Computer Science (BS) with an Emphasis in Artificial Intelligence

Computer Science (BS)* with an Emphasis in Artificial Intelligence

This program is offered by the George Herbert Walker School of Business and Technology/Computer and Information Sciences Department. It is available at the Webster Vienna campus and the St. Louis main campus.

STEM program

Program Description

Artificial Intelligence (AI) is a rapidly-evolving branch of Computer Science focusing on analyzing data, and making appropriate and effective decisions based on this analysis. A foundation of Artificial Intelligence and Machine Learning will be provided. The Python programming language will be introduced and used to resolve Machine Learning-related questions. An understanding of ways in which Machine Learning can provide support to multiple disciplines will be introduced.

*NOTE: The bachelor of science (BS) degree is abbreviated as BSc when completed in Vienna with Austrian accreditation.

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.

Emphasis Specific Learning Objectives

Upon completion of the program students will be able to:

- Explain the fundamental aspects of Artificial Intelligence and the potential benefits to companies and organizations.
- Utilize a programming language to manage Machine Learning techniques.
- Develop Machine Learning techniques and algorithms to resolve Artificial Intelligence problems in different areas of industry.

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.

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

At least 30 of the required 60 hours must be taken at Webster University.

All upper-level (3000 and above) courses must be taken at Webster University. All artificial intelligence 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 3230 Human-Computer Interaction (3 hours)
- COSC 3410 Computer and Information Security (3 hours)
- COSC 3510 Computer Architecture (3 hours)
- COSC 4110 Database Concepts (3 hours)
- COSC 4120 Database Applications (3 hours)
- MATH 2410 Discrete Mathematics (3 hours)

Emphasis Specific Required Courses

- CSAI 3210 Introduction to Artificial Intelligence (3 hours)
- CSAI 3220 Foundations of Machine Learning (3 hours)
- CSAI 4210 Machine Learning Methods (3 hours)
- CSAI 4220 Neural Networks (3 hours)
- CSAI 4230 Deep Learning (3 hours)