Bachelor of Science

Cybersecurity (BS)

Web Site: https://www.odu.edu/cyber (https://www.odu.edu/cyber/)

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The Bachelor of Science degree in cybersecurity provides opportunities for students to integrate education and training with the application of problem-solving skills in the lab environment. Courses are drawn from the disciplines of philosophy, computer science, computer engineering, information technology, and criminal justice to examine the multi-faceted nature of cybersecurity. Students admitted to the program have a variety of credit options including portfolio review, CLEP, DANTES, and departmental exams. For more information about the cybersecurity interdisciplinary program, email cyber@odu.edu or Dr. Saltuk Karahan (skarahan@odu.edu).

Requirements

Lower-Division General Education

Written Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#written)	6
Oral Communication (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#oral)	3
Mathematics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#math)	3
Language and Culture (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#language)	0-6
Information Literacy and Research (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#information)	3
Human Behavior (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#behavior)	3
Human Creativity (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#creativity)	3
Interpreting the Past (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#interpret)	3
Literature (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#literature)	3
Philosophy and Ethics (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#philosophy)	3
The Nature of Science (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#nature)	8
Impact of Technology (http://catalog.odu.edu/undergraduate/requirements-undergraduate-degrees/#impact)	3

Written Communication: Grade of C or better required in both written communication courses and in ENGL 110C before declaring major.

Mathematics: MATH 162M required. MATH 211 and MATH 212 are required as prerequisites for selected upper-division ECE and MSIM courses.

Philosophy and Ethics: can be met by PHIL 355E

Impact of Technology: met with CYSE 200T/IT 200T in the major

Human Behavior: CRJS 215S or DASC 205S/SOC 205S

Upper-Division General Education

Met in the major.

Requirements for Graduation

Requirements for graduation include the following:

- Minimum of 120 credit hours.
- Minimum of 30 credit hours overall and 12 credit hours of upper-level courses in the major program from Old Dominion University.

- Minimum overall cumulative grade point average of C (2.00) in all courses taken.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward the major.
- Minimum overall cumulative grade point average of C (2.00) in all courses taken toward a minor.
- Completion of ENGL 110C, ENGL 211C or ENGL 231C, and the writing intensive (W) course in the major with a grade of C or better. The W course must be taken at Old Dominion University.
- Completion of Senior Assessment.

Cybersecurity Major

General Education

Complete lower-division requirements	35-44
Complete upper-division requirements (met in the major)	

Prerequisite Courses

Students may be required to complete an additional 15-36 hours of prerequisite courses depending on which Principles and Application courses they select.	15-36

Interdisciplinary Writing Course

IDS 300W	Interdisciplinary Theory and Concepts	3

Core Courses

CYSE/IT 200T	Cybersecurity, Technology, and Society	3
CYSE 201S	Cybersecurity and the Social Sciences	3
CYSE 250	Basic Cybersecurity Programming and Networking	3
CYSE 300	Introduction to Cybersecurity	3
CYSE 301	Cybersecurity Techniques and Operations	3
CYSE/CRJS/CPD 406	Cyber Law	3
CYSE 425W	Cybersecurity Strategy and Policy (C or better required)	3
or POLS 425W	Cybersecurity Strategy and Policy	
CS 462	Cybersecurity Fundamentals	3

Principles Courses

Select three courses from the following. The coursework allows students to study the selected cybersecurity principles of their choice aligned with their interests and career goals.		9
CRJS 310	Cybercriminology: Foundations	
CS 463	Cryptography for Cybersecurity	
CS 464	Networked Systems Security	
CYSE 495	Topics in Cybersecurity	
ECE/MSIM 416	Cyber Defense Fundamentals	
ECE/MSIM 419	Cyber Physical System Security	
ECE/MSIM 470	Foundations of Cyber Security	
IT 315	Introduction to Networking and Security [*]	
IT 417	Management of Information Security [*]	
IT 418	Enterprise Information Assurance [*]	
or CS 465	Information Assurance for Cybersecurity	
PHIL 355E	Cybersecurity Ethics	

Application Courses [+]

Select three courses from the following. The coursework allows students to apply fundamental cybersecurity theories and techniques in their selected application domains.		9
CYSE 270	Linux System for Cybersecurity	
CYSE 280	Windows System Management and Security	
CYSE 407/ CRJS 395	Digital Forensics	
CYSE 420	Applied Machine Learning in Cybersecurity	
CYSE 426	Cyber War	
or POLS 426	Cyber War	

CYSE 450	Ethical Hacking and Penetration Testing	
CS 467	Introduction to Reverse Software Engineering	
CS 471	Operating Systems	
ECE 452	Introduction to Wireless Communication Networks	
ECE 455	Network Engineering and Design	
IT 410	Business Intelligence *	
IT 416	Network Server Configuration and Administration *	
IT 419	Enterprise Cyber Defense *	
IT 461	Implementing Internet Applications *	
RMI 412	Property & Liability Insurance Company Operations *	
or RMI 443	Enterprise Risk Management	
Capstone Courses		
CYSE 368	Cybersecurity Internship	3
or CYSE 494	Entrepreneurship in Cybersecurity	
IDS 493	IDS Electronic Portfolio Project	3
Electives (minimum of 19 credit hours)		
Students can take the electives from any discipline at ODU and/or complete prerequisites for Principles and Application courses, as needed, to complete the required 120 credit hours. However, no more than 29 credits from courses in the Strome College of Business may be applied to the degree requirements, including named elective courses and general electives (ACCT, BNAL, ECON, FIN, IT, OPMT, MSCM, MGMT, ENTR, MKTG).		19
Total Credit Hours		**120-150**

*	No more than 29 credits from courses in the Strome College of Business may be applied to the degree requirements, including named elective courses and general electives (ACCT, BNAL, ECON, FIN, IT, OPMT, MSCM, MGMT, ENTR, MKTG).
+	Other courses may be substituted with the approval of the program coordinator.

No more than two classes, or six credits, may be counted for both the major and a minor. Some minors may allow fewer credits to share.

Electives

Elective credit may be needed to meet the minimum of 120 hours required for the degree.

Degree Program Guide

The Degree Program Guide is a suggested curriculum to complete this degree program in four years. It is just one of several plans that will work and is presented only as broad guidance to students. Each student is strongly encouraged to develop a customized plan in consultation with their academic advisor. Additional information can also be found in Degree Works.

Course	Title	Credit Hours
Freshman		
Fall		
ENGL 110C	English Composition (Grade of C or better required)	3
MATH 162M	Precalculus I	3
Oral Communication		3
Information Literacy and Research		3
Human Behavior: CRJS 215S or DASC 205S/SOC 205S		3
	Credit Hours	**15**

Spring		
ENGL 211C or ENGL 231C	Writing, Rhetoric, and Research (Grade of C or better required) or Writing, Rhetoric, and Research: Special Topics	3
Interpreting the Past		3
CYSE 250	Basic Cybersecurity Programming and Networking	3
Approved prerequisite or program elective		3
CYSE 201S	Cybersecurity and the Social Sciences	3
	Credit Hours	**15**
Sophomore		
Fall		
Nature of Science I		4
CYSE 200T	Cybersecurity, Technology, and Society (Meets Impact of Technology)	3
CYSE 300	Introduction to Cybersecurity	3
Select one of the following:		3
CYSE 406	Cyber Law	
CRJS 406	Cyber Law	
CPD 406	Cyber Law	
Approved prerequisite or program elective		3
	Credit Hours	**16**
Spring		
Nature of Science II		4
CYSE 301	Cybersecurity Techniques and Operations	3
CS 462	Cybersecurity Fundamentals	3
Principles course selection 1 of 3		3
Approved prerequisite or program elective		3
	Credit Hours	**16**
Junior		
Fall		
IDS 300W	Interdisciplinary Theory and Concepts	3
Philosophy and Ethics (Can be met by PHIL 355E)		3
Principles course selection 2 of 3		3
Application course selection 1 of 3		3
Approved prerequisite or program elective		3
	Credit Hours	**15**
Spring		
Human Creativity		3
CYSE 425W or POLS 425W	Cybersecurity Strategy and Policy (C or better required) or Cybersecurity Strategy and Policy	3
Application course selection 2 of 3		3
Approved prerequisite or program elective		3
Approved program elective		3
	Credit Hours	**15**

Senior

Fall

Literature		3
Principles course selection 3 of 3		3
Application course selection 3 of 3		3
Approved program elective		3
Approved program elective		3
	Credit Hours	**15**

Spring

CYSE 368 or CYSE 494	Cybersecurity Internship or Entrepreneurship in Cybersecurity	3
IDS 493	IDS Electronic Portfolio Project	3
Approved program elective		3
Approved program elective		3
Elective (if needed)		1
	Credit Hours	**13**
	Total Credit Hours	**120**

Language and Culture I & II may be met in high school and are not included in this four-year plan. Please see requirement details.