Doctor of Engineering
Doctor of Philosophy

Classes Begin August 2019

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Academic Director & Faculty Advisor, SEAS/EMSE Online & Off-Campus Programs
March 13th, 2019
Information Session Agenda

✓ Overview of George Washington University

✓ D.Eng. and Ph.D. Programs
  • D.Eng. Program Overview
  • Ph.D. Program Overview
  • Grading and Scholarship Requirements
  • Application Information

✓ Q & A Session
George Washington University

- Chartered in 1821 by an Act of Congress
- 10 colleges and schools, including the School of Engineering & Applied Science
- More than 15,000 graduate students
- Alumni network of 275,000 in 134 countries
- Accredited by the Middle States Commission on Higher Education
Our Online Programs

→ Instructors, course content, and degree conferred are identical to the main campus programs

→ Class meet by synchronous distance learning technology (WebEx)

→ Supported by Blackboard, GW’s web-based course management software

→ Exams are taken through a secure testing platform, RPNow

→ Classes are recorded for during the session for future review if needed

→ Required textbooks and software are provided at no additional charge and sent to students before the start of each course
<table>
<thead>
<tr>
<th><strong>Field of Study</strong></th>
<th>Engineering management</th>
<th>Systems engineering</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credit Hours</strong></td>
<td>45 credit hours minimum</td>
<td>54 credit hours minimum</td>
</tr>
<tr>
<td><strong>Completion time</strong></td>
<td>Approximately 2 years</td>
<td>Minimum of 3 years</td>
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<table>
<thead>
<tr>
<th><strong>Degree Requirements</strong></th>
<th><strong>Doctor of Engineering (D.Eng.)</strong></th>
<th><strong>Doctor of Philosophy (Ph.D.)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Min 3.2 GPA in classroom phase</td>
<td>• Min 3.4 GPA in classroom phase</td>
<td></td>
</tr>
<tr>
<td>• Praxis development and defense</td>
<td>• Qualifying Exam</td>
<td></td>
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<tr>
<td>• Journal article publication</td>
<td>• Dissertation development and defense</td>
<td></td>
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<table>
<thead>
<tr>
<th><strong>Type of Research</strong></th>
<th><strong>Doctor of Engineering (D.Eng.)</strong></th>
<th><strong>Doctor of Philosophy (Ph.D.)</strong></th>
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<tbody>
<tr>
<td>• Applied research</td>
<td>• Fundamental research</td>
<td></td>
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<tr>
<td>• Solves a practical problem</td>
<td>• Contributes to basic understanding of field</td>
<td></td>
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<tr>
<th><strong>Minimum Admission Requirements (holistic approach to application file)</strong></th>
<th><strong>Doctor of Engineering (D.Eng.)</strong></th>
<th><strong>Doctor of Philosophy (Ph.D.)</strong></th>
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<td>• Bachelor’s and master’s degrees in engineering, applied science, mathematics, computer science, business administration, information technology or related field from accredited institutions</td>
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<tr>
<td>• 3.2 GPA in graduate study</td>
<td>• 3.5 GPA in graduate study</td>
<td></td>
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<tr>
<td>• 2 college-level calculus courses, ≥ B-</td>
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<td></td>
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<tr>
<td>• 5 years relevant professional experience</td>
<td>• Demonstrated capacity for original scholarship</td>
<td></td>
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Admission to EMSE-OOCP doctoral programs is competitive. Meeting the minimum requirements does not guarantee admission.
Doctor of Engineering
Doctor of Engineering

Program Logistics
• 45 credit hours (minimum)
• Classroom Phase
  • 10 graduate-level, 3-credit-hour courses
• Research Phase
  • Minimum 15 credit hours of praxis development
  • Praxis defense

Program Timeline
• Program begins
  • August 2019
• Program completion
  • August 2021
D.Eng. Field of Study
Engineering Management

