

# Computer Science Graduation Requirements

Walla Walla College: **BS – CS (Applied Computer Science Option)**

The graduation requirements shown below are subject to change.

For more information consult the WWC Bulletin, available online at

<http://www.wwc.edu/academics/bulletins/>

## General Education Component

### Health and PE (2 credits)

### History and Social Science (12 credits)

- History (8)
- Social Science (4) Psychology – recommended

### Humanities (12 credits)

- Fine Arts (0-8)
- Literature (0-8)
- Philosophy (0-8)

### Language Arts (13 credits)

- ENGL 121,122, 223
- SPCH 101 – Recommended
- Foreign Language – Recommended

### Religion (16 credits)

- 6 credits of RELB
- 6 credits of course numbers 300 and above. RELH 303 World Religions is recommended.
- One SDA special

## Mathematics and Science Component

### Mathematics (12 credits)

- Calculus (MATH 123 Survey of Calculus or MATH 181, 281 Calculus I & II recommended)
- Statistics (MATH 206 or MATH 315)
- MATH 250 Discrete Mathematics

### Science (8 credits in sequence)

## Computer Science Component

### Required (38 credits)

- CPTR 141 Intro to Programming
- CPTR 142-3 Data Structures and Algorithms
- CPTR 215 Assembly Language Programming

- CPTR 316 Programming Paradigms
- CPTR 345 Theory of Computation
- CPTR 352 Operating System Design
- CPTR 435 Software Engineering
- CPTR 454 Design and Analysis of Algorithms
- CPTR 495 Colloquium (4 quarters; one during the senior year)
- CPTR 496-498 Seminar

### Electives (24 credits)

- CPTR 235 System software and programming
- CPTR 245 Object-oriented system design
- CPTR 350 Computer Architecture
- CPTR 355 Computer Graphics
- CPTR 415 Introduction to Databases
- CPTR 425 Introduction to Networking
- CPTR 445 Introduction to Artificial Intelligence
- CPTR 460 Parallel and Distributed Computation
- CPTR 464 Compiler Design

Electives from CIS, ENGR, GRPH and MATH require departmental advisor's approval.

### Credits in applied program (30 credits)

- Information Systems
- Software Development
- System Administration

These require departmental advisor's approval.

### Cognates (3 credits)

- ENGR 354 Digital Logic

**Free Electives to bring total credits up to the 192 required for graduation and 60 credits of upper division.**

The minimum acceptable grade for any required or elective CPTR course is 2.0. A student's overall GPA must not fall below 2.0.

## Information Systems

- CPTR 235 System Software and Programming
- CPTR 415 Introduction to Databases
- Business and Management (30 credits): Accounting, marketing, finance, and organizational behavior
  - ACCT 201-3 Principles of Accounting
  - FINA 351 Financial Management
  - MGMT 371 Principles of Management
  - MGMT 373 Organizational Behavior
  - MKTG 381 Principles of Marketing
  - Elective: ECON, GBUS

## Software Development

- SPCH 207 Small Group Communication or SPCH 242 Acting
- JOUR 245 Newswriting, WRIT 325 Writing for the Professions, or GBUS 270 Organizational Communication

## System Administration

- CPTR 370 Practicum: Systems Administration 2-4
- CPTR 370 Practicum: Network Administration 2-4
- CPTR 370 Practicum: Security Administration 2-4
- MGMT 275 Management of Small Business or MGMT 371 Principles of Management

## Program Goals

1. To prepare students for software engineering positions in industry or government;
2. To prepare students for graduate study in Software Engineering; and
3. To provide a solid foundation in Computer Science and Software Engineering principles that will allow graduates to adapt effectively in a quickly changing field.

## Educational Objectives: graduates

1. effectively apply knowledge of programming, algorithms, data structures, and software engineering to the development of complex software systems;
2. communicate technical concepts effectively in both written documents and oral presentations;
3. design and analyze software at the component; subsystem, and software architecture levels and make informed, sound software design tradeoffs;
4. understand the social and ethical issues that arise in their work and deal with them professionally;
5. understand the importance of all phases of the software lifecycle, with emphasis on the need to plan for change and continuously vie to improve the software process;
6. work effectively in a software development team and with other engineering professionals;
7. appreciate the need for lifelong learning and adapt to rapid technological changes.