Cybersecurity (BS)

As our lives increasingly rely on cyberspace, the demand for securing cyberspace continues to grow. There is a substantial shortage of cybersecurity professionals in Oregon and nationwide. As a cybersecurity major, you will have the foundational knowledge and hands-on skills to become leaders in this crucial field. The curriculum for the major closely follows the guidelines and standards set by the National Security Agency (NSA) for cybersecurity education. This ensures that graduates possess a robust skill set and knowledge base that aligns with the latest developments in the field. Graduates of this program will be well-prepared to tackle the evolving challenges of modern cybersecurity threats.

We invite students who are passionate about cybersecurity, eager to immerse themselves in experiential learning, and ready to contribute to the safety of cyberspace to explore this exciting new program. Together, we will shape the future of cybersecurity and cultivate a generation of professionals who are at the forefront of defending against ever-evolving cyber threats.

Computer Science majors and Computer Science minors cannot major in Cybersecurity major.

Admission

Students may be admitted to the major after consultation with an adviser in the Department of Computer Science or with an advisor in Tykeson Hall. Students should seek admission to this major early in their career at the university as the requirements have a number of course dependencies.

Program Learning Outcomes

Upon successful completion of this program, students will be able to:

- Learn essential knowledge and up-to-date techniques in cybersecurity, including those in the main areas of fundamental security concepts and principles, applied cryptography, program security, and system and network security.
- Hone hands-on skills in cybersecurity via computer and network security lab courses and field studies.
- Be able to draw on a broad knowledge and hands-on skills of cybersecurity to design, implement, and test solutions to cybersecurity tasks.
- Understand the wide-ranging effects and interdisciplinary aspects of cybersecurity while attaining proficiency in one or multiple subdomains within the field of cybersecurity.
- Apply and expand foundational knowledge and skills to new problem domains and emerging technologies.
- Possess effective communication and collaboration abilities and express ideas clearly and concisely both orally and in written form.
- Adhere to ethical principles and make well-informed decisions in the field of cybersecurity.

Cybersecurity Major Requirements

Code	Title	Credits
Stage 1	**All courses must be taken graded with a grade of B- or better.**	
CS 102	Fundamentals of Computer and Information Security	4
CS 210	Computer Science I	4
CS 211	Computer Science II	4
CS 212	Computer Science III	4
MATH 231	Elements of Discrete Mathematics I	4
MATH 232	Elements of Discrete Mathematics II	4
Stage 2	**All courses must be taken graded.**	
CS 313	Intermediate Data Structures	4
CS 314	Computer Organization	4
CS 315	Intermediate Algorithms	4
CS 330	C/C++ and Unix	4
CS 332	System and Security Administration Lab	4
CS 333	Applied Cryptography	4
Stage 3	**All courses must be taken graded.**	
CS 415	Operating Systems	4
CS 422	Software Methodology I	4
CS 425	Principles of Programming Languages	4
CS 432	Introduction to Networks	4
CS 433	Computer and Network Security	4
CS 437	Computer and Network Security Practicum (Computer and Network Security Practicum) to be submitted for approval soon	4
Stage-3 depth courses		**8**
CS 434	Computer and Network Security II	
CS 436	Secure Software Development	
Breadth Courses	**A maximum of 8 credits may be taken Pass/No Pass.**	**16**
Any 400-level CS courses and CS 322		
A maximum number of 8 credits from courses CS 399, CS 400M, and CS 410 may be counted toward the degree		
A maximum number of 8 credits from CS 403 may be counted toward the degree		
A maximum number of 4 credits from courses CS 405 and CS 407 may be counted toward the degree		
CS 405, CS 407, CS 399, CS 410 repeatable only with different subtitles		
Writing Requirement: one of the three	**The course may be taken Pass/No Pass or Graded.**	**4**
WR 320	Scientific and Technical Writing	
WR 321	Business Communications	
HC 301H	Research and Writing: [Topic]	
Field Study	**Over one or multiple terms with a total four (4) credits. The course may be taken Pass/No Pass or Graded.**	**4**
CS 401	Research: [Topic]	
CS 404	Internship: [Topic]	
CS 406	Practicum: [Topic]	
Total Credits		**104**

Additional Requirements

- 24 CS credits must be earned in residence at the University of Oregon.
- Satisfactory progress: Apart from Stage 1, all other courses must be completed with a grade of C- or better if graded. Students who receive three grades below C- in all courses will be removed from the major. Below C- grades are cumulative. Retaking and passing a course does not change the total number of below C- grades.