- Bridges the gap between engineering and management. EM enables engineers to work most effectively in the business environment. A degree in EM provides a technical-based alternative to traditional business programs. Candidates specialize in such areas as management of technology, product and process, quality, organizational management, operations management, program management, marketing and finance.
D.Eng. Classroom Phase
Proposed Curriculum

- EMSE 6025  Entrepreneurship and Technology
- EMSE 6115  Uncertainty Analysis for Engineers
- EMSE 6760  Discrete Systems Simulation
- EMSE 6765  Data Analysis for Engineers and Scientists
- EMSE 6790  Logistics Planning
- EMSE 6850  Quantitative Models in Systems Engineering
- EMSE 6992  Special Topic: Machine Learning
- EMSE 8030  Risk Management Process for the Engineering Manager
- EMSE 8099  Survey of Research Formulation for Engineering Management
- EMSE 8100  The Praxis Proposal

Schedules, regulations and policies subject to change; course substitution in the curriculum is usual and should be expected.
D.Eng. Classroom Phase

<table>
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<tr>
<th>Session</th>
<th># Courses</th>
<th># Credits</th>
<th>Approximate Timeframe</th>
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<tbody>
<tr>
<td>Fall-1 2019</td>
<td>2</td>
<td>6</td>
<td>August 10 – October 12</td>
</tr>
<tr>
<td>Fall-2 2019</td>
<td>2</td>
<td>6</td>
<td>October 19 – December 21</td>
</tr>
<tr>
<td>Spring-1 2020</td>
<td>2</td>
<td>6</td>
<td>January 4 – March 7</td>
</tr>
<tr>
<td>Spring-2 2020</td>
<td>2</td>
<td>6</td>
<td>March 21 – May 23</td>
</tr>
<tr>
<td>Summer 2020</td>
<td>2</td>
<td>6</td>
<td>May 30 – August 8</td>
</tr>
</tbody>
</table>

- 2 courses per session
- Each session is 10 weeks long
- Classes meet Saturdays
  - Morning Class from 9:00a-12:00p (Eastern)
  - Afternoon Class from 1:00p-4:00p (Eastern)
D.Eng. Research Phase

• After completion of the classroom phase with a GPA of 3.2 or higher, and no grade below B-, students begin praxis research.
  • During this stage, students will develop and defend praxis
  • Praxis defenses are scheduled for the end of the final semester of research
  • Minimum half-hour individual research meetings on Saturdays each month, typically scheduled 8:30a-3:00p

• Research course EMSE 8199 Praxis Research
  • Session I: Fall 2020, 6 credit hours
  • Session II: Spring 2021, 6 credit hours
  • Session III: Summer 2021, 3 credit hours
  • A single semester extension through Fall 2021 (6 credit hours) may be granted.
    • Students approved for an extension semester who do not successfully defend their praxis after a second attempt in Fall 2021 will have the option to have their work transferred a Professional degree (Degree of Engineer).
Praxis Research Areas

Sample Praxis Titles from Previously Published D.Eng. Praxis Papers

• A Technology Maturity Assessment of Sustainment-Dominated Systems under the Influence of Obsolescence
• Planning for the Influence of Emerging Disruptive Technologies on IT Systems
• A Generalized Approach to Measure and Predict Innovation Maturity Progression Aligned to Business Objectives
• Identifying and Overcoming Barriers to Cloud Adoption within the Government Space
Doctor of Philosophy
Doctor of Philosophy

Program Logistics
• 54 credit hours (minimum)
• Classroom Phase
  • 8 graduate-level, 3-credit-hour courses
• Research Phase
  • At least 30 credit hours of dissertation research
• Research Milestones
  • Qualifying Exam
  • Journal Article Publication
  • Dissertation defense

Program Timeline
• Program begins
  • August 2019
• Average completion time approximately 3-4 years
Ph.D. Field of Study
Systems Engineering

