space and technology incubator.

Our faculty has integrated students into their research programs in various ways. Some of our undergraduate students have participated in REUs (research experience for undergraduates), capstone projects and independent research that has resulted in scholarly publications with their faculty mentors. In addition, many students have had opportunities to travel to conferences and present their work.

Careers

Careers related to computer science are routinely found on various "best jobs" lists because of their outstanding combination of excellent pay, satisfying work-life balance and personal reward in seeing the great impact of computing throughout society. As a sample of such listings:

- U.S. News 100 Best Jobs list for 2024 (https://money.usnews.com/careers/best-jobs/rankings/the-100-best-jobs/) The top 100 included software developer (#3), IT manager (#4), information security analyst (#7), data scientist (#8), web developer (#21), computer systems analyst (#61), and computer network architect (#77).
- Glassdoor's 50 Best Jobs in America list for 2022 (https://www.glassdoor.com/List/Best-Jobs-in-America-LST_KQ0,20.htm) named enterprise architect as #1, and many other technology positions appear within the top 25: full stack engineer (#2), data scientist (#3), devops engineer (#4), machine learning engineer (#6), data engineer (#8), software engineer (#8), java developer (#9), back end engineer (#11), cloud engineer (#12) information security engineer (#15), back end engineer (#16), automation engineer (#21), and UX designer (#24).

Admission Requirements

Begin Your Application (https://www.slu.edu/apply.php)

Saint Louis University also accepts the Common Application.

Freshman

All applications are thoroughly reviewed with the highest degree of individual care and consideration to all credentials that are submitted. Solid academic performance in college preparatory coursework is a primary concern in reviewing a freshman applicant's file.

To be considered for admission to any Saint Louis University undergraduate program, applicants must be graduating from an accredited high school, have an acceptable HiSET exam score or take the General Education Development (GED) test.

Transfer

Applicants must be a graduate of an accredited high school or have an acceptable score on the GED or HiSET.

Students who have attempted fewer than 24 semester credits (or 30 quarter credits) of college credit must follow the above freshmen admission requirements. Students who have completed 24 or more semester credits (or 30 quarter credits) of college credit must submit transcripts from all previously attended college(s).

In reviewing a transfer applicant's file, the Office of Admission holistically examines the student's academic performance in college-level coursework as an indicator of the student's ability to meet the academic rigors of Saint Louis University. Where applicable, transfer students will be evaluated on any courses outlined in the continuation standards of their preferred major.

International Applicants

All admission policies and requirements for domestic students apply to international students along with the following:

- Demonstrate English Language Proficiency (https://catalog.slu.edu/academic-policies/office-admission/undergraduate/english-language-proficiency/)
- All academic records must include an English translation. An official course-by-course transcript evaluation may be required and accepted.

Tuition

Tuition	Cost Per Year
Undergraduate Tuition	$54,760

Additional charges may apply. Other resources are listed below:

Net Price Calculator (https://www.slu.edu/financial-aid/tuition-and-costs/calculator.php)

Information on Tuition and Fees (https://catalog.slu.edu/academic-policies/student-financial-services/tuition/)

Miscellaneous Fees (https://catalog.slu.edu/academic-policies/student-financial-services/fees/)

Information on Summer Tuition (https://catalog.slu.edu/academic-policies/student-financial-services/tuition-summer/)

Scholarships and Financial Aid

There are two principal ways to help finance a Saint Louis University education:

- **Scholarships:** Scholarships are awarded based on academic achievement, service, leadership and financial need.
- **Financial Aid:** Financial aid is provided through grants and loans, some of which require repayment.

Saint Louis University makes every effort to keep our education affordable. In fiscal year 2023, 99% of first-time freshmen and 92% of all students received financial aid (https://www.slu.edu/financial-aid/) and students received more than $459 million in aid University-wide.

For priority consideration for merit-based scholarships, apply for admission by December 1 and complete a Free Application for Federal Student Aid (FAFSA) by March 1.

For more information on scholarships and financial aid, visit the Office of Student Financial Services (https://www.slu.edu/financial-aid/).

Learning Outcomes

1. Graduates will be able to analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
2. Graduates will be able to design, implement, evaluate and test a software system that meets a given set of computing requirements.
3. Graduates will be able to apply computer science theory, knowledge of computer systems and software development fundamentals to produce computing-based solutions.
4. Graduates will be able to communicate effectively to both professional and general audiences in both oral and written forms.
5. Graduates will be able to recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
6. Graduates will be able to function effectively as members of a team in developing computing technology and solving technical problems.

Requirements

Computer science students must complete a minimum total of 53 credits for the major.

Code	Title	Credits
University Undergraduate Core (https://catalog.slu.edu/academic-policies/academic-policies-procedures/university-core/)		**32-25**
Major Requirements		
Select a CSCI 10xx: Introduction to Computer Science (p. 2)		3
CSCI 1300	Introduction to Object-Oriented Programming	4
CSCI 2100	Data Structures	4
CSCI 2300	Object-Oriented Software Design	3
CSCI 2500	Computer Organization and Systems	3
CSCI 2510	Principles of Computing Systems	3
CSCI 3100	Algorithms	3
CSCI 4961	Capstone Project I	2
CSCI 4962	Capstone Project II	2
Select one Systems Elective course (p. 3)		3
Two additional 3000 or 4000 level CSCI elective courses		6
Required Mathematics Courses		
MATH 1510	Calculus I	4
MATH 1520	Calculus II	4
MATH 1660	Discrete Mathematics	3
STAT 3850	Foundation of Statistics	3
Required Computer Ethics		
PHIL 3050X	Computer Ethics	3
General Electives		**42-49**
Total Credits		**123**

