

CYBERSECURITY BACHELOR OF SCIENCE

Leading to a Bachelor of Science Degree in Cybersecurity

Students in Cybersecurity (BSCY) learn how systems, devices, and networks operate and how to identify potential security vulnerabilities in those environments. Students will experience the entire security process from incident response and forensics, to offensive and defensive security, to policy and management. Electives allow students to dive deeper into areas of cybersecurity that they are most interested in. Students also apply these skills directly in the work environment through two required co-op work semesters beginning junior year.

Program Learning Outcomes

- Graduates are able to regard cybersecurity across domains of people, process, policy, and technology.
- Graduates are able to define solutions that integrate cybersecurity concepts from the design phase through implementation.
- Graduates are able to apply security principles and practices to the environment, hardware, software, and human aspects of a system.
- Graduates are able to analyze and evaluate systems with respect to maintaining operations in the presence of risks and threats.
- Graduates are able to apply necessary oversight of systems based on legal, compliance, regulatory, or governance requirements.
- Graduates are able to define privacy, trust, confidentiality, and security as it relates to people, personnel, and organizations.

Total credits for degree: 125

This is a four-year full-time program, starting in the fall semester of the student's first year and planned to end in the summer semester of the student's fourth year. The courses are as follows:

Course	Title	Credits
Freshman Year		
Fall Semester		
COMP1000	COMPUTER SCIENCE I	4
COMP1100 or COMP2100	INTRODUCTION TO NETWORKS or NETWORK PROGRAMMING	4
MATH2300	DISCRETE MATHEMATICS	4
English Sequence*		4
Credits		16
Spring Semester		
COMP1050	COMPUTER SCIENCE II	4
COMP2500	SECURITY PRINCIPLES	4
MATH1776	CALCULUS 1A	2
MATH1777	CALCULUS 1B	2
English Sequence*		4
Credits		16
Sophomore Year		
Fall Semester		
COMP1200 or ELEC2275	COMPUTER ORGANIZATION or DIGITAL LOGIC	4
COMP2000	DATA STRUCTURES	4

Course	Title	Credits
MGMT2560	CYBERSECURITY LAW & POLICY	4
MATH1876	CALCULUS 2A	2
MATH1877	CALCULUS 2B	2
Credits		16
Spring Semester		
COMP2150	NETWORK ADMINISTRATION	4
COMP2350	ALGORITHMS	4
MATH2860	LINEAR ALGEBRA & MATRIX THEORY	4
HSS Elective*		4
COOP2500	INTRODUCTION TO COOPERATIVE EDUCATION	0
Credits		16
Summer Semester		
COOP3000	OPTIONAL COOP EDUCATION	0
Credits		0
Junior Year		
Fall Semester		
COMP3100	SYSTEM ADMINISTRATION	4
COMP3400	OPERATING SYSTEMS	4
COMP3500	NETWORK SECURITY	4
Math or Science Elective ²		4
Credits		16
Spring Semester		
COOP3500	COOP EDUCATION 1	0
Credits		0
Summer Semester		
COMP3550	COMPUTER SECURITY	4
COMP3590	APPLIED CRYPTOGRAPHY	4
MATH2100	PROBABILITY & STATISTICS FOR ENGINEERS	4
HSS Elective*		4
Credits		16
Senior Year		
Fall Semester		
COOP4500	COOP EDUCATION 2	0
Credits		0
Spring Semester		
COMP4500	OFFENSIVE SECURITY	4
Cybersecurity Elective ⁶		3 or 4
Computer Science Elective ³		4
HSS Elective*		4
Credits		15-16
Summer Semester		
COMP4550	INCIDENT RESPONSE & BUSINESS CONTINUITY	4
COMP5500	SENIOR PROJECT	4
Cybersecurity Elective ⁶		3-4
Math or Science Elective ²		4
Credits		15-16
Total Credits		126-128

2

Students must take two math or science electives total. Of these, at least one must be a 3-2-4 science elective with the exception of PHYS1000, and PHYS1500. Math electives include any Applied Math minor course.

3

Cybersecurity students take a total of four computer science electives: two cybersecurity electives, one cryptography elective and one computer science.

ENGL/HSS Note

Students are required to complete:

- At least one course in Humanities: CSAS, HSSI, HIST, HUMN, LITR and PHIL
- At least one course in the Social Sciences: CSAS, HSSI, COMM, ECON, ENVM, POLS, PSYC and SOCL
- The remaining course from either the Humanities or Social Sciences category.

Students with a three English course sequence may use the third English course to satisfy a Humanities requirement.

A minimum of 20 credits total, including English, humanities, and social science credit, is required to complete the humanities and social sciences graduation requirement.

Of the three listed humanities and social science electives BSCY students must include a Directed Elective:

- An Ethics elective

Math Placement (<https://catalog.wit.edu/academic-policies-procedures/ug/math-placement/>) may alter the course schedule above.

Cybersecurity Electives: select two courses from the following list

Course	Title	Credits
COMP3575	SCRIPTING FOR CYBERSECURITY AND FORENSICS	4
COMP3580	DIGITAL FORENSICS	4
COMP3590	APPLIED CRYPTOGRAPHY	4
COMP3800	SPECIAL TOPICS IN COMPUTER NETWORKING OR COMPUTER SCIENCE (require School approval to satisfy Cybersecurity Elective)	4
COMP4580	NETWORK FORENSICS	4
COMP4590	PUBLIC KEY CRYPTOGRAPHY	4
ELEC3800	SPECIAL TOPICS IN ELECTRONICS (require School approval to satisfy Cybersecurity Electives)	
ELEC4025	HARDWARE SECURITY	3
MATH2425	CRYPTOLOGY	4
MATH3800	SPECIAL TOPICS IN APPLIED MATHEMATICS (require School approval to satisfy Cybersecurity Electives)	

Computer Science Electives: select one course from the following list

Course	Title	Credits
COMP1150	ROUTING AND SWITCHING	4
COMP2160	WIRELESS NETWORKS	4
COMP2650	DATABASES	4
COMP3125	DATA SCIENCE FUNDAMENTALS	4
COMP3200	ASSEMBLY LANGUAGE	4
COMP3350	PROGRAMMING LANGUAGES	4
COMP3450	PARALLEL COMPUTING AND DISTRIBUTED COMPUTING	4
COMP3660	MOBILE APP DEVELOPMENT	4
COMP3750	INTRODUCTION TO BIostatISTICS	4
COMP4050	MACHINE LEARNING	4
COMP3800	SPECIAL TOPICS IN COMPUTER NETWORKING OR COMPUTER SCIENCE (require School approval to satisfy Computing Elective)	4
COMP4150	ADVANCED SYSTEM ADMINISTRATION	4
COMP4450	SYSTEMS PROGRAMMING	4
COMP4950	PROJECT MANAGEMENT	4
COMP4960	SOFTWARE ENGINEERING	4