- Defined by INCOSE as “interdisciplinary approach and means to enable the realization of successful systems. It focuses on defining customer needs and required functionality early …, documenting requirements, then proceeding with design synthesis and system validation while considering the complete problem: Operations, Performance, Test, Manufacturing, Cost & Schedule, Training & Support, Disposal. Systems Engineering integrates all the disciplines and specialty groups into a team effort forming a structured development process that proceeds from concept to production to operation. Systems Engineering considers both the business and the technical needs of all customers with the goal of providing a quality product that meets the user needs.”
Ph.D. Classroom Phase Proposed Curriculum

- EMSE 6115  Uncertainty Analysis for Engineers
- EMSE 6760  Discrete Systems Simulation
- EMSE 6765  Data Analysis for Engineers and Scientists
- EMSE 6790  Logistics Planning
- EMSE 6807  Advanced Systems Engineering
- EMSE 6817  Model-Based Systems Engineering
- EMSE 6992  Special Topic: Machine Learning
- EMSE 8000  Research Formulation in Engineering Management and Systems Engineering

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Ph.D. Classroom Phase

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- Each session is 10 weeks long
- Classes meet Saturdays
  - Morning Class from 9:00a-12:00p (Eastern)
  - Afternoon Class from 1:00p-4:00p (Eastern)
Ph.D. Research Phase

• After completion of the classroom phase with a GPA of 3.4 or higher, and no grade below B-, students begin dissertation research.

• Minimum half-hour individual research meetings typically scheduled weeknight evenings

• Research Course – EMSE 8999 Dissertation Research
  • 6 credit hours each Fall and Spring semester, 3 credit hours in Summer
  • Minimum 30 credit hours of EMSE 8999 required
  • Students who do not successfully complete the requirements within five years (by December 2024) will have the option to have their work transferred a Professional degree (Degree of Engineer).
Dissertation Research Areas
Sample Titles from Previously Published Ph.D. Journal Articles


Doctoral Programs
Tuition & Fees

2019-2020 Academic Year:

$1,450 per credit

- $35 registration fee each semester
- Required textbooks and software are provided at no additional charge
Application Information
GW Application Process

Completed Application Packet includes:

• Online Application Form
• Current Resume
• Statement of Purpose (250 words or less)
• Official Academic Transcripts

Online application available at emse.offcampus.gwu.edu/apply-today

All submitted materials remain property of EMSE00CP.
GW Application Process

Academic Transcripts

Transcripts should be sent to applyoffcampus@gwu.edu (if sent electronically), or via mail to:

EMSE Online and Off-Campus Programs Office
The George Washington University
1 Old Oyster Point Rd., Ste 220
Newport News, VA 23602
GW Application Process

Applications will be accepted until the cohorts are full.

- Applicants can only apply for either the D.Eng. or Ph.D. program. Dual applications will not be processed.
- Admission decisions are made on a rolling basis and communicated via email.
- Admitted applicants must complete and return a reply card and tuition deposit by the deadline provided in admission letter. Tuition deposit is applied to first semester tuition.
GW Contact Information

• SEAS EMSE Online & Off-Campus Programs Office
• Shahram Sarkani, Ph.D., P.E., Director
  ▪ Sara Noack, Assistant Director
    ▪ cohort@gwu.edu
    ▪ Tel: 1-888-694-9627
    ▪ Fax: 1-888-969-4851
  ▪ Shannon Finley, Admissions
    ▪ applyoffcampus@gwu.edu
    ▪ Tel: 1-855-EMSE-GWU (367-3498)
  ▪ Mayra De Laurentiis, Program Associate
    ▪ seasdoc@gwu.edu
  ▪ Mark Griffith, Distance Learning Technologist
    ▪ seasonline@gwu.edu
    ▪ Tel: 202-422-2806
Answers to Frequently Asked Questions

• D.Eng. cohorts typically begin each Spring and Fall semester.

• Ph.D. cohorts typically begin once a year.

• Typically, around 25 students are admitted to each cohort.

• Transfer credit is not allowed toward doctoral programs.

• Students should be expected to spend approximately 20 hours a week on coursework/research.
Any Questions?