

Cybersecurity, M.S.C.Y.S.

The mission of the College of Engineering Masters in Cybersecurity program is to train graduates with advanced skills and practices relating to the design, development, and operation of technologies and processes to secure computing systems, networks, and infrastructures from malicious cyberattacks causing damages and data losses. This major will allow graduates to pursue technical careers in a wide range of areas, including network security design and operation, software security, secure software development, hardware security design, cyberphysical systems security, Internet of Things (IoT) security, and social networks, etc. In addition, this major will also allow graduates to pursue further advanced graduate (Ph.D. level) research in the cybersecurity field.

Major Research Areas:

Network security design and operation, software security, secure software development, hardware security design, cyberphysical systems security, Internet of Things (IoT) security, and social networks

Admissions Requirements

Must meet University Graduate Admissions and English Proficiency requirements.

- GRE required with minimum preferred scores of 167 Quantitative (89 percentile) and 158 Verbal (79 percentile)
- Three Letters of Recommendation
- CV/Resume
- Statement of Interest
- Applicants must have adequate preparation in mathematics (courses in calculus through differential equations), knowledge of electrical engineering, computer engineering and computer science, e.g., such as programming, data structures, logic design, computer architecture, operating systems, analysis of algorithms.
- Preferred undergraduate degrees include: Electrical Engineering, Computer Engineering, Computer Science, or Mathematics.

CURRICULUM REQUIREMENTS

Total Minimum Hours - 30

- Core Requirements- 9 credit hours
- Electives - 18 credit hours
- Practicum - 3 credit hours
- CAE Certification Option: 9* credit hours

*Students who opt to complete the CAE certification will complete a total of 39 Credit Hours

Core Requirements (9 Credit Hours)

- [EEL 6787 Data Network, Systems, and Security](#) **Credit Hours: 3**
- [EEL 6935 Selected Electrical Topics](#) **Credit Hours: 1-3** taken as *Cryptography & Data Security* (Proposed as EEL 6749) (3 Credits for this program)
- [CEN 6084 Advances in Object Oriented Programming for IT](#) **Credit Hours: 3**

Electives (18 Credit Hours)

Students complete a minimum of six (6) electives (18 credit hours) chosen in consultation with the Graduate Director.

- [EEL 6935 Selected Electrical Topics](#) **Credit Hours: 1-3** taken as *Wireless Mobile Computing & Security* (Proposed as EEE 6747)
- [EEL 6935 Selected Electrical Topics](#) Credit Hours 3 taken as *Advanced Cybersecurity*
- [EEL 6935 Selected Electrical Topics](#) Credit Hours 3 taken as *Embedded Systems*
- [EEE 6777 Data Analytics](#) **Credit Hours: 3**
- [EEL 6935 Selected Electrical Topics](#) Credit Hours 3 taken as *AI & Security in Cyberphysical Systems*
- [CDA 6328 Cryptographic Hardware and Embedded Systems](#) **Credit Hours: 3**
- [CIS 6220 Penetration Testing for IT](#) **Credit Hours: 3**
- [CTS 6716 Network Programming for IT](#) **Credit Hours: 3**
- [EIN 6935 Special Industrial Topics II](#) **Credit Hours: 1-3** taken as *Applied Data Analytics* (3 Credits for this program)
- [EIN 6935 Special Industrial Topics II](#) taken as *Cyber Analytics* (3 Credits for this program)

Center of Academic Excellence Certification Option (9 credit hours)

For students wanting further NSA/DHS CAE (Center of Academic Excellence) certification for their degree, 3 additional out-of-college courses (9 credits) are required. These classes along with the core class [EEL 6787 Data Network, Systems, and Security](#) fulfill the complete CAE certification requirement.

- [ISM 6328 Information Security & Risk Management](#) **Credit Hours: 3**
- [ISM 6577 Decision Processes for Business Continuity and Disaster Recovery](#) **Credit Hours: 3**
- [MAT 5932 Selected Topics](#) **Credit Hours: 1-4** taken as *Applied Cryptography* (proposed as MAD 5474) (3 Credit hours for this program)

Comprehensive Exam

In lieu of a Comprehensive Exam, students will complete a portfolio addressing the content from the core courses (3 courses) and electives (4 courses).

Practicum (3 Credit Hours)

Students are required to complete three (3) hours of Practicum.

- [EEL 6935 Selected Electrical Topics](#) **Credit Hours: 1-3** taken as *Cybersecurity Training/Practicum (proposed as EEL 6019)* (3 Credits for this program)
-