Cybersecurity Undergraduate Certificate

Certificate Requirements

The Undergraduate Certificate in Cybersecurity is a five-course (15 credit hours) interdisciplinary studies program. It is 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 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 or without a bachelor’s degree. A prior background in information security is not required to enter this program. A minimum GPA of 2.5 is required for admission.

Requirements

All students must take three required courses and two electives.

Required Courses

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>INFSYS 3848</td>
<td>Introduction to Information Security</td>
<td>3</td>
</tr>
<tr>
<td>or CMP SCI 3702</td>
<td>Introduction to Cyber Threats and Defense</td>
<td></td>
</tr>
<tr>
<td>CMP SCI 4730</td>
<td>Computer Networks and Communications</td>
<td>3</td>
</tr>
<tr>
<td>or INFSYS 3842</td>
<td>Data Networks and Security</td>
<td></td>
</tr>
<tr>
<td>CMP SCI 4782</td>
<td>Information Security</td>
<td>3</td>
</tr>
<tr>
<td>or INFSYS 3858</td>
<td>Advanced Security and Information Systems</td>
<td></td>
</tr>
</tbody>
</table>

Electives

Choose two of the following:

- CMP SCI 3780 Software Security
- CMP SCI 4020 Introduction to Android Apps: Android Fundamentals
- CMP SCI 4200 Python for Scientific Computing and Data Science
- CMP SCI 4222 iOS Apps
- CMP SCI 4700 Computer Forensics
- CMP SCI 4732 Introduction to Cryptography for Computer Security
- CMP SCI 4750 Introduction to Cloud Computing
- CMP SCI 4792 Introduction to Mobile Computing, Networking, and Security
- CMP SCI 4794 Introduction to Security of IoT Systems
- INFSYS 3830 Data Programming
- INFSYS 3862 Artificial Intelligence Applications for Business
- INFSYS 3864 Applied Cryptography for Business
- INFSYS 3866 Cloud Security for Business
- INFSYS 3868 Secure Software Development

Total Hours 15

Students may substitute the above courses with other courses upon approval by the program adviser in either the Computer Science or Information Systems department. In all cases, 15 hours are needed to complete the Undergraduate Certificate in Cybersecurity. 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.

Learning Outcomes

Upon completion of the program, certificate earners will be able to:

- Analyze a cybersecurity problem and apply principles of cybersecurity and business decision making to identify potential solutions
- Design, implement, and evaluate a cybersecurity-based solution to meet a given set of cybersecurity and business requirements
- Describe professional responsibilities and make informed judgments in cybersecurity practice based on legal and ethical principles
- Function effectively as a member of a team engaged in activities appropriate to the cybersecurity discipline