Computer Science
Bachelor of Science
2017-2018

General Areas of Service:

Computer Science spans a wide range, from its theoretical and algorithmic foundations to cutting edge developments in robotics, computer vision, intelligent systems, bioinformatics and other exciting areas. Computer scientists work in three primary areas: designing and implementing software, devising new ways to use computers, and developing effective ways to solve computer problems. Computer science offers a comprehensive foundation that permits graduates to adapt to new technologies and new ideas in many different fields. Electives in the Walla Walla University Computer Science curriculum are organized into strands focusing on particular career paths. These include:

- Applied Computer Science
- Web and Information Management
- Computational Science and Intelligent Systems
- Programming Methods and Tools
- Theoretical Computer Science
- Computer Architecture and Organization

Professional Training:

A bachelor’s degree is required for most jobs, and a master’s degree is desirable for many employment opportunities. Prior work experiences (such as those gained through internships) are also important in getting a job in this field.

Job Outlook:

The Bureau of Labor Statistics (BLS) states that the occupations of computer and information technology are all projected to grow 12 percent from 2014-2024, faster than the average for all occupations. “These occupations are expected to add about 488,500 new jobs ... from 2014 to 2024, in part due to greater emphasis on cloud computing, the collection and storage of big data, more everyday items becoming connected to the internet in what is commonly referred to as the ‘internet of things,’ and the continued demand for mobile computing.” (See www.bls.gov)

Earnings:

According to the most recent BLS salary survey from May 2016, the median annual salaries for the following computer specialties were $111,840 for computer and information research scientists, $101,210 for computer network architects; $102,280 for software developers; $66,130 for web developers; and $84,950 for database administrators. (See www.bls.gov)
The chart below details one suggested path a student may take to complete a bachelor’s degree in Computer Science. **Classes that are offered with multiple sections are listed in each quarter they are available.** Cognates, general studies courses, and electives should be taken to complete 192 credit hours to complete a Bachelor of Science in Computer Science.

*See the Undergraduate Bulletin for complete requirements.*

### Autumn

- **Freshman**
  - CPTR 141 Fundamentals of Programming I .......... 4
  - CPTR 142 Fundamentals of Programming II .......... 4

### Winter

- **Freshman**
  - CPTR 141 Fundamentals of Programming I .......... 4
  - CPTR 108 The Art & Practice of Computer Science ... 3

### Spring

- **Sophomore**
  - CPTR 280 Computer Organization & Assembly ....... 3
  - CPTR 241 Advanced Object-Oriented Programming ... 4
  - CPTR 242 Sequential & Parallel Data Structures & Algorithms .................................................. 4

- **Junior**
  - CPTR 354 Compilers & Languages ............................... 4
  - CPTR 352 Operating Systems ................................. 4

- **Senior**
  - CPTR 450 Software Engineering ............................. 3
  - CPTR 497 Senior Project ...................................... 2
  - CPTR 498 Senior Project ...................................... 2

- **CPTR 454 Design & Analysis of Algorithms ............ 4
  - CPTR 496 Senior Project ...................................... 1

**Before graduation, all students must take the MFT exam in Computer Science.**

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**Total Credits Required:**
192 Credits

**Cognates:**
- Junior
  - ENGR 354 – Digital Logic

**English Requirements:**
- Freshman
  - ENGL 121 & 122 – College Writing
- Sophomore
  - ENGL 223 – Research Writing

**Math Requirements:**
- Freshman
  - *MATH 121, 122 – Pre-calculus I, II
  - MATH 181 – Calculus I
- Sophomore
  - MATH 281, 282 – Calculus II, III
  - MATH 250 – Discrete Mathematics
- Junior
  - + MATH 215 – Data Analysis
  - MATH 289 – Intro to Linear Algebra

**General Requirements:**
- Health & P.E. 2 cr.
- History 8 cr.
- Social Science 4 cr.
- Humanities 12 cr.
- Language Arts 12 cr.
- Mathematics 4 cr.
- Natural Science 8 cr.
- Religion & Theology 18 cr.

**Notes:**
- + Classes offered even years
- - Classes offered odd years
- * Does not count toward Computer Science major, but is a pre-requisite for other required courses.