NATIONAL UNIVERSITY

COLLEGE OF PROFESSIONAL STUDIES

BACHELOR OF SCIENCE IN COMPUTER SCIENCE

Learn the Latest Skills for Computer Science Success

Do you dream of a career in computing? Enroll in the ABET-accredited National University Bachelor of Science in Computer Science program to gain the technical and design skills you'll need to succeed in this growing field. The program balances a strong academic foundation with real-world programming assignments. Courses include object-oriented programming, data structures and algorithms, operating systems, computer communication networks, software engineering, and computer architecture. Students interested in further study can efficiently transition to the next level through the Bachelor of Science in Computer Science/Master of Science in Computer Science Transition Program.

Program highlights:

- Entire program can be completed online
- Apply math, algorithms, and computer science in the modeling, design, and optimization of computer systems
- Analyze problems and design the appropriate computer solutions
- Gain experience using current technical techniques, skills, and tools
- Learn to construct software systems

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NATIONAL UNIVERSITY

MAJOR IN COMPUTER SCIENCE

Program Lead: Alireza Farahani; (858) 309-3438; afarahan@nu.edu

The Bachelor of Science in Computer Science degree program provides a strong technical background for students planning to begin careers upon graduation and for those interested in graduate study in computer science. Degree requirements include courses in object-oriented programming, data structures and algorithms, operating systems, computer communication networks, software engineering, and computer architecture, as well as mathematics, statistics and the natural sciences. The program features a rigorous academic foundation that is complemented by realistic programming assignments. Emphasis is placed on developing both the technical and design skills necessary to begin and enhance an individual's career. Graduates of this program are well prepared for immediate employment in either the computer industry or many other businesses that increasingly rely on computer science.

The Bachelor of Science in Computer Science Program Educational Objectives are as follows.

Within a few years of graduation, graduates are expected to be:

- Engaged and active as responsible professionals pursuing diverse career
- paths or successfully continuing their education in graduate school
- Participating in continuing education opportunities enabling them to understand and apply new ideas and technologies in the field of computing
- Effective communicators and team members
- Active contributors to their community and their profession

Bachelor of Science in Computer Science/Master of Science in Computer Science (BSCS/MSCS) Transition Program

Students must complete graduate-level coursework taken as part of the BSCS degree with a grade of B or better. This coursework, which counts as electives, will not transfer as graduate-level credit to National University or any other institution as it is part of an undergraduate degree program. Grades earned in graduate-level courses will be calculated as part of the student's undergraduate Grade Point Average. Students must be within completing their last six courses in their undergraduate program and have a cumulative GPA of at least a 3.00 to be eligible. Lastly, students must apply for and begin the MSCS program within six months after completing their final BSCS course. Students must complete their MSCS program within four years with no break exceeding 12 months. Students in the BSCS transition program may take up to two MSCS classes as electives during the BSCS. Students may choose from the following courses: CSC 603, CSC 605, CSC 675, CSC606, and CSC607. The number of courses required to earn an MSCS degree for transition program students is reduced from 12 to as few as 10 courses.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Analyze a complex computing problem and 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.
- Apply computer science theory and software development fundamentals to produce computing-based solutions.

Degree Requirements

To receive a Bachelor of Science in Computer Science, students must complete at least 180 quarter units to include a minimum of 70.5 units of the University General Education requirements; 76.5 quarter units must be completed at the upper-division level, and 45, including the senior project courses (CSC 480A, CSC 480B & CSC 480C), must be taken in residence at National University. In the absence of transfer credit, students may need to take additional general electives to satisfy the total units for the degree. Students should refer to the section on undergraduate admission procedures for specific information on admission and evaluation. All students receiving an undergraduate degree in Nevada are required by State Law to complete a course in Nevada Constitution.

Prerequisites for the Major

(10 courses; 42 quarter units)
Students must select ONE science-related lecture and ONE lab course from Area F of the General Education for a total of 6 quarter units. The course/lab combination must be intended for science and engineering majors and develop an understanding of the scientific method (PHY104 and PHY104A or PHY130A are recommended.)

MTH 215*	College Algebra & Trigonometry	
	Prerequisite: Accuplacer test placement evaluation or MTH 12A and MTH 12B	
CSC 208*	Calculus for Comp. Science I	
	Prerequisite: MTH 215	
CSC 209	Calculus for Comp. Science II	
	Prerequisite: CSC 208	
CSC 220	Applied Probability & Stats.	
	Prerequisite: MTH 215	
CSC 242*	Intro to Programming Concepts	
	Prerequisite: MTH 215	
CSC 252*	Programming in C++	
	Prerequisite: CSC 242	
CSC 262*	Programming in JAVA	
	Prerequisite: MTH 215	
CSC 272	Advanced Programming in Java	
	Prerequisite: CSC 262	

* May be used to meet a General Education requirement.

Requirements for the Major

(18 courses; 78 quarter units)

CSC 300	Object Oriented Design
	Prerequisite: CSC 252 or CSC 272
CSC 350	Computer Ethics
EGR 320	Scientific Problem Solving
	Prerequisite: CSC 208 or EGR 220
CSC 310	Linear Algebra and Matrix Comp
	Prerequisite: CSC 252 or CSC 272
CSC 331	Discrete Structures and Logic
	Prerequisite: CSC 252 or CSC 272
CSC 335	Data Structures and Algorithms
	Prerequisite: CSC 300 and CSC 331
CSC 338	Algorithm Design
	Prerequisite: CSC 335
CSC 340	Digital Logic Design
	Corequisite: CSC 340L, Prerequisite: CSC 331
CSC 340L	Digital Logic Design Lab (1.5 quarter units)
	Corequisite: CSC 340, Prerequisite: CSC 331
CSC 342	Computer Architecture
	Prerequisite: CSC 340 and CSC 340L
CSC 400	OS Theory and Design
	Prerequisite: CSC 335
CSC 422	Database Design
	Prerequisite: CSC 300
CSC 436	Comp Communication Networks
	Prerequisite: CSC 331
CSC 430	Programming Languages
	Prerequisite: CSC 300
CSC 480A	Computer Science Project I
	Prerequisite: Completion of requirements for the major except CSC340/CSC340L, CSC342 and ITM470
CSC 480B	Computer Science Project II
	Prerequisite: CSC 480A
CSC 480C	Computer Science Project III
	Prerequisite: CSC 480B
ITM 470	Information Security Management

Approved Electives

(2 courses; 9 quarter units)

Students must complete **TWO** 400-level technical electives. These electives can be taken from the computer science, computer information systems, or information technology management programs without duplicating any of the core courses.

CIS 430	Web/EB Design & Development
CIS 460	Human Factor /Ergonomic Design
ITM 475	Information Security Technology
	Prerequisite: ITM 470