

# BACHELOR OF SCIENCE IN COMPUTER SCIENCE CYBERSECURITY TRACK

Cybersecurity is a concentration within Computer Science that encompasses a variety of subjects, including software development, networking, database management, data security, software security, network security, and system security. The cybersecurity track provides foundational knowledge and skills to enable graduates to create, manage, execute, analyze, and evaluate secure computing systems.

COURSE	TITLE	S.H.
<b>First Year Requirement - Student Success</b>		
YSU 1500	Success Seminar	1-2
or YSU 1500S	Youngstown State University Success Seminar	
or HONR 1500	Intro to Honors	
<b>General Education</b>		
ENGL 1550	Writing 1	3-4
or ENGL 1549	Writing 1 with Support	
ENGL 1551	Writing 2	3
MATH 1571	Calculus 1	4
Natural Sciences ((2 courses; one course must include a lab)		7
PHIL 2625	Introduction to Professional Ethics	3
Arts and Humanities (1 course)		3
Social Science (2 courses)		6
General Education Electives (9 s.h.) <small>Any Gen Ed Courses</small>		9
<b>Major Requirements</b>		
CSIS 2610	Programming and Problem-Solving	3
CSIS 2610L	Programming and Problem-Solving Lab	1
CSIS 3700	Data Structures and Objects	3
CSIS 3700L	Data Structures and Objects Lab	1
CSIS 3701	Advanced Object-oriented Programming	3
CSIS 3740	Computer Organization	4
CSCI 3710	Introduction to Discrete Structures	3
CSCI 5806	Operating Systems	3
CSCI 5801	Software Engineering	3
CSCI 5870	Data Structures and Algorithms	3
CSCI 4890	Computer Projects	2-4
ENGL 3743	Introduction to Public, Professional and Technical Writing	3
or INFO 3704	Business Communication	
<b>Cybersecurity Track Courses</b>		
CSIS 3722	Development of Databases	3
CSIS 3723	Networking Concepts and Administration	3
CSIS 3755	Information Assurance	3
CSIS 3756	Security Design	3
CSIS 3757	Computer Forensics	3
CSIS 5828	Computer Network Security	3
CSCI 5857	Encoding and Encryption	3
<b>Mathematics Minor</b>		
MATH 1572	Calculus 2	4
MATH 3720	Linear Algebra and Matrix Theory	3
STAT 3743	Probability and Statistics	4
Additional MATH course	<small>To meet 18 hour minor</small>	3

<b>Free Electives</b> <small>Any course to meet 120 total hours</small>	14	
<b>Total Semester Hours</b>	120-124	
15		
<b>Year 1</b>		
<b>Fall</b>		
YSU 1500	Success Seminar	
or YSU 1500S	or Youngstown State University Success Seminar	
or HONR 1500	or Intro to Honors	
CSIS 2610	Programming and Problem-Solving	3
CSIS 2610L	Programming and Problem-Solving Lab	1
MATH 1571	Calculus 1	4
ENGL 1550	Writing 1	3-4
or ENGL 1549	or Writing 1 with Support	
Gen Ed Social Science		3
<b>Semester Hours</b>		15-17
<b>Spring</b>		
CSIS 3700	Data Structures and Objects	3
CSIS 3700L	Data Structures and Objects Lab	1
MATH 1572	Calculus 2	4
ENGL 1551	Writing 2	3
Gen Ed Natural Science + Lab		4
<b>Semester Hours</b>		15
<b>Year 2</b>		
<b>Fall</b>		
PHIL 2625	Introduction to Professional Ethics	3
CSIS 3701	Advanced Object-oriented Programming	3
CSIS 3740	Computer Organization	4
Gen Ed Arts & Humanities		3
Free Elective <small>Any course to meet 120 total hours</small>		3
<b>Semester Hours</b>		16
<b>Spring</b>		
CSCI 3710	Introduction to Discrete Structures	3
MATH 3720	Linear Algebra and Matrix Theory	3
ENGL 3743	Introduction to Public, Professional and Technical Writing	3
or INFO 3704	or Business Communication	
Gen Ed Social Science		3
Gen Ed Natural Science		3
<b>Semester Hours</b>		15
<b>Year 3</b>		
<b>Fall</b>		
CSIS 3722	Development of Databases	3
CSIS 3723	Networking Concepts and Administration	3
CSIS 3755	Information Assurance	3
STAT 3743	Probability and Statistics	4
Gen Ed Electives <small>Any Gen Ed Course</small>		3
<b>Semester Hours</b>		16
<b>Spring</b>		
CSCI 5801	Software Engineering	3
CSIS 3756	Security Design	3
CSIS 3757	Computer Forensics	3
Math Minor Upper Division Elective		3
Gen Ed Elective <small>Any Gen Ed Course</small>		3
<b>Semester Hours</b>		15

**Year 4****Fall**

CSCI 5857	Encoding and Encryption	3
CSCI 5870	Data Structures and Algorithms	3
CSIS 5828	Computer Network Security	3
Gen Ed Electives	Any Gen Ed Course	3
Free Elective	Any course to meet 120 total hours	3
<b>Semester Hours</b>		<b>15</b>

**Spring**

CSCI 4890	Computer Projects	2-4
CSCI 5806	Operating Systems	3
Free Electives	Any course to meet a total of 120 hours	8
<b>Semester Hours</b>		<b>13-15</b>
<b>Total Semester Hours</b>		<b>120-124</b>

1. Demonstrate fundamental knowledge and skills in data security.
2. Exhibit understanding of basic cryptography principles.
3. Demonstrate foundational knowledge in digital investigation and the use of forensic tools.
4. Demonstrate proficiency in data integrity and authentication techniques.
5. Display expertise in software security.
6. Demonstrate competencies in ensuring security in both physical and logical connections between components.
7. Demonstrate a basic understanding of system security principles.