M.S. in Computer Science

The realm of computer science is rapidly evolving, with the advancement of technology permeating every aspect of modern life. From everyday cyber-physical devices, such as smartphones, to great advances in artificial intelligence, the scope of computer science is rapidly expanding. This rapid growth necessitates a deep understanding of both fundamental and advanced computing principles. The Master of Science in Computer Science program is designed to equip students with a broad knowledge base and specialized skills, providing an option to further specialize in one of two available areas of concentration either further in computer science or in cybersecurity engineering. The Master of Science in Computer Science provides its participants with exceptional learning opportunities and prepares them for successful careers after the degree. The program is designed such that the engineers and managers currently in the workforce can also enhance their skill sets in this increasingly important field.

The program allows the student to further specialize either in computer science or cybersecurity engineering topics. For each area of concentration, the program begins with a foundation of courses in computer security, requirements engineering, and system safety and certification. Then, each area has its own core: artificial intelligence, advanced algorithms, and data modeling comprise the computer science concentration; system exploitation and penetration testing, software security assessment, and applied cryptography, the cybersecurity engineering concentration. The student can tailor each area of concentration toward either professional practice or further graduate study. For those inclined toward research and later doctoral studies, the program offers a thesis option. For those more interested in entering or returning to the workplace, there is a graduate research project option.

Admissions Criteria

Students will:

- Have an ability to apply fundamental computer science professional practices to analyze, design, and implement security-critical systems.
- Have an ability to apply knowledge of advanced topics in cybersecurity engineering and/or computer science.
- Have an ability to communicate effectively on issues pertaining to computer science and/or cybersecurity.

Degree Requirements

The Master of Science in Computer Science degree is granted to students who complete the coursework described below. The program consists of nine hours of core courses, nine hours of Area of Concentration courses, and nine hours of open electives for the Graduate Research Project Option or six hours of open electives for the Thesis Option.

Program Core Requirements

CS 529	Computer Security	3
SE 530	Software Requirements Engineering	3
SYS 505	System Safety and Certification	3
Total Credits		**9**

Area of Concentration

Students may choose one of the two Areas of Concentration as shown below.

Computer Science

CS 555	Artificial Intelligence	3
CS 600	Advanced Algorithms	3
DS 615	Data Modeling	3
Total Credits		**9**

Cybersecurity Engineering

CS 527	System Exploitation and Penetration Testing	3
CS 532	Software Security Assessment	3
CS 538	Applied Cryptography	3
Total Credits		**9**

Students may choose the Graduate Research Project or Thesis option, as shown below.

Graduate Research Project Option

Program Core		9
Area of Concentration		9
Open Electives		9
CS 690	Graduate Research Project	3
Total Credits		**30**

Thesis Option

Program Core		9
Area of Concentration		9
Open Electives		6
CS 700	Graduate Thesis	6
Total Credits		**30**