

# COMPUTER SCIENCE, B.S.

## Degree Program

A Bachelor of Science degree in Computer Science is offered upon completion of the University baccalaureate requirements and the computer science major in one of the following concentrations: Computer Science or Information Systems.

## Learning Outcomes

### Program Learning Outcomes

Upon completion of the Bachelor of Science in Computer Science, students will be able to:

1. Analysis, modeling and problem solving: Students develop the logical, algorithmic, and mathematical capability to model and analyze real-world problems in different application domains, to devise problem-solving schemes accordingly, and to validate the correctness and effectiveness of these schemes (ULO 1).
2. Foundational knowledge and practice of computing: Students employ the theoretical, operational, and implementational underpinnings of modern computing infrastructure to be able to effectively utilize the whole spectrum, including computer hardware, software, programming environments, operating systems, and networking environments (ULO 1).
3. Programming and system integration: Students practice constructing and designing programs using mainstream programming languages, to assess fine software-engineering practices in order to implement problem-solving schemes as correct, efficient, and well-structured programs, and to integrate the programs into a computing infrastructure as functional information systems (ULO 3).
4. Integration of faith and learning: Students will develop a holistic integration of faith and learning in their perspective of computer science for enabling them to utilize their professional capacities to impact the world for Christ (ULO 2).

Each Program Learning Outcome (PLO) listed above references at least one of the University Learning Outcomes (ULO 1, 2, 3), which may be found in the General Information (<http://catalog.biola.edu/general-information>) section of this catalog.

## Requirements

### Curriculum Requirements

#### Program-Specific Core Curriculum (GE) Courses

The Core Curriculum (GE) requirement for a foreign language for those following a computer science major may be met by two years of high school language or the first 4 credits of a college language. The science/mathematics requirement may be met by 3 credits of science.

#### Program Courses

All concentrations must include 24 upper-division credits. The following courses are required:

CSCI 105	Introduction to Computer Science	3
CSCI 106	Data Structures	3
CSCI 220	Computer Organization and Assembly Language Programming	3
CSCI 230	Programming Languages	3

CSCI 311	Operating Systems	3
CSCI 335	User Interface Design and Programming	3
CSCI 430	Computer Communications	3
CSCI 450	Software Engineering	3
Total Credits		24

## Concentrations

### Computer Science (29 Credits)

#### Concentration Courses

CSCI 400	Theory of Algorithms	3
CSCI 440	Topics in Computer Science <sup>1</sup>	6
MATH 105	Calculus I	4
MATH 106	Calculus II	4
MATH 112	Discrete Structures	3
MATH 291	Linear Algebra	3
MATH 321 or MATH 333	Numerical Analysis Operations Research	3
Select one course (3 credits) at the 300 or 400 level in Computer Science or Math		3
Total Credits		29

<sup>1</sup> CSCI 440 must be taken twice with two different topics.

### Information Systems (33 Credits)

#### Concentration Courses

CSCI 402	Database Management	3
CSCI 440	Topics in Computer Science	3
BUSN 202	Principles of Microeconomics	3
BUSN 211	Principles of Accounting I	3
BUSN 212	Principles of Accounting II	3
BUSN 328	Organizational Behavior	3
BUSN 370	Business Finance	3
MATH 103	Calculus for Management Sciences	3
MATH 112	Discrete Structures	3
MATH 210	Introduction to Probability and Statistics	3
Select one course (3 credits) at the 300 or 400 level in Business or Computer Science.		3
Total Credits		33