

# Systems Engineering (M.S.)

Master of Science

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## Program Overview

Mason Engineering offers a Master of Science in Systems Engineering through its Department of Systems Engineering and Operations Research. Systems engineering is the methodology for ensuring the successful design and performance of systems throughout their entire life cycle. Systems engineering is concerned with cost, function, architectures, human factors, safety and security, decision support, management, and integration of all components of the system design.

System engineers are the visionaries who take a global perspective of the system. The MS in Systems Engineering Program prepares students for a professional career in the design and architecture of complex systems. The program emphasizes analytical and practical aspects of engineering systems. Students are expected to master state-of-the-art approaches to systems modeling, requirements analysis, design, integration, and management.

Emphasis areas include systems management; command, control, communications, computing, and intelligence (C4I); architecture-based systems integration; systems engineering of software-intensive systems; advanced transportation systems; systems engineering and data analytics; and financial systems engineering. Research activities include fundamental and applied research. Mason's program in systems engineering recognizes the importance of balancing an education in quantitative models and engineering tools with a proper understanding of the systems perspective.

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## Program Requirements

The Master of Science in Systems Engineering requires a minimum of 30 credits of graduate-level course work. The program contains five core courses that provide students with a comprehensive understanding of the basic foundations of systems engineering, as well as a capstone project course in which students work in teams in an applied project. The remaining four courses are chosen by the student and faculty advisor from one of seven emphasis areas.

Core courses include:

- Systems Engineering Principles
- Systems Definition and Cost Modeling
- Systems Engineering Design
- Systems Engineering Management
- System Methodology and Modeling

Emphasis areas include:

- Advanced Transportation Systems
- Architecture-based Systems Integration
- Systems Engineering of Software-Intensive Systems
- Command, Control, Communications, Computing, and Intelligence (C4I)
- Systems Engineering and Data Analytics
- Systems Management
- Financial Systems Engineering
- Energy Systems

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## Related Program

- Systems Engineering and Operations Research, PhD

Refer to our website for more information on program course offerings and details on program requirements.

The MS in Systems Engineering can be completed entirely online for a number of emphasis areas. The delivery mode is asynchronous but many courses are offered in synchronous mode. Graduate Certificate degree programs may also be offered. Please visit our website for details.

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## Admission Requirements

In addition to meeting general university admissions requirements, applicants must hold a baccalaureate degree in engineering, mathematics, computer science, physical sciences, economics, or a related field from an accredited institution, and have completed courses in calculus, differential equations, matrix algebra, applied probability, and a scientific programming language. In addition, applicants must show evidence of satisfactory prior educational achievement in at least one of the following forms: an acceptable grade point average as an undergraduate or an acceptable grade point average in graduate courses.

Required application materials include:

- Online application and non-refundable fee
- Transcripts showing all post-secondary study
- Professional and Educational Goals Statement
- Two letters of recommendation from professors or senior officials at place of employment
- GRE scores (for applicants who have not earned at least a Bachelor's degree from a U.S. institution)
- Resume

Additional application materials, including English proficiency examination scores (e.g., TOEFL, IELTS), are required if the applicant holds a degree from an international institution and/or requires an F-1 or J-1 visa. Visit <http://admissions.gmu.edu/grad/> for details.

Special admission programs are available for Volgenau School students and alumni.

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Visit our website for details: <http://seor.gmu.edu>

Apply online: <http://admissions.gmu.edu/grad/applynow/>