Doctor of Philosophy in Systems Engineering

Information Session
Thursday, April 21, 2022

Classes Begin August 2022

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Professor of Engineering Management and Systems Engineering
Co-Director, SEAS Online Programs
Information Session Agenda

✓ Overview of The George Washington University

✓ Doctor of Philosophy (Ph.D.) Program
  • Program Overview
  • Academic Requirements
  • Application Information

✓ Q & A Session
The 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 290,000 in 134 countries
- Accredited by the Middle States Commission on Higher Education
- GWU’s Online Graduate Engineering Programs ranked #16 by US News
- GWU’s Online Graduate Engineering Programs Ranked #14 for Veterans by the US News
Our Online Programs

→ Course content and degree conferred are identical to the main campus programs

→ Online classes meet synchronously via Zoom and are recorded for future viewing

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

→ Exams are taken through a secure testing platform, RPNow
Ph.D. field of study
Systems Engineering

The doctor of philosophy in the field of systems engineering provides advanced knowledge on the theory and applications of systems engineering methods to efficiently design and manage large-scale systems throughout the life cycle. Students will demonstrate mastery of broad-based knowledge in systems engineering, and of a specific area of knowledge relevant to their own research interests, along with mastery of a research methodology. They will develop and present an original study to the scholarly community that is based on research in primary sources and that makes a significant contribution to the field.
Doctor of Philosophy

• 54 credit hours (minimum)
• Classroom Phase
  • 8 graduate-level, 3-credit-hour courses
  • Submission to present at an Engineering Professional Society Conference
• Research Phase
  • Minimum 30 credit hours of dissertation research
  • Results of research must be accepted for publication from an approved archival journal
  • Dissertation defense
• Program Begins
  • August 2022
• Planned Program Completion
  • May 2025
Ph.D. Classroom Phase

<table>
<thead>
<tr>
<th>Session</th>
<th>#Courses</th>
<th>#Credit Hours</th>
<th>Tentative Dates</th>
</tr>
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<tbody>
<tr>
<td>Fall-1 2022</td>
<td>2</td>
<td>6</td>
<td>August 13 – October 15, 2022</td>
</tr>
<tr>
<td>Fall-2 2022</td>
<td>2</td>
<td>6</td>
<td>October 22, 2022 - January 14, 2023</td>
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<tr>
<td>Spring-1 2023</td>
<td>2</td>
<td>6</td>
<td>January 21 – March 25, 2023</td>
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<tr>
<td>Spring-2 2023</td>
<td>2</td>
<td>6</td>
<td>April 1 – June 10, 2023</td>
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No classes on Thanksgiving, Christmas, New Year, and Memorial Weekends

- 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

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>EMSE 6115</td>
<td>Uncertainty Analysis for Engineers</td>
</tr>
<tr>
<td>EMSE 6710</td>
<td>Applied Optimization Modeling</td>
</tr>
<tr>
<td>EMSE 6760</td>
<td>Discrete Systems Simulation</td>
</tr>
<tr>
<td>EMSE 6765</td>
<td>Data Analysis for Engineers and Scientists</td>
</tr>
<tr>
<td>EMSE 6769</td>
<td>Machine Learning for Engineers</td>
</tr>
<tr>
<td>EMSE 6807</td>
<td>Advanced Systems Engineering</td>
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<tr>
<td>EMSE 6817</td>
<td>Model Based Systems Engineering</td>
</tr>
<tr>
<td>EMSE 8000</td>
<td>Research Formulation in Engineering Management &amp; Systems Engineering</td>
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Schedules, regulations and policies subject to change; course substitution in the curriculum is usual and should be expected.
Ph.D. Research Phase

• Research course EMSE 8999 Dissertation Research
  (Minimum half-hour individual research meetings will take place and are scheduled by your advisor)
  • Session I:  Summer 2023, 3 credit hours
  • Session II: Fall 2023, 6 credit hours
  • Session III: Spring 2024, 6 credit hours
  • Session IV: Summer 2024, 3 credit hours
  • Session V: Fall 2024, 6 credit hours
  • Session VI: Spring 2025, 6 credit hours

• More than 30 credit hours of EMSE 8999 may be approved, depending on the candidate’s progress; approved candidates will be registered for the standard number of credit hours per semester of extension (3 credits in Summer, 6 credits in Fall or Spring).

  Candidates who do not successfully complete the requirements within five years (by August 2027) will have their work transferred to a Professional Degree Program.
Ph.D. Milestones

- **Milestone 1:** To be admitted to candidacy for the doctoral degree, the student must earn at least a 3.4 GPA and finish the classroom phase with no grade below B-

- **Milestone 2:** By no later than the end of the first semester of research, Summer 2023, the student must be accepted to present their proposed research at an appropriate engineering professional society conference. This will serve as the qualifying exam. If the candidate is unsuccessful, their studies will be transferred to a Professional Degree program.

- **Milestone 3:** Candidate must submit an article based on results of the dissertation research to an approved, refereed scholarly journal. Credit must be given in the publication to the fact that the material is abstracted, summarized, or developed from a dissertation submitted to GWU in partial fulfillment of the requirements for the Ph.D. degree. Before the candidate is permitted to defend the dissertation, this original article must be accepted for publication.

- **Milestone 4:** Candidate defends dissertation in the Final Examination before a committee of faculty members. This must be taken within two months after the journal article is accepted for publication.

*All research publications must include faculty advisors as co-authors*
## Comparison of D.Eng. and Ph.D.

<table>
<thead>
<tr>
<th>Research Philosophy</th>
<th>Doctor of Engineering (D.Eng.)</th>
<th>Doctor of Philosophy (Ph.D.)</th>
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<tbody>
<tr>
<td>Applied research</td>
<td>• Applied research</td>
<td>• Fundamental research</td>
</tr>
<tr>
<td>Solves a practical problem</td>
<td>• Solves a practical problem</td>
<td>• Contributes to literature in the field</td>
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<thead>
<tr>
<th>Career Goal</th>
<th>Doctor of Engineering (D.Eng.)</th>
<th>Doctor of Philosophy (Ph.D.)</th>
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<tr>
<td>Technical Leadership</td>
<td>• Technical Leadership</td>
<td>• Academic Career</td>
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<tr>
<td>Industry Career Advancement</td>
<td>• Industry Career Advancement</td>
<td>• Career in Industrial Research</td>
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<tr>
<td>Teaching Oriented Faculty</td>
<td>• Teaching Oriented Faculty</td>
<td>• Research Oriented Faculty</td>
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<thead>
<tr>
<th>Completion time</th>
<th>Doctor of Engineering (D.Eng.)</th>
<th>Doctor of Philosophy (Ph.D.)</th>
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<td>Scheduled Duration: 2 years</td>
<td>• Scheduled Duration: 2 years</td>
<td>• Scheduled Duration: 3 years</td>
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Doctoral Programs
Tuition

2022-2023 Academic Year:
$1,625 per credit
GW Application Process

Completed Application Packet includes:

- Online Application Form
  - Available at: https://seasonline.gwu.edu/apply-today/phd-program/
- Current Resume
- Statement of Purpose (250 words or less)
- Official Academic Transcripts

All submitted materials remain property of SEAS Online Programs
GW Application Process

Academic Transcripts

Electronic Transcripts should be sent to:
seasdeng@gwu.edu

Paper transcripts should be mailed to:
SEAS Online Programs Office
The George Washington University
170 Newport Center Drive
Suite 260
Newport Beach, CA 92660

All Transcripts must be sent directly from the institution
GW Application Process

• Admission decisions are made on a rolling basis and communicated via email. Please note, slots are limited. Applications will be accepted as long as slots are available.

• Admitted applicants must complete and return a reply card and a non-refundable tuition deposit of $995 by the deadline provided in admission letter (usually 2-3 weeks). Tuition deposit is applied to the first session’s tuition.
GW Contact Information

SEAS Online Programs Office
Dr. Shahram Sarkani, Ph.D., P.E., Director
Dr. Thomas A. Mazzuchi, D.Sc., Co-Director

- Admissions Team
  - seasdeng@gwu.edu
  - Tel: 833-330-1454, option #1

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

To protect your privacy, questions regarding individuals’ specific application, degrees, background, or experience will not be answered during this Q&A session.

• Ph.D. cohorts begin each Fall semester.
• Doctor of Engineering cohorts begin each Fall and Spring semesters.
• Transfer credit is not allowed toward doctoral programs.
• Students should be expected to spend approximately 20 hours a week on coursework/research.
Questions regarding individuals’ specific application, degrees, background, or experience will not be answered during the Q&A session.