

# **Program Review Executive Summary**

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## **Western Oregon University: Computer Science Program (Computer Science Division)**

### **Majors Reviewed:**

- ☐ Computer Science B.A., B.S., B.A.S.
- ☐ Computer Science and Mathematics

### **Minors and Certificates Reviewed:**

- ☐ Computer Science

Dates of Program Review: Academic Year 2020-21  
External Reviewer Visit: Winter and Spring 2022

Date of Executive Summary: December 2022

## **EXECUTIVE SUMMARY: COMPUTER SCIENCE PROGRAM**

The Computer Science Program in WOU's Computer Science Division conducted a formal program review self-study during the 2020-21 academic year. The self-study was primarily written by Dr. Scot Morse and was submitted to the Dean of the College of Liberal Arts & Sciences (LAS) in January 2021. Dr. Peter G. Drexel, Professor of Computer Science & Technology at Plymouth State University, conducted a virtual external review that began in February 2022 and continued periodically through May 2022. He submitted his report in June 2022. (The long delay between self-study and external review was due to ongoing pandemic restrictions; the CS Division strongly preferred to host an external reviewer in person rather than remotely, but over time it became apparent that such a visit would not be feasible due to ongoing COVID surges.) The LAS Dean visited the Computer Science faculty during a departmental retreat in September 2022 to discuss both the self-study and external review, as well as the strategies for continual improvement identified by the Division. The implementation of most identified initiatives was already underway at that time.

The program review emphasized the following programmatic strengths:

- The program is small and personable one, where students are known by name and provided with individualized support.
- The program is flexible, responsive, and designed to support graduation within four years; curricular adjustments are often made to ensure access and completion, offering students a variety of pathways and course modalities.
- The program has a strong sense of community and collaboration, including its physical spaces.
- The student-run ByteClub promotes focused co-curricular activities for CS and IS students, such as traveling to career fairs, company tours, invited talks, and game and pizza nights.
- Program graduates fulfill specific niches as practicing software professionals in Oregon.
- The program strongly emphasizes diversity and inclusion for both students and faculty.
- NWCIT survey data indicates strong student satisfaction with the program; nevertheless, the program still focuses on continual improvement.
- Recent curricular improvements include integrated Major Field Test Exam, senior capstone sequence, e-portfolios and high-impact projects; development of entry and exit surveys; website improvements focused on diversity and inclusion; strong branding and marketing strategies; Welcome Week events; divisional Code of Conduct; asynchronous General Education courses; Safe Zone training; and more.
- Program has strong partnerships with community colleges, effective Industry Advisory Board, and outstanding professional connections, such as through Oregon Gaming Challenge.
- Pairs programming in introductory courses has increased the number of women in programming classes.
- Faculty have procured significant grants, developed intriguing interdisciplinary projects (such as FYS and the current Turtle Project).

- Faculty turnover, while initially stressful, has ultimately allowed for new hires that have fostered an improved divisional climate, collegiality, cutting-edge pedagogy, and inclusivity.

Some of the most significant challenges faced by the program include:

- The computing field undergoes continual rapid change, arguably more so than any other academic discipline. This requires faculty to be exceptionally responsive, which is challenging given WOU's high teaching/service requirements and inadequate resources.
- Student enrollment by headcount continues to decline at WOU, including the number of CS majors.
- The new Computer Science and Mathematics major is innovative yet remains small in numbers.
- The external reviewer suggests that CS could do more with Computer-Human Interaction; that there is a need for additional programmatic IT support; and that upper administration needs to take a more holistic approach when it comes to running necessary courses that are low-enrolled.
- The program has identified a need to improve its tracking of post-graduation outcomes, building of alumni relations, and mentoring of the capstone sequence and e-portfolios.

#### NEW INITIATIVES:

As a result of the program review, the Department decided to pursue new program-driven initiatives and continue with numerous academically effective practices. All of these are outlined in the Implementation Matrix below.

#### IMPLEMENTATION MATRIX

<b>New Program-Driven Initiatives</b>	<b>Completed/</b>	<b>Underway/Ongoing)</b>	<b>To Be Done</b>
Create new major in Data Analytics	X		
Support new interdisciplinary major in Cybercrime Investigation & Enforcement	X		
Continue to make scheduling decisions in light of ongoing budgetary challenges		X (ongoing)	
Strengthen relationships with other programs to provide computer-centered courses in variety of disciplines		X (ongoing)	
Engage in vigorous recruitment efforts		X (ongoing)	
Continue to develop increasingly sophisticated assessment methods for continual curricular improvement		X (ongoing)	

Continue to focus on diversity and inclusion efforts		X (ongoing)	
Expand alumni outreach and tracking of post-graduation outcomes			X
Continue to develop both agility and transparency in divisional operations		X (ongoing)	
Continue working with Industry Advisory Board		X (ongoing)	
Work with administration to find ways to support continual faculty professional development, in light of the rapidly changing nature of the field		X (ongoing)	
Consider pursuing external reviewer recommendation regarding human/computer interaction course			X

The Computer Science Program is to be commended for its success, as demonstrated in the above matrix, in promptly implementing the majority of identified initiatives while continuing its many outstanding practices. (Following the self-study, the Division was able to hire a new junior faculty member, Alex LeClerc, who is currently working on their doctorate.) At this point the primary need of Computer Science is, as stated above, the necessary support for faculty to stay current in the field that is arguably the most rapidly changing of any academic discipline. Despite the current fiscal challenges faced by WOU, the LAS Dean strongly recommends that the university prioritize this effort, in order to promote student success and professional diversity in critical STEM fields.