COURSE OBJECTIVES: GRADUATE CERTIFICATE IN CYBER SECURITY AND DEFENSE

Cybersecurity Programming and Analysis
This course covers programming concepts related to the security of operating systems, applications, networks, and mobile devices. This course will explore:
- Principles of network, database and operating system cybersecurity
- Use of multiple cybersecurity-related programming languages
- Building and extending existing scanning software
- Analysis and reporting of XML or JSON based cyber related data stores
- Analysis and reporting of cyber related NIST data stores
- Log analysis through programming and scripting
- Database programming and attack mitigation
- Analysis of intrusion prevention data
- Use of existing tool vs new tool creation analysis

Cyber Infrastructure and Defense
This course covers analysis and defense techniques for operational networks and critical infrastructure. This course will explore:
- Design and use of cryptographic systems
- Network security firewalls and devices
- Intrusion detection systems
- Malware detection
- Distributed Denial of Service
- Infrastructure and Application attacks
- Emerging cybersecurity defense methods

Operating Systems
Students study the principles of computer operating systems and their essential components. Team projects expose students to a variety of system design issues as they relate to the functionality and performance of the system.

Computer Networks
An in-depth study of active research topics in computer networks.

Cloud Computing
This course studies fundamental designs and key technologies in Cloud Computing by reading technical articles, and conducting a semester group project.