

Computer Science – Secondary Education BAE

Department of Computer Science, College of Science and Engineering

**50 credits (118 with additional credits from
Woodring)**

Introduction

There is a demand for qualified computer science teachers at the secondary level, but there is an even greater need for quality computer science teachers — teachers who have a broad and deep understanding of computer science, and a thorough understanding of effective learning and teaching.

The study of computer science education involves both learning about computer science and pedagogy. This program is designed to provide exposure to the breadth of topics required to satisfy K6-12 students' curiosity about how computers and technology, now so central to daily life, actually work, and how students can personally leverage the learned knowledge to create their own futures. Since knowing computer science alone is not enough to be an effective, inspiring, and inclusive teacher, this major also includes coursework and field experience in the theory and methods of pedagogical content knowledge. This major both employs and creates emerging research on best-practices in computer science education.

This major must be accompanied by the professional preparation program in secondary education offered through Woodring College of Education.

Why Consider a Secondary BAE in Computer Science?

Teaching computer science to secondary students is a challenge as well as an opportunity. Learning to teach computer science occurs through a variety of means: the study of a wide variety of computer science, pedagogical preparation within a computing context, formal clinical preparation in education, an extended internship, and continual experiences as a student, learner, and problem solver.

Western encourages prospective CS teachers to expand their personal understanding of computer science and capitalize on opportunities to work with secondary students as tutors, classroom assistants, practicum students in their internships. With access to both the Computer Science Department as well as Woodring resources, students have two communities to enhance and enrich their learning and teaching experiences.

How to Declare (Admission and Declaration Process):

Students are advised to declare the pre-major as soon as they are enrolled in CSCI 145 by contacting the Program Coordinator [Caroline Hardin (caroline.hardin@wwu.edu) and Qiang Hao (qiang.hao@wwu.edu)] for Advising and completing the pre-major application. Transfer students should seek advising immediately upon transfer to Western.

This major must be accompanied by the professional preparation program in secondary education and leads to an endorsement in secondary computer science. To be eligible for admission to the Woodring College of Education, prospective students are required to complete two computer science courses (CSCI 141 and CSCI 145) and earn a C- or above in CSCI 145. See the Secondary Education section of this catalog for program admission, completion, and teacher certification requirements.

Grade Requirements

Recommendation for teaching endorsement normally requires completion of the major with a grade point of 2.50 or better in the required major courses.

Students must earn a grade of C (2.0) or better in the secondary education professional program and in all courses required for the endorsement.

Requirements

Credits from CS Department (51 credits)

Must-take CS Courses (43 credits):

- CSCI 101 - Computers and Applications Credits: 4
- CSCI 102 - Computer-Mediated Communications Credits: 3 (WP 1)
- CSCI 141 - Computer Programming I Credits: 4
- CSCI 145 - Computer Programming and Linear Data Structures Credits: 4
- CSCI 241 - Data Structures Credits: 4
- CSCI 311 - Fundamentals of Data Science Credits: 4
- CSCI 330 - Database Systems Credits: 4
- CSCI 345 - Object-Oriented Design Credits: 4 (WP 1)
- CSCI 426 - Principles of Human-Centered Technology Design Credits: 4
- CSCI 436 - Technology for Social Good Credits: 4
- CSCI 497S - Usable Security and Privacy Credits: 4

Specialization electives (must take 8 credits):

- CSCI 202 - Dynamic Web Pages Credits: 4
- CSCI 247 - Computer Systems I Credit 4
- CSCI 321 - Game Programming Credits: 4
- CSCI 372 - Robotics: Applications of Artificial Intelligence Credits: 4
- CSCI 342 - Web Scripting Credits: 4
- CSCI 346 - Secure Software Development Credits: 4
- CISS 361 - Cybersecurity Credits: 4
- Other electives with advisor's approval

Additional Requirements

Secondary Education Undergraduate and Post-Baccalaureate Professional Program (67 Credits)

Must-take disciplinary-specific educational courses (15 credits):

- SCED 435 - Secondary Computing Education Practicum I Credits: 2
- SCED 436 - Secondary Computing Education Practicum II Credits: 2
- SCED 497A Computing Education I || Credits: 4 (WP 1) CS methods
- SCED 497B Computing Education II || Credits: 4 Assessment in CS
- SCED 370 - Science and Society Credits: 3 (WP 3)

Must-take Secondary Education courses (52 credits):

- SEC 303 - Teaching Adolescents: Development and Identity Credits: 4
- SEC 310 - Education, Culture, and Equity Credits: 4
- SEC 410 - Dynamic of teaching Credits: 2
- SEC 411 - Philosophical Foundations of Education Credits: 4
- SEC 425 - Developmental Reading, Writing & Learning in Secondary Schools Credits: 4
- SPED 363 - Secondary Students With Special Needs Credits: 4
- SEC 495 - Internship - Secondary Credits: 18
- SEC 430 - Secondary School Methods I - Instructional Strategies, Daily Planning, and Standards Credits: 4
- SEC 431 - Secondary School Methods II-Assessment and Long Term Planning Credits: 4
- SEC 432 - Secondary School Methods III - Management, Motivation and Discipline Credits: 4

University Graduation Requirements

General University Requirements 2019-20

Writing Proficiency Requirement (WP)

180 Minimum Total Credits

60 Minimum Upper Division Credits

Residency Requirement

Minimum Grade Requirements

Final Quarter Requirement