CYBERSECURITY (BS)

Exploration and Discovery

Overview

The Bachelor of Science in Cybersecurity provides a comprehensive four-year program aligned with National Security Agency's (NSA) National Center of Academic Excellence in Cyber Defense (CAE-CD) standards. It prepares students for careers in government, industry, and graduate study through a strong technical foundation in computing, networks, security principles & technologies, and ethical practice.

Degree Requirements

The 120-credit curriculum builds progressively across four years, covering foundational computing, programming, networking, cybersecurity fundamentals, digital forensics, ethical hacking, cloud security, risk management, and a hands-on Red Team/Blue Team capstone. Required courses align with NSA CAE-CD Knowledge Units and National Institute of Standard and Technology's (NIST) National Initiative for Cybersecurity Education (NICE) Workforce Framework job roles.

The program emphasizes applied learning through a dedicated state-of-the-art cybersecurity lab, a Cyber Range, industry-informed coursework with extensive hands-on practices, stackable credentials, certification-aligned content, and options for research, independent study, or internships.

Course	Title	Credits
CY 2020	Cybersecurity Fundamentals	4
CY 3010	Ethical Hacking & Pentesting	4
CY 3020	Network Security	4
CY 3030	Digital Forensics & Incident Response	4
CY 3040	Cloud Security and Privacy	4
CY 3100	Red Team/Blue Team Capstone	4
CY 4100	Risk Management, Governance, and Compliance	4
MGM 3100	Cybersecurity and Privacy for Business	4
CS 2010	Computing Fundamentals (TECO)	3
CS 2015	Introduction to Digital Forensics	4
CS 2370	Introduction to Programming	4
CS 2470	Systems Programming in C/C++	2
CS 3240	Data Communication and Computer Networks	3
CS 3600	Database Management Systems & Security	4
CS 3720	Systems Analysis and Design	3
CS 4230	System Administration	4
CS 4310	Operating Systems	3
CS 4400	Computer Networks and Protocols	4
CS 4520	CyberEthics (DICO,WRCO)	3
CS 4760	Senior Project	3
or CS 4910	Independent Study	
or CS 4920	Computer Science Internship	
MA 1800	College Algebra	3
MA 2210	Finite Math with Business Statistics (QRCO)	4
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
IS 4220	Signature Project (INCO,INCP)	4
Pathway Certificate (https://coursecatalog.plymouth.edu/general-education/)		15-16
Additional Pathway Credits (0 if in major)		0-9
Free Electives		4-13
Total Credits		**120**

* To complete the Pathways HoME General Education program, a student must complete 24 credits of Pathways courses, including those that lead to a Pathways Certificate. 15-16 credits of a Pathway Certificate must be in a single Pathway skill and must include at-least 8 credits of upper-division courses. Students may complete the remaining 8-9 credits with Pathway classes taken inside the major (double-counting) or outside of it. Students in this major may earn multiple Pathway Certificates.

Recommended Course Sequence

Check all course descriptions for prerequisites before planning course schedule. Course sequence is suggested but not required.

To complete the bachelor's degree in 4 years, you must successfully complete a minimum of 15 credits each semester or have a plan to make up credits over the course of the 4 years. For example, if you take 14 credits one semester, you need to take 16 credits in another semester. Credits completed must count toward your program requirements (major, option, minor, certificate, general education or free electives).

Course	Title	Credits
Year One		
EN 1400	Composition	4
IS 1115	Tackling a Wicked Problem	4
MA 1800	College Algebra	3
MA 2210	Finite Math with Business Statistics (QRCO)	4
CS 2010	Computing Fundamentals (TECO)	3
CS 2370	Introduction to Programming	4
CY 2020	Cybersecurity Fundamentals	4
Pathway Course		4
	Credits	**30**
Year Two		
CS 3240	Data Communication and Computer Networks	3
CS 2015	Introduction to Digital Forensics	4
CS 3600	Database Management Systems & Security	4
CS 2470	Systems Programming in C/C++	2
CS 4400	Computer Networks and Protocols	4
Free Elective		4
Free Elective		1
Pathway Course		4
Pathway Course		4
	Credits	**30**
Year Three		
CS 4230	System Administration	4
CS 3720	Systems Analysis and Design	3
CY 3020	Network Security	4
CY 3030	Digital Forensics & Incident Response	4

CY 3010	Ethical Hacking & Pentesting	4
CY 3040	Cloud Security and Privacy	4
MGM 3100	Cybersecurity and Privacy for Business	4
IS 4220	Signature Project (INCO,INCP)	4
	Credits	**31**
Year Four		
CS 4520	CyberEthics (DICO,WRCO)	3
CS 4760 or CS 4910 or CS 4920	Senior Project or Independent Study or Computer Science Internship	3
CS 4310	Operating Systems	3
CY 3100	Red Team/Blue Team Capstone	4
CY 4100	Risk Management, Governance, and Compliance	4
Pathway Course		4
Free Elective		4
Free Elective		4
	Credits	**29**
	Total Credits	**120**

Learning Outcomes

Students graduating from PSU's Bachelor of Science in Cybersecurity program be able to:

- Analyze cybersecurity threats and defense affecting computing of systems and networks, both independently and as a part of a team.

- Conduct security assessments and evaluations using industry-standard testing methodologies to identify vulnerabilities and improve an organization's security posture.

- Design and manage secure systems, networks, and cloud environments using defense-in-depth principles.

- Formulate technical and strategic cybersecurity solutions with professional ethics and communicate them to diverse audiences

- Apply organizational risk management principles and develop governance frameworks that align security controls with business objectives and regulatory requirements.

Career Pathways

Career paths include cybersecurity analyst, network defender, incident responder, penetration tester, cloud security specialist, security engineer, and governance/risk/compliance roles. The program also prepares students for federal cybersecurity positions and graduate study.