Computer Science (BS) with an Emphasis in Cybersecurity*

This program is offered by the George Herbert Walker School of Business and Technology/Computer and Information Sciences Department. It is available at the St. Louis main campus and at select international campuses. Please see the Locations Offering Undergraduate Programs section of this catalog for a list of campuses where this program is offered.

The BSc in IT Security Systems is offered in Vienna only.

Program Description

The bachelor of science degree in computer science with an emphasis in cybersecurity (bachelor of science in IT Security Systems in Vienna) is designed around identified core knowledge areas of computer science. Students will also study foundational cybersecurity concepts. The program includes theoretical and practical approaches to prepare students entering the cybersecurity workforce or to continue their education in a professional graduate degree program.

This program is offered in Vienna as a **Bachelor of Science in IT Security Systems. The Bachelor of Science (BS) degree is abbreviated as BSc when completed in Vienna with Austrian accreditation.*

Webster University is designated as a National Center of Academic Excellence in Cyber Defense Education (CAE-CDE).

Learning Outcomes

Upon completion of the program, students will be able to:

- Demonstrate mastery of computer science in the following core knowledge areas:
  - Software development.
  - Algorithms and data structures.
  - Computer organization, hardware, and architecture.
  - Data and information management.
- Describe how technological advances impact social issues and professional practice.
- Write and orally communicate technical material effectively and professionally.
- Apply problem-solving skills and the knowledge of computer science to solve problems.
- Demonstrate an understanding of the vocabulary of cybersecurity terms and phraseology.
- Demonstrate a working knowledge of cybersecurity threats to IT systems.
- Describe the roles, responsibilities and tools of a cybersecurity professional.

Degree Requirements

For information on the general requirements for a degree, see Baccalaureate Degree Requirements under the Academic Policies and Information section of this catalog.

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

At least 30 of the required 57 hours must be taken at Webster University.

All upper-level (3000 and above) courses must be taken at Webster University. All cybersecurity 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 Network Principles (3 hours)
- COSC 2710 Social Engineering and Society (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 3510 Computer Architecture (3 hours)
- COSC 3810 Principles of Programming Languages (3 hours)
- COSC 4110 Database Concepts (3 hours)
- COSC 4120 Database Applications (3 hours)
- MATH 2410 Discrete Mathematics (3 hours)
- CSSS 2410 Cybersecurity and Internet Architecture (3 hours)
- CSSS 2510 Cyber Attacks and Defenses (3 hours)
- CSSS 3510 Writing Secure Code (3 hours)
- CSSS 3520 Cybersecurity Programs, Policies and Ethics (3 hours)
- CSSS 4510 Cybersecurity Capstone Project (3 hours)^

Special Requirements

Students studying at the Vienna campus must fulfill the following additional requirements.
12 hours in preselected courses

- COSC 4310 Database Programming (3 hours)
- COSC 2070 Introduction to Mobile Technology (3 hours)
- COSC 3500 IT Project Management (3 hours)
- COSC 3660 Network Concepts (3 hours)

2 hours in a practicum

- COSC 3900 Practicum (2 hours)

And successfully complete a thesis

- COSC 4920 Senior Thesis (4 hours)
  ^ Students studying at the Vienna campus will complete COSC 4920, Senior Thesis (4 credit hours), replacing CSSS 4510 Cybersecurity Capstone Project.