SYSTEMS ENGINEERING, MASTER OF SCIENCE (M.S.)

Thesis option: 30 credits
Non-thesis option (scholarly paper): 30 credits

Course	Title	Credits
Required courses:		
ENSE621	Systems Engineering Concepts and Processes: A Model-Based Approach	3
ENSE622	System Trade-off Analysis, Modeling, and Simulation	3
ENSE623	System Development, Verification, and Validation	3
ENSE624	Human Factors in Systems Engineering	3
ENSE626	System Life Cycle Analysis and Risk Management	3
Thesis or Non-Thesis Requirements		
Select one of the following options:		15
Thesis:		
Select three additional electives from one specialization area		
ENSE799	Systems Engineering Thesis	
Non-Thesis:		
Select five additional electives from no more than two specialization areas		
Complete a scholarly paper		
Specialization Options		
Select from the following specialization areas:		
Communication and Networking Systems		
Computer and Software Systems		
Control Systems		
Manufacturing Systems		
Operations Research		
Process Systems		
Robotics		
Signal Processing Systems		
Cybersecurity		
Transportation Systems		
Total Credits		**30**

General requirements for the master's thesis and non-thesis options are those of the University of Maryland Graduate School. All requirements must be completed within 5 years. The thesis option requires each student to obtain a total of 30 credit hours: 24 hours of coursework and six (6) hours for the thesis project to complete the program. The coursework includes 15 credits for the five core courses (three courses from the systems engineering core and two courses from the management core), and three (3) elective courses. The elective courses must be taken from one specialization area. The master's thesis project demonstrates the practical implications of systems engineering principles. The thesis project may be related to a practical industrial system, and must be supervised by the academic advisor.

The non-thesis option requires each student to obtain a total of 30 credit hours of coursework to complete the program (three courses from the systems engineering core, two courses from the management core, and five elective courses). The elective courses must be taken from not more than two specialization areas. In addition, students must complete a scholarly paper. Expectations of the scholarly paper: While less detailed and complex than the thesis, the scholarly paper also contributes to systems engineering research. For example, a student might chose to write a literature review, identify and propose a solution to a systems problem encountered on the job, or prepare a systems case study. The scholarly paper is prepared under the supervision of the student's academic advisor. It also must be read by at least one additional ISR faculty member, and approved by the ENSE graduate director. No specific format is required by the Graduate School.