CYBERSECURITY AREA OF CONCENTRATION WITHIN STEM TECHNOLOGY A.A.S. (CAREER)

Program website (https://www.frederick.edu/programs/science,-technology,-engineering,-and-math-(stem)/cybersecurity.aspx)

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Program Description

Prepares graduates for a career in the cybersecurity capacities, such as information security analyst, information technology auditor, network security engineer, and information assurance engineer. This program covers technologies, techniques, and tools required by the cybersecurity industry to identify and respond to threats and vulnerabilities in cyber systems. It covers skills needed to design, analyze, evaluate, and implement security controls in the cyber environments. This program also prepares graduates for professional certifications, including A+, Net+, Security+, Certified Ethical Hacker (CEH), Certified Information Systems Security Professional (CISSP), and Certified Information Security Auditor (CISA).

Program Learning Outcomes

- Knowledge of disaster recovery and continuity of operations plans.
- Knowledge of systems administration concepts and operations.
- Knowledge of the operations and processes for diagnosing system problems.
- Knowledge of the maintenance needed to keep equipment functioning properly.
- Knowledge of physical computer components and architectures, and their functions.
- Knowledge of network security architecture concepts, including topology, protocols, components, and principles.
- Skills in conducting research for troubleshooting client-level problems.
- Skills in identifying possible causes of degradation of system performance or availability and initiating actions needed to mitigate this degradation.
- Skills in testing and configuring network workstations and peripherals.
- Skills in using the appropriate tools for repairing software, hardware, and peripheral equipment of a system.
- Skills in identifying the risks and threats to an organization's data and providing a structured way of addressing how to safeguard these critical electronic assets.
- Skills in a systems approach to critical thinking.

Program Requirements

- Students must complete their credit **English and Mathematics** within the first 24 credits.
- One course must meet the cultural competence graduation requirement **(**https://frederick-public.courseleaf.com/general-education-core/#cultural**).**
- **CORE: The General Education CORE** is that foundation of the higher education curriculum providing a coherent intellectual experience for all students. Students should check with an advisor or the transfer institution (ARTSYS) before selecting General Education CORE requirements. http://artsys.usmd.edu/
- In some General Education categories (Mathematics, Biological & Physical Sciences), a 4-credit course selected from the GenEd course list will satisfy the requirement in place of a 3-credit course. Students should check with an advisor before selecting these courses.
- For the Physical Education, Health, or Nutrition requirement, a 3-credit PHED, HLTH, or NUTR course may satisfy the requirement in place of a 1-credit course. Students should check with an advisor before selecting this course.
- Students must earn a grade of "C" or better in ENGL 101 English Composition.
- Students must complete a minimum of nine credits at the 200-level.

Code	Title	Credits
English		
ENGL 101	English Composition	3
Mathematics		
Mathematics Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#mathematics) - Recommended course(s) below:		3
MATH 120	Statistics	
Social & Behavioral Sciences		
Social & Behavioral Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#social-behavioral)		3
Arts & Humanities		
Arts Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#arts)		3
Humanities Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#humanities) - Recommended course(s) below:		3
PHIL 101	Introduction to Philosophy	
PHIL 208	Business Ethics	
Communication Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#communication)		3
Biological & Physical Sciences		
Biological & Physical Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#biological-physical)		3
Physical Education, Health, or Nutrition Requirement		
Select one PHED, HLTH, or NUTR course		1
Concentration Requirements		
CMIS 106	Object Design and Programming	3
CMIS 111L	UNIX/Linux Operating System	3
CMIS 120	PC Operating Systems	3
CMIS 281	Security Fundamentals	3
CMIS 179	Cybersecurity Fundamentals	3
CMIS 280	Networking Fundamentals	3
CMIS 203	Systems Analysis & Design	3
CMIS 121	PC Repair & Diagnostics	3
CMIS 217	Cybercrime and Digital Forensics	3
CMIS 219	Ethical Hacking	3
CMIS 295	Cloud Security	3
Electives		
Select 5 credits of the following:		5
Any CMIS or BMGT or MATH course(s)		

EMGT 101	Disaster, Crisis, and Emergency Management	
Total Credits		60

- Students holding CompTIA A+ Certification may be awarded 6 credits (CMIS 120 PC Operating Systems and CMIS 121 PC Repair & Diagnostics).
- Students holding CompTIA Network+ Certification may be awarded 3 credits (CMIS 280 Networking Fundamentals).
- Students holding CompTIA Security+ Certification may be awarded 3 credits (CMIS 281 Security Fundamentals).
- Students holding CCNA Certification may be awarded 9 credits (CMIS 290 Cisco 1 Introduction to Networks, CMIS 291 Cisco 2 Switching, Routing, and Wireless Essentials, and CMIS 292 Cisco 3 Enterprise Networking, Security, and Automation).

Transfer Note

For more information on careers and transfer, contact the Career and Academic Planning Services office at 301.846.2471 or visit Transfer Services (https://www.frederick.edu/student-resources/counseling-advising/transfer-services.aspx).

Guided Pathway to Success (GPS)

Suggested schedules map your path to degree completion.

Students should meet with an advisor each semester to carefully select and sequence courses based on their specific academic goals and interests. Visit Jefferson Hall or call 301.846.2471 for advising.

Recommended First Semester		**Credits**
ENGL 101	English Composition [1]	3
Mathematics Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#mathematics) - Recommended course(s) below: [1]		3
MATH 120	Statistics	
CMIS 120	PC Operating Systems	3
CMIS 121	PC Repair & Diagnostics	3
Select one of the following:		2-4
Any CMIS or BMGT or MATH course		
EMGT 101	Disaster, Crisis, and Emergency Management	
CMIS 105	Introduction to Programming (recomended)	
	Credits	14-16
Recommended Second Semester		
Arts Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#arts)		3
CMIS 106	Object Design and Programming	3
CMIS 179	Cybersecurity Fundamentals	3
CMIS 280	Networking Fundamentals	3
CMIS 281	Security Fundamentals	3
	Credits	15
Recommended Third Semester		
Humanities Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#humanities)		3
Biological & Physical Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#biological-physical)		3-4
CMIS 111L	UNIX/Linux Operating System	3
CMIS 219	Ethical Hacking	3
CMIS 295	Cloud Security	3
	Credits	15-16
Recommended Fourth Semester		
Social & Behavioral Sciences Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#social-behavioral)		3
Communication Elective (Gen Ed course list) (https://frederick-public.courseleaf.com/general-education-core/#communication)		3
Physical Education, Health, or Nutrition Requirement		1,3
CMIS 203	Systems Analysis & Design	3
CMIS 217	Cybercrime and Digital Forensics	3
Select one of the following:		3
Any CMIS or BMGT or MATH course		
EMGT 101	Disaster, Crisis, and Emergency Management	
	Credits	16-18
	Total Credits	60-65

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Take this course within the first 24 credits.

Part-time Students

Part-time students should complete courses in the order listed on the pathway. Please contact program manager for questions about part-time status.

Students who take fewer than 15 credits each semester or who require developmental English or Math coursework will need additional semesters to complete their degrees. Summer term and January session classes may help students to make faster progress.

Pathway Legend

Milestone - courses with the Milestone notation should be taken within the recommend credit range to stay on track for program completion.

Fall, Spring, Summer - courses with a Fall, Spring, or Summer notation indicate the course is offered in the specified semester only.