Introduction to Computer Science

Code	Title	Credits
CSCI 1010	Introduction to Computer Science: Principles	
CSCI 1020	Introduction to Computer Science: Bioinformatics	
CSCI 1025	Introduction to Computer Science: Cybersecurity	
CSCI 1030	Introduction to Computer Science: Game Design	
CSCI 1040	Introduction to Computer Science: Mobile Computing	
CSCI 1050	Introduction to Computer Science: Multimedia	
CSCI 1060	Introduction to Computer Science: Scientific Programming	
CSCI 1070	Introduction to Computer Science: Taming Big Data	
CSCI 1080	Introduction to Computer Science: World Wide Web	

CSCI 1090	Introduction to Computer Science: Special Topics	

With permission, a computing-intensive course from another discipline may be substituted. Examples of such courses include:

BME 2000	Biomedical Engineering Computing	
CVNG 1500	Civil Engineering Computing	
STAT 3850	Foundation of Statistics	

Systems Electives Courses

Code	Title	Credits
CSCI 4500	Advanced Operating Systems	
CSCI 4530	Computer Security	
CSCI 4550	Computer Networks	
CSCI 4610	Concurrent and Parallel Programming	
CSCI 4620	Distributed Computing	

Non-Course Requirements

All School of Science and Engineering B.A. and B.S. students must complete an exit interview/survey near the end of their bachelor's program.

Continuation Standards

After declaring a computer science major, students must achieve a minimum GPA of 2.00 in computer science courses by the conclusion of their second year as a major and maintain such a GPA at the conclusion of each semester thereafter. Furthermore, students should require at most two attempts to successfully complete any computer science courses required for the major (where an unsuccessful attempt is considered a "D" or "F" for courses numbered 2100 and lower, and an "F" in higher-level courses).

Students are also expected to make adequate progress in the major, typically by enrolling in at least one computer science course per semester until completing their coursework (with exceptions made for premed scholars during their first year, and all students if studying abroad or facing other such extenuating circumstances).

Program Notes

At most, three credit hours of internship with industry courses can be applied to the degree.

Roadmap

Roadmaps are recommended semester-by-semester plans of study for programs and assume full-time enrollment unless otherwise noted.

Courses and milestones designated as critical (marked with !) must be completed in the semester listed to ensure a timely graduation. Transfer credit may change the roadmap.

This roadmap should not be used in the place of regular academic advising appointments. All students are encouraged to meet with their advisor/mentor each semester. Requirements, course availability and sequencing are subject to change.

Course	Title	Credits
Year One		
Fall		
CSCI 10xx: Introduction to Computer Science (p. 3)		3
MATH 1660	Discrete Mathematics	3
University Core and/or General Electives		9
	Credits	**15**
Spring		
CSCI 1300	Introduction to Object-Oriented Programming	4
MATH 1510	Calculus I	4
University Core and/or General Electives		7
	Credits	**15**
Year Two		
Fall		
CSCI 2100	Data Structures	4
CSCI 2500	Computer Organization and Systems	3
MATH 1520	Calculus II	4
University Core and/or General Electives		4
	Credits	**15**
Spring		
CSCI 2300	Object-Oriented Software Design	3
CSCI 2510	Principles of Computing Systems	3
STAT 3850	Foundation of Statistics	3
University Core and/or General Electives		6
	Credits	**15**
Year Three		
Fall		
Systems Elective Course (p. 4)		3
CSCI 3000+	Elective	3
University Core and/or General Electives		6
PHIL 2050	Ethics	3
	Credits	**15**
Spring		
CSCI 3000+	Elective	3
PHIL 3050X	Computer Ethics	3
University Core and/or General Electives		9
	Credits	**15**
Year Four		
Fall		
CSCI 4961	Capstone Project I	2
CSCI 3100	Algorithms	3
University Core and/or General Electives		10
	Credits	**15**
Spring		
CSCI 4962	Capstone Project II	2
University Core and/or General Electives		13
	Credits	**15**
	Total Credits	**120**

Introduction to Computer Science

Code	Title	Credits
CSCI 1010	Introduction to Computer Science: Principles	
CSCI 1020	Introduction to Computer Science: Bioinformatics	

CSCI 1025	Introduction to Computer Science: Cybersecurity
CSCI 1030	Introduction to Computer Science: Game Design
CSCI 1040	Introduction to Computer Science: Mobile Computing
CSCI 1050	Introduction to Computer Science: Multimedia
CSCI 1060	Introduction to Computer Science: Scientific Programming
CSCI 1070	Introduction to Computer Science: Taming Big Data
CSCI 1080	Introduction to Computer Science: World Wide Web
CSCI 1090	Introduction to Computer Science: Special Topics

With permission, a computing-intensive course from another discipline may be substituted. Examples of such courses include:

BME 2000	Biomedical Engineering Computing
CVNG 1500	Civil Engineering Computing
STAT 3850	Foundation of Statistics

Systems Elective Courses

Code	Title	Credits
CSCI 4500	Advanced Operating Systems	
CSCI 4530	Computer Security	
CSCI 4550	Computer Networks	
CSCI 4610	Concurrent and Parallel Programming	
CSCI 4620	Distributed Computing	

Madrid

Students can complete a B.A. in computer science at SLU-Madrid. They may also transfer freely between the Madrid and St. Louis campuses.

Learn More (https://www.slu.edu/madrid/academics/degrees-and-programs/computer-science.php)

2+SLU

2+SLU programs provide a guided pathway for students transferring from a partner institution.

- Computer Science, B.A. (STLCC 2+SLU) (https://catalog.slu.edu/academic-policies/office-admission/undergraduate/2plusslu/stlcc/computer-science-ba/)