COMPUTER SCIENCE + NEUROSCIENCE, B.A.

What if you could decode the brain — and build the systems to translate it? SLU's Bachelor of Arts in Computer Science + Neuroscience program puts you at the intersection of algorithms and neurons, machine learning and brain science. You'll graduate from Saint Louis University with the technical depth of a software engineer and the scientific grounding of a neuroscientist — a combination that neither field can produce alone.

Curriculum Overview

- Algorithms, data structures and machine learning
- Neural systems, cognitive science and experimental design
- Artificial intelligence and natural language processing

Experiential and Applied Learning

- Research placements in neuroscience labs and at software firms
- Internships with healthcare technology, biomedical device and pharmaceutical firms
- Presentations at interdisciplinary research symposia and professional conferences

Careers

- Computational neuroscientist, neural/BCI engineer, biomedical data scientist
- Clinical, informatics specialist, AI researcher, pharmaceutical analyst
- Typical entry salary: $72,000 – $110,000

Tuition

Tuition/Fee	Cost Per Year
Undergraduate Tuition	$58,960
University Fees	$1,000

Additional charges may apply. Other resources are listed below:

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

Cost of Attendance (https://www.slu.edu/financial-aid/tuition-and-costs/cost-of-attendance.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-current/tuition-summer-current.pdf)

Scholarships and Financial Aid

For more information about Saint Louis University scholarships and financial aid, please visit the Office of Student Financial Services (https://www.slu.edu/financial-aid/types-of-aid/).

Learning Outcomes

1. Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions.
2. Design, implement, evaluate and test a software system that meets a given set of computing requirements.
3. Apply computer science theory, knowledge of computer systems and software development fundamentals to produce computing-based solutions.
4. Communicate effectively to both professional and general audiences in both oral and written forms.
5. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
6. Function effectively as a member of a team in developing computing technology and solving technical problems.
7. Synthesize computational methods and neuroscientific principles to analyze, design or evaluate problems that require reasoning across both domains.

Requirements

Code	Title	Credits
University Undergraduate Core (https://catalog.slu.edu/academic-policies/academic-policies-procedures/university-core/)		**32-35**
Major Requirements		**81**
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. 2)		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
Neuroscience Requirements		
BIOL 1240	General Biology: Information Flow and Evolution	3
BIOL 1245	Principles of Biology I Laboratory	1
BIOL 1260	General Biology: Transformations of Energy and Matter	3
BIOL 1265	Principles of Biology II Laboratory	1

BIOL 3040	Cell Structure & Function	3
CHEM 1110	General Chemistry 1	3
CHEM 1115	General Chemistry 1 Laboratory	1
CHEM 1120	General Chemistry 2	3
CHEM 1125	General Chemistry 2 Laboratory	1
PSY 1010	General Psychology	3
NEUR 3400	Introduction to Neuroscience 1: Cellular, Molecular and Systemic	3
NEUR 3500	Introduction to Neuroscience 2: Cognitive and Behavioral	3
University Electives		**4-7**
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 as long as it is not already fulfilling another requirement. 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	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

This roadmap is just one example of a semester-by-semester plan of study for this program. There are other plans students can and do take. The plan of study for each particular student is established in consultation with each student's academic advisor; *this roadmap does not replace academic advising appointments.*

Roadmap notes:

- This Roadmap assumes full-time enrollment unless otherwise noted.
- Courses/Milestones marked with an "!" are critical and must be completed in the semester listed in the Roadmap to ensure a timely graduation.
- Course availability and sequencing are subject to change.

Course	Title	Credits
Year One		
Fall		
CSCI 10XX	Introduction to Computer Science	3
MATH 1660	Discrete Mathematics	3
CORE 1700	Ultimate Questions: Philosophy	3
CORE 1000	Ignite First Year Seminar	3
CORE 1500	Cura Personalis 1: Self in Community	1
CORE 1900	Eloquentia Perfecta 1: Written and Visual Communication	3
	Credits	**16**
Spring		
CSCI 1300	Introduction to Object-Oriented Programming	4
MATH 1510	Calculus I	4
CORE 1600	Ultimate Questions: Theology	3
PSY 1010	General Psychology	3
	Credits	**14**
Year Two		
Fall		
MATH 1520	Calculus II	4

BIOL 1240 & BIOL 1245	General Biology: Information Flow and Evolution and Principles of Biology I Laboratory	4
CHEM 1110 & CHEM 1115	General Chemistry 1 and General Chemistry 1 Laboratory	4
CSCI 2100	Data Structures	4
CORE 2500	Cura Personalis 2: Self in Contemplation	0
	Credits	**16**
Spring		
CSCI 2500	Computer Organization and Systems	3
CSCI 2300	Object-Oriented Software Design	3
STAT 3850	Foundation of Statistics	3
CHEM 1120 & CHEM 1125	General Chemistry 2 and General Chemistry 2 Laboratory	4
BIOL 1260 & BIOL 1265	General Biology: Transformations of Energy and Matter and Principles of Biology II Laboratory	4
	Credits	**17**
Year Three		
Fall		
Systems Elective		3
CSCI 2510	Principles of Computing Systems	3
BIOL 3040	Cell Structure & Function	3
CORE 1200	Eloquentia Perfecta 2: Oral and Visual Communication	3
CORE	Equity and Global Identities: Global Interdependence	3
	Credits	**15**
Spring		
PHIL 3050X	Computer Ethics	3
CSCI 3000-level or 4000-level elective		3
NEUR 3400	Introduction to Neuroscience 1: Cellular, Molecular and Systemic	3
CORE 2800	Eloquentia Perfecta 3: Creative Expression	2
CORE 3400	Ways of Thinking: Aesthetics, History, and Culture	3
	Credits	**14**
Year Four		
Fall		
CSCI 4961	Capstone Project I	2
CORE 4000	Collaborative Inquiry	3
CSCI 3100	Algorithms	3
NEUR 3500	Introduction to Neuroscience 2: Cognitive and Behavioral	3
CORE 4500	Reflection-in-Action	0
University Elective		3
	Credits	**14**
Spring		
CSCI 4962	Capstone Project II	2
CORE	Eloquentia Perfecta: Writing Intensive	3
CORE	Equity and Global Identities: Identities in Context	3
CORE 3500	Cura Personalis 3: Self in the World	1
CSCI 3000-level or 4000-level elective		3
University Elective		2
	Credits	**14**
	Total Credits	**120**

Contact Us

For more information about computer science programs, please call 314-977-6667 or email cs@slu.edu.