Doctor of Engineering
Doctor of Philosophy

Classes Begin
August 2019
January 2020

Shahram Sarkani, Ph.D., P.E.
Professor of Engineering Management & Systems Engineering
Academic Director & Faculty Advisor, SEAS/EMSE Online & Off-Campus Programs
June 18th, 2019
Information Session Agenda

✓ Overview of George Washington University

✓ D.Eng. and Ph.D. Programs
  • 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
- Ranked #28 in US News Best Online Graduate Engineering Programs
- Ranked #16 US News Best Online Graduate Engineering Programs for Veterans
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
Doctor of Engineering
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.
Doctor of Engineering

• 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 Begins
  • January 2020

• Planned Program Completion
  • December 2021
D.Eng. Classroom Phase

<table>
<thead>
<tr>
<th>Session</th>
<th># Courses</th>
<th># Credits</th>
<th>Approximate Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring-1 2020</td>
<td>2</td>
<td>6</td>
<td>January 4 – March 7</td>
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<tr>
<td>Spring-2 2020</td>
<td>2</td>
<td>6</td>
<td>March 21 – May 23</td>
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<tr>
<td>Summer 2020</td>
<td>2</td>
<td>6</td>
<td>May 30 – August 8</td>
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<tr>
<td>Fall-1 2020</td>
<td>2</td>
<td>6</td>
<td>August 8 – October 10</td>
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<tr>
<td>Fall-2 2020</td>
<td>2</td>
<td>6</td>
<td>October 17 – December 19</td>
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- 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. Classroom Phase
Proposed Curriculum

- EMSE 6025  Entrepreneurship and Technology
- EMSE 6045  International Technology Commercialization
- EMSE 6115  Uncertainty Analysis for Engineers
- EMSE 6710  Applied Optimization Modeling
- EMSE 6755  Quality Control and Acceptance Sampling
- EMSE 6765  Data Analysis for Engineers and Scientists
- 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. 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: Spring 2021, 6 credit hours
  - Session II: Summer 2021, 3 credit hours
  - Session III: Fall 2021, 6 credit hours
  - A single semester extension through Spring 2022 (6 credit hours) may be granted.

- Students approved for an extension semester who do not successfully defend their praxis after a second attempt in Spring 2022 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

• Optimal Subset Selection for Causal Inference Using Machine Learning and Particle Swarm Optimization
• Energy Storage Systems Architecture Optimization to Facilitate Penetration of Distributed Rooftop Photovoltaic Generation
• Reducing Time and Cost Overruns for Aerospace Development Programs Using Precedence Networks Patterns
• A Quantitative Performance-Oriented Capability Model for Better Adoption of DevOps in Software Production Organizations
Doctor of Philosophy
Ph.D. Field of Study
Systems Engineering

- Defined by INCOSE as “interdisciplinary approach and means to enable the realization of successful systems. 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.”
Doctor of Philosophy

- 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 Begins
  - August 2019
- Average completion time approximately 3-4 years
Ph.D. Classroom Phase

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- 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)
Ph.D. Classroom Phase Proposed Curriculum

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

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


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<th><strong>Doctor of Engineering (D.Eng.)</strong></th>
<th><strong>Doctor of Philosophy (Ph.D.)</strong></th>
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<tr>
<td><strong>Field of Study</strong></td>
<td>Engineering Management</td>
<td>Systems Engineering</td>
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<tr>
<td><strong>Credit Hours</strong></td>
<td>45 credit hours minimum</td>
<td>54 credit hours minimum</td>
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<td><strong>Completion time</strong></td>
<td>Approximately 2 years (Maximum 2.5 years)</td>
<td>Minimum of 3 years (Maximum 5 years)</td>
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<td><strong>Degree Requirements</strong></td>
<td>• Min 3.2 GPA in classroom phase</td>
<td>• Min 3.4 GPA in classroom phase</td>
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<td></td>
<td>• Praxis development and defense</td>
<td>• Qualifying Exam</td>
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<td>• Journal article publication</td>
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<td></td>
<td></td>
<td>• Dissertation development and defense</td>
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<tr>
<td><strong>Type of Research</strong></td>
<td>• Applied research</td>
<td>• Fundamental research</td>
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<td>• Solves a practical problem</td>
<td>• Contributes to basic understanding of field</td>
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<td><strong>Minimum Admission Requirements (holistic approach to application file)</strong></td>
<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>
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<td>• 3.2 GPA in graduate study</td>
<td>• 3.5 GPA in graduate study</td>
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<td>• 2 college-level calculus courses, ≥ B-</td>
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<tr>
<td></td>
<td>• 5 years relevant professional experience</td>
<td>• Demonstrated capacity for original scholarship</td>
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Admission to EMSE-OOCP doctoral programs is competitive. Meeting the minimum requirements does not guarantee admission.
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 EMSEOOCOP.
GW Application Process

Academic Transcripts

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

The George Washington University
Online Engineering Programs Office
170 Newport Center Drive, Suite 260
Newport Beach, CA 92660

Transcripts must be sent directly from the institution.
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 & Academic Advisor
  - sarkani@gwu.edu

- Mayra De Laurentiis, Doctoral Programs Associate
  - seasdoc@gwu.edu
  - Tel: 1-833-330-1454

- Mark Griffith, Distance Learning Technologist
  - seasonline@gwu.edu
  - Tel: 202-422-2806
Answers to Frequently Asked Questions

Questions regarding individuals’ specific application, degrees, background, or experience will not be answered during the Q&A session.

• 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?

Questions regarding individuals’ specific application, degrees, background, or experience will not be answered during the Q&A session.