Computer Science (BS) with an Emphasis in Information Technology

Program Description

Students in this major are at the core of computer science; they focus on the science of computer science. Through this program, students will acquire a substantial knowledge of mathematics, science, and computer hardware and software. Many of these students will continue their education through advanced degrees. Others will be the heart of the technical IT staff within an organization.

Graduates from this program will be able to apply their solid foundation in the mathematics behind the computer to become the ultimate problem solvers.

Learning Outcomes

- Students will demonstrate critical thinking skills in the field of computer science.
- Students will demonstrate the ability to solve problems related to the program content.
- Students will demonstrate an understanding of the concepts and principles of software systems.
- Students will analyze, design and document a system component using appropriate computer science techniques and models.
- Students will make a formal presentation of a software system project including the demonstration of a working application.
- Students will demonstrate an in-depth knowledge of advanced software development techniques.
- Students will demonstrate an understanding of the fundamental principles of advanced mathematics and applications.

Degree Requirements

A minimum of 128 credit hours consisting of the following:

- 75 required credit hours
- Applicable University Global Citizenship Program hours
- Electives

At least 18 of the required 42 computer science credit hours must be taken at Webster University.

All upper-level courses must be taken at Webster University.

Required Courses

- COSC 1550 Computer Programming I (3 hours)
- COSC 1560 Computer Programming II (3 hours)
- COSC 1570 Math for Computer Science (3 hours)
- COSC 2610 Operating Systems (3 hours)
- COSC 2670 Telecommunications (3 hours)
- COSC 2810 Systems Analysis and Design (3 hours)
- COSC 3050 Data Structures I (3 hours)
- COSC 3100 Data Structures II (3 hours)
- COSC 3410 Computer Security (3 hours)
- COSC 3500 IT Project Management (3 hours)
- COSC 4110 Computer Architecture (3 hours)
- COSC 4120 Database Concepts (3 hours)
- COSC 4250 Object-Oriented Analysis and Design (3 hours)
- COSC 4260 Object-Oriented Programming (3 hours)

Students will choose two of the following courses:

- COSC 3510 Computer Architecture (3 hours)
- COSC 3610 Operating Systems Concepts (3 hours)
- COSC 3660 Network Concepts (3 hours)

- COSC 3810 Principles of Programming Languages (3 hours)

Students who do not have a second major or a minor in mathematics are required to take the following courses:

- MATH 1580 Formal Logic (3 hours)
- MATH 1610 Calculus I (5 hours)
- MATH 1620 Calculus II (5 hours)
- MATH 3010 Discrete Mathematics (3 hours)
- Mathematics courses numbered MATH 2000 and above, excluding all MTHT courses (3 hours)

Students who do not have a second major or a minor in biological sciences are required to take the following courses:

- PHYS 2030 University Physics I (3 hours)
- PHYS 2031 University Physics I Lab (1 hour)
- PHYS 2040 University Physics II (3 hours)
- PHYS 2041 University Physics II Lab (1 hour)