**DOCTOR OF ENGINEERING IN ENGINEERING MANAGEMENT**

**ONLINE**

**OFFERED ON SATURDAYS STARTING JANUARY 2018**

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**INTRODUCTION**

This Department of Engineering Management and Systems Engineering Online and Off-Campus Programs Office (EMSEOOCP) weekend program leads to award of the Doctor of Engineering (D.Eng.) degree in Engineering Management. A group of about 25 students will begin study as D.Eng. Cohort 7 (DN7) in January 2018 with a target graduation date of December 2019. Under the direction and supervision of Professor Shahram Sarkani, Ph.D., P.E., EMSEOOCP Director, professionals employed full-time pursue advanced study in a focused environment alongside like-minded fellow students.

**THE DOCTOR OF ENGINEERING DEGREE IN ENGINEERING MANAGEMENT**

The D.Eng.(EM) addresses the widespread need for practitioners who can apply knowledge from the program of study in a business or technical environment. Unlike a Doctor of Philosophy degree student, whose fundamental research leads to foundational work that is published in archival professional journals and contributes to the basic understanding of a field, the D.Eng. student engages a practical problem and takes a new approach to its resolution, applying advanced engineering management theories and practices to recommend a useful solution. Research toward the D.Eng. is applied, rather than basic. The D.Eng. empowers the student—who is likely already to be a practicing engineer—to create advanced, hands-on treatments of complex engineering management problems.

**CURRICULUM**

The curriculum comprises 45 credit hours (ch) divided into a classroom phase of 10 graduate-level, 3-ch courses (30 ch), and a research phase during which the student writes and defends a praxis paper. The research phase is exactly 15 ch.

**TEN PROPOSED CLASSROOM COURSES**

- **EMSE 6030**  Technological Forecasting and Management
- **EMSE 6045**  International Technology Commercialization
- **EMSE 6115**  Uncertainty Analysis for Engineers
- **EMSE 6573**  Managing E-Commerce Technologies
- **EMSE 6765**  Data Analysis for Engineers and Scientists
- **EMSE 6790**  Logistics Planning
- **EMSE 6992H**  Sustainability for Engineering Managers
- **EMSE 8030**  Risk Management Process for the Engineering Manager
- **EMSE 8099**  Survey of Research Formulation for Engineering Management
- **EMSE 8100**  The Praxis Proposal

Course work culminates in the praxis proposal, a research report that proposes a practice-based solution—to a problem of the student’s own choosing—that could be used by practicing engineers.

**CLASSROOM PHASE SCHEDULE (30 CREDIT HOURS)**

Course sessions last 9 weeks. Classes meet Saturday mornings from 9:00am-12:30pm and afternoons from 1:30-5:00pm (all times Eastern). This program is taught in an accelerated, cohort format in which students take all courses in lock step. Classes cannot be taken out of sequence, attendance at all class meetings is expected, and students must remain continuously enrolled; i.e., leaves of absence are not permitted.

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<thead>
<tr>
<th>SESSION</th>
<th># CRS/ES</th>
<th># CH</th>
<th>TENTATIVE DATES</th>
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<tbody>
<tr>
<td>Spring-1 2018</td>
<td>2</td>
<td>6</td>
<td>January 6, 2018 – March 3, 2018</td>
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<tr>
<td>Spring-2 2018</td>
<td>2</td>
<td>6</td>
<td>March 17, 2018 – May 12, 2018</td>
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<td>Summer 2018</td>
<td>2</td>
<td>6</td>
<td>June 2, 2018 – July 28, 2018</td>
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<td>Fall-1 2018</td>
<td>2</td>
<td>6</td>
<td>August 11, 2018 – October 6, 2018</td>
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<tr>
<td>Fall-2 2018</td>
<td>2</td>
<td>6</td>
<td>October 20, 2018 – December 22, 2018*</td>
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*No class November 24, 2018, for holiday observed by GW.*
RESEARCH PHASE SCHEDULE (15 CREDIT HOURS)
Upon successful completion of the classroom phase, students are registered for 15 ch of **EMSE 8199 Praxis Research**: 6 ch in Spring 2019, 3 ch in Summer 2019 and 6 ch in Fall 2019. Throughout this phase, the student develops the praxis on a topic related to engineering management chosen by the student and approved by the advisors. Faculty research directors meet monthly with the students, who are expected to attend each meeting. Work on the praxis is completed in one year.

RESEARCH AREAS FOR THE PRAXIS
With the advisors’ consent, the student may elect to focus on an area within the Engineering Management field. Below, find a sample of published D.Eng. praxis paper titles:

- Planning for the Influence of Emerging Disruptive Technologies on IT Systems
- Managing Risk as a Function of the Nuclear Work Model
- Pre-Design Methodology for Establishing Scope-Budget and Scope-Duration Alignment for Capital Projects
- A Technology Maturity Assessment of Sustainment-dominated Systems Under the Influence of Obsolescence
- Cross-Domain Knowledge Management Strategy for a Mission Areas within the Force Projection Sector
- Application of Multi-Criteria Decision Making Methods to the DLA Energy Military Construction Portfolio Selection Process
- Improving Team Performance By Identifying Significant Attributes Required In A Knowledge Management Solution for Fast Paced Research Teams
- Ranking of Cloud Service Providers Using a Dynamic TOPSIS Model for Provisioning of Enterprise IT Infrastructure in the Cloud

COST
Classes meet live online through synchronous distance learning technologies, and classes are recorded for future viewing. Tuition is billed at $1350 per ch. Required textbooks and software are provided at no additional cost. A non-refundable tuition deposit of $1350, which is applied to tuition in the first semester, is required when the student accepts admission.

COURSE DESCRIPTIONS FOR THE D.ENG.(EM)
See also http://bulletin.gwu.edu/courses/emse/

**EMSE 6030 Technological Forecasting and Management.** Concepts and methods for understanding the dynamics of technological change. Issues in technology assessment, technology transfer, and strategic management of technology.

**EMSE 6045 International Technology Commercialization.** The process of moving ideas to commercial reality in an international setting. Interdisciplinary approach that weaves together study of international and organizational cultures and dynamics, with the disciplines of analytics, engineering management, entrepreneurship, marketing, and technology forecasting, to commercialize innovations in technology.

**EMSE 6115 Uncertainty Analysis for