

# Cybersecurity Graduate Certificate

Information security is currently one of the most critical issues facing individuals, organizations, governments, and society. Media reports are replete with breaches of information security and the adverse consequences for all stakeholders involved. Thus, demand for professionals who understand the managerial and technical aspects of information security is growing. However, security is a rather broad field and includes a plethora of interconnected sub-specialties. Students or professionals seeking an entry into this field are often overwhelmed by its vastness. Further, since security is both a management issue and a technological issue, it is critical that students think about it from both perspectives and develop skills at their intersection.

This multidisciplinary certificate program is designed for students from diverse backgrounds who wish to get a foundation in information security. Given its flexible structure, it allows students to pursue either more technical courses throughout their program or have a mixture of technical and non-technical courses to match their interests and skill-sets.

The University of Missouri-St. Louis holds the prestigious **National Center of Academic Excellence in Cyber Defense Education (CAE-CDE)** designation granted by the National Security Agency and the U.S. Department of Homeland Security. We are currently one of only two institutions that hold such a designation in the state of Missouri and the only CAE-CDE in the Saint Louis region. UMSL also holds an additional CAE-CDE designation in the **Security Policy Development and Compliance** focus area.

For more information, please visit <http://cybersecurity.umsl.edu> or contact the program directors at [cybersecurity@umsl.edu](mailto:cybersecurity@umsl.edu).

## Admissions Requirements

Applicants must meet the following program admission requirements in addition to the general requirements of the Graduate School.

By the time of enrollment, prospective students must have obtained a baccalaureate degree or the equivalent from an accredited college or university. A minimum GPA of 3.0 on a 4.0 scale is required to be considered for regular admission. This GPA is higher than the minimum for the Graduate School. An undergraduate GPA below 3.0 will be considered on an individual basis for restricted admission. Applicants must demonstrate proficiency in college algebra or the equivalent. Graduate coursework also will be taken into consideration.

Applicants must obtain three letters of recommendation. The letters should be from those who are familiar with your professional and/or academic skills. At least one of the letters must be from a current or former college-level instructor. Written letters of recommendation must accompany the downloadable recommendation forms from the Graduate School. These materials should be sent by the letter writer directly to the Cybersecurity program director of either Computer Science or Information Systems.

Applicants must submit official transcripts to the graduate admissions office documenting the baccalaureate degree and all other prior college and graduate-level coursework completed.

For more information on the program and contact information please visit [cybersecurity.umsl.edu](http://cybersecurity.umsl.edu).

## Certificate Requirements

The Graduate Certificate in Cybersecurity is a four-course (12 credit hours) multidisciplinary program designed to help students from all backgrounds achieve a foundation in information security. It provides students the flexibility to focus on technical and/or managerial aspects of computer, software, network, and information security. With primary courses offered by the Computer Science and Information Systems and Technology departments, the program also allows students to choose from a range of electives based on student interests. This certificate serves a broad group of managers, technical specialists, and professionals with a bachelor's degree. A prior background in information security is not required to enter this program.

### Requirements

All students must take three required courses and one elective.

#### Required Courses

INFSYS 6828 or CMP SCI 5702	Principles of Information Security Cyber Threats and Defense	3
CMP SCI 4730  or INFSYS 6836	Computer Networks and Communications Management of Data Networks and Security	3
CMP SCI 5782 or INFSYS 6858	Advanced Information Security Advanced Cybersecurity Concepts	3

#### Electives

Choose one of the following:		3
CMP SCI 4700	Computer Forensics	
CMP SCI 5020	Android Apps: Android Fundamentals	
CMP SCI 5222	Advanced iOS Apps	
CMP SCI 5732	Cryptography for Computer Security	
CMP SCI 5750	Cloud Computing	
CMP SCI 5792	Mobile Computing, Networking, and Security	
CMP SCI 5794	Security of IoT Systems	
INFSYS 6830	Data Programming for Business Intelligence	
INFSYS 6862	Artificial Intelligence Applications for Business and Cybersecurity	
INFSYS 6864	Applied Cryptography for Business Applications	
INFSYS 6866	Cloud Security Management	
INFSYS 6868	Software Assurance	
INFSYS 6878	Management of Information Security	

**Total Hours** **12**

A maximum of two (2) 4000-level courses can be taken as part of the graduate certificate. A minimum of three courses must be taken from UMSL. Students may not receive both the Undergraduate and the Graduate Certificate in Cybersecurity.

For more information, students can contact the program directors at [cybersecurityUMSL@umsl.edu](mailto:cybersecurityUMSL@umsl.edu).

## Learning Outcomes

Upon completion of the program, graduates will be able to:

- apply fundamental security principles and formal security models to solve problems in cybersecurity
- develop, maintain, and update an organization's information security policies to meet security and compliance requirements
- select and execute appropriate security mechanisms to implement security policies of an organization
- communicate cybersecurity issues effectively to a range of audiences and work effectively in a team environment