Master of Science

Cybersecurity with a Concentration in AI Security (MS)

Master of Science in Cybersecurity

Rafael Diaz, Graduate Program Director

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 purse 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
or CYSE 625	Advanced Ethical Hacking and Penetration Testing	
CYSE 601	Advanced Cybersecurity Techniques and Operations	3
or CYSE 602	Advanced Techniques for Cyber Defense	
CYSE 603	Advanced Cybersecurity Law and Policy	3
CYSE 605	Leadership and Management in Cybersecurity	3
Total Credit Hours		**12**

Artificial Intelligence (AI) Security Concentration

The MS in Cybersecurity concentrations are designed for the students who are interested to focus on a specific area in cybersecurity. An admitted student can be accepted to a concentration upon the approval of the Graduate Program Director. The concentration will be posted on the transcript.

Artificial Intelligence (AI) security is an integral part of cybersecurity. This concentration will expose students to sophisticated AI security principles and tools.

Required Electives for Concentration		
Select two of the following:		6
CS 522	Introduction to Machine Learning	
CS 580	Introduction to Artificial Intelligence	
CS 728	Deep Learning Fundamentals and Applications	
CS 733	Natural Language Processing	
CYSE 520	Applied Machine Learning in Cybersecurity	3
CYSE 635	AI Security and Privacy	3
CYSE 640	Trustworthy and Responsible AI	3
Capstone		
CYSE 698	Master's Project	3
Total Credit Hours		**18**

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**