

# Computer Science (BS) with an Emphasis in Data Science

*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.*

## Program Description

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

## 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.

## 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.

## 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)

## Emphasis in Data Science

### Program Description

Students will study foundational data science and analytics concepts. The program includes theoretical and practical

approaches to prepare students entering the data science and data analytics workforce or to continue their education in a professional graduate degree program.

## Emphasis Learning Outcomes

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

- Demonstrate the understanding of the roles of data science in business decision making.
- Demonstrate working knowledge of analytics algorithm and modeling methods.
- Apply data science algorithms and approaches to real world problem solving.

## Emphasis Course Requirements

- CSIS 2500 Introduction to Data Science (3 hours)
- CSIS 2800 Data Visualization Fundamentals (3 hours)
- CSIS 3300 R Programming for Data Analytics (3 hours)
- CSIS 3700 Data Analytics Methods (3 hours)
- CSIS 4330 Machine Learning for Data Analytics (3 hours)

## Admission

See the

Admission

section of this catalog for general admission requirements. Students interested in applying must submit their application online at

[www.webster.edu/apply](http://www.webster.edu/apply). Transcripts should be sent from your institution electronically to

[transcripts@webster.edu](mailto:transcripts@webster.edu). If this service is not available, send transcripts to:

Office of Admission  
Webster University  
470 E. Lockwood Ave.  
St. Louis, MO 63119