



COMPUTER SCIENCE & SOFTWARE ENGINEERING INTERNSHIP PROGRAM GUIDE



CSSE DEGREE

The Bachelor of Science in Computer Science and Software Engineering curriculum stresses computer programming and people centered software development processes. Our aim is to educate students who can contribute to the entire software development ecosystem, including programming, systems integration, test, design, requirements definition and analysis, project management, and technical communications.

Interns will have completed almost all of their coursework by the time their projects commence. Core courses cover elementary programming concepts; object-oriented design and development; data structures and algorithms; discrete mathematics; hardware and computer organization; operating systems; project management; software engineering; systems analysis and design; and technical writing. Students will also have taken several elective courses, which could include networks; databases; embedded systems; parallel and distributed systems; compilers; computer graphics; game design; scientific computing; digital signals and data analysis; human-computer interaction; expert systems; computer vision; technology business concepts; or public policy, among many other topics.

CSSE INTERNSHIP PROGRAM

One of the largest computer science degree programs in the Pacific Northwest, the Computer Science and Software Engineering Program at the University of Washington Bothell places great emphasis on providing students with a uniquely interdisciplinary educational experience. A key part of this experience is a capstone internship that requires students to integrate what they've learned during their studies in order to accomplish a substantial, real-world project.

Interns work for a total of at least 400 hours, typically over one or two 10-week quarters. Each student has a faculty advisor who will work with your organization and the student to ensure that the work satisfies UW Bothell academic standards for a capstone experience, and that it is completed as specified in our Cooperative Education Contract. The faculty member can also serve as a liaison with a mentor or supervisor in your organization, who will be requested to provide an evaluation of the student's work when the project is complete. As a part of his or her graduation requirement, each student will participate in one of our quarterly colloquia and present a summary of the project.



SPONSOR'S REQUIREMENTS

You will work with the CSSE Internship Coordinator to prepare an internship description that outlines the project(s) that are available in your organization for our students' participation. Internships may be either paid or unpaid, individual or team; what is important is that the scope of work provides students a substantive, immersive experience that draws upon multiple competencies that they have gained during their studies. It is possible for

students to work on projects that involve proprietary information as long as progress and performance can be shared with a faculty advisor and the general nature of those activities—and their relationships to UW Bothell CSS coursework and competencies—can be presented publicly at the CSSE colloquium.

Once project descriptions are made available to students, they will contact you directly. You are responsible for screening internship applications; the UW Bothell CSS Program cannot perform this function for you. You are, of

STUDENT INTERN EXPERTISE

Besides the specific topics and technical knowledge that students will bring to your project, you can also expect that they will be prepared to integrate what they have learned from multiple courses into their singular capstone experience. To help emphasize this integrative process, we have developed a system of cross-cutting competencies to define and describe our students' educational experience. These competencies are broken into two broad categories: foundational competencies that are found in every CSSE core course and technical competencies specific to software engineering and computer science that are developed across the set of individual courses.

Foundational Competencies

Foundational competencies span three areas:

- **Analysis and problem-solving.** This area emphasizes the gathering information to support decision-making; solving problems efficiently; thinking through problem solutions in a systematic manner, ensuring that work done is of the highest quality; identifying novel, creative approaches to problem-solving; and demonstrating the ability to learn continuously as new challenges arise.
- **Interpersonal skills.** This area focuses on the fact that software and systems development almost always involves teams. We emphasize collaborative team building; effective leadership as a contribution to these teams; effective written and oral communications; and nimbleness in the face of changing, uncertain conditions.
- **Management skills.** Our graduates learn the importance of the process of developing software in ensuring high quality. This includes managing projects to keep them efficient and within time and budget constraints; administering projects' compliance with desired standards and reporting requirements; acting in anticipation of possible problems and opportunities to manage risk; and, overall, maintaining a careful focus on the user's needs.

Technical Competencies

Technical competencies address business, programming, and operational aspects of software systems:

- **General business, social, and technical.** Students are expected to understand the business, mathematical, and social contexts in which software development takes place. This includes analyzing project cost; benefit and risks; evaluating alternative technologies; re-engineering business processes; understanding the mathematical theory underpinning computing applications; and writing the full range of documents associated with computing systems.
- **Application programming.** We develop an appreciation of the extent of the full software development life cycle: requirements, design, testing, implementation, programming (both singly and in teams), and quality assurance. Core courses emphasize this full range, while electives focus on a variety of techniques for addressing each part.
- **Infrastructure/operations.** Students gain experience with the range of hardware, software, and professional development necessary for successful systems. They learn to integrate different technologies across multiple platforms; to take advantage of the interrelationships among hardware, software, and operating systems; to evaluate and troubleshoot system performance, to manage systems and networks; and to support developers and users in their understanding and use of computer hardware and software.

course, free to apply any recruitment procedure that you use in the normal course of employee hiring. Students are also responsible for identifying a faculty advisor (if you have an ongoing relationship with a CSS faculty member, please feel free to suggest that person) and completing a Cooperative Education Contract to your and their advisor's satisfaction. The Contract will require signatures from the student, a representative of your organization, and the faculty advisor.

During the project, the student will be responsible

for communicating their progress regularly with their faculty advisor. As the project nears completion, and the Colloquium approaches, the student may wish to consult with his or her mentor in your organization regarding the required poster and oral presentations. The student will also request an evaluation letter from the mentor to the faculty advisor. We hope that you can join us on the day of the Colloquium to see your intern's presentation, to experience the breadth of internship experiences, and to network with other sponsors and CSS faculty and staff.



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