

Master of Science

Cybersecurity (MS)

Master of Science in Cybersecurity

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The Master of Science in Cybersecurity is a 30-credit hour non-thesis degree program. It is designed to prepare cyber security technology leaders.

Graduates will develop skills and competencies in technical aspects of cyber security and will be prepared to assume responsibility for the management of cybersecurity projects and coordination of cyber operation teams. It also provides preparation for students desiring to pursue doctoral studies or teach cybersecurity courses in 2- and 4-year colleges and universities.

The program is offered in online format and with the option for local students to attend classes on campus. The required core courses focus on the fundamental knowledge of cybersecurity, covering advanced cybersecurity principles, techniques, and operations, as well as advanced topics in law, policy, management and leadership in cybersecurity. Students will have opportunities to choose five restricted electives to learn about different aspects of cybersecurity. The capstone course provides opportunities to synthesize and apply the knowledge and skills to solve real-world cybersecurity problems.

Financial Aid

Sources of financial aid available to students include

1. Research and teaching assistantships and
2. Loans.

Admission

Application Procedures

The completed application for the Master of Science Cybersecurity program will include the following items:

1. Official copies of transcripts from all colleges/universities attended.
2. Two letters of recommendation from individuals familiar with applicant's professional and/or academic background.
3. A current resume.
4. A statement of professional goals and academic objectives.
5. A completed application form.
6. Receipt of the application fee. Checks should be made payable to Old Dominion University
7. TOEFL test scores, sent directly from the ETS to ODU International Graduate Admission Office must accompany international applications for applicants with a degree issued outside of the United States.

Applications to Old Dominion University can be completed on-line at <http://www.odu.edu/admission/graduate> (<http://www.odu.edu/admission/graduate/>).

The applicant is responsible to ensure that all application materials are received and the application is complete in all respects.

Curriculum Requirements

This program consists of four core courses (12 credit hours), five electives (15 credit hours), and one capstone course (3 credit hours). The four core courses focus on the fundamental knowledge of cybersecurity, covering advanced cybersecurity principles, techniques, and operations, as well as advanced topics in law, policy, management and leadership in cybersecurity.

The five electives provide students with opportunities to learn about different aspects of cybersecurity, e.g., in information systems, network systems, mobile and wireless systems, operating systems, and cyber-physical systems. Courses are also offered to address such important cybersecurity

topics as reverse software engineering, digital forensics, thread modeling, and ethical hacking and penetration testing.

The capstone course brings together students in their final semester of study to synthesize knowledge from their previous coursework and apply it to solve real-world cybersecurity problems. The faculty member who teaches the capstone course will work with industrial and academic partners who will serve as external mentors of the capstone course. Each student in the capstone course will discuss—with both faculty member and mentor—development of her/his master's project that aims to solve a cybersecurity problem in a real-world business setting.

Cybersecurity Core

Core Courses

CYSE 600	Cybersecurity Principles	3
CYSE 601	Advanced Cybersecurity Techniques and Operations	3
CYSE 603	Advanced Cybersecurity Law and Policy	3
CYSE 605	Leadership and Management in Cybersecurity	3

Total Credit Hours 12

Cybersecurity Concentration

Restricted Elective Courses

Select 15 credits of the following: 15

CS 564	Networked Systems Security
CS 565	Information Assurance for Cybersecurity
CS 566	Principles and Practice of Cyber Defense
CS 567	Introduction to Reverse Software Engineering
CS 569	Data Analytics for Cybersecurity
CYSE 516	Cyber Defense Fundamentals
CYSE 519	Cyber Physical System Security
CYSE 520	Applied Machine Learning in Cybersecurity
CYSE 525	Cybersecurity Strategy and Policy
CYSE 526	Cyber War
CYSE 595	Topics in Cybersecurity *
CYSE 597	Tutorial Work in Special Topics in Cybersecurity
CYSE 598	Tutorial Work in Special Topics in Cybersecurity
CYSE 607	Advanced Digital Forensics
CYSE 610	Advanced Cryptography
CYSE 615	Mobile and Wireless Security
CYSE 625	Advanced Ethical Hacking and Penetration Testing
CYSE 635	AI Security and Privacy
CYSE 695	Advanced Topics in Cybersecurity
CYSE 697	Independent Study in Cybersecurity *
ENMA 625	Introduction to Homeland Security Logistics
MSIM 670	Cyber Systems Engineering

Capstone Course

CYSE 698	Master's Project	3
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Total Credit Hours 18

Note on CYSE 595, CYSE 596, and CYSE 697 : CYSE 595 can be taken multiple times by a student as long as the CYSE 595 courses have different titles. However, if a student has already taken a CYSE 595 course, which is converted to a regularly numbered course (generally the same title) in a future semester, the student cannot take the converted course any more. The rules of CYSE 595 are also applicable to CYSE 596. CYSE 697 can also be taken multiple times by a student, but the research topics on different CYSE 697 courses need to be different.

Recommended Plan of Study

Full-Time Students

Course	Title	Credit Hours
First Year		
Fall		
CYSE 600	Cybersecurity Principles	3
CYSE 605	Leadership and Management in Cybersecurity	3
Restricted Elective		3
Restricted Elective		3
Credit Hours		12
Spring		
CYSE 601	Advanced Cybersecurity Techniques and Operations	3
CYSE 603	Advanced Cybersecurity Law and Policy	3
Restricted Elective		3
Restricted Elective		3
Credit Hours		12
Summer		
CYSE 698	Master's Project	3
Restricted Elective		3
Credit Hours		6
Total Credit Hours		30

Part-Time Students

Course	Title	Credit Hours
First Year		
Fall		
CYSE 600	Cybersecurity Principles	3
CYSE 605	Leadership and Management in Cybersecurity	3
Credit Hours		6
Spring		
CYSE 601	Advanced Cybersecurity Techniques and Operations	3
Restricted Elective		3
Credit Hours		6
Second Year		
Fall		
CYSE 603	Advanced Cybersecurity Law and Policy	3
Restricted Elective		3
Credit Hours		6
Spring		
Restricted Elective		3
Restricted Elective		3
Credit Hours		6
Third Year		
Fall		
CYSE 698	Master's Project	3

Restricted Elective	3
Credit Hours	6
Total Credit Hours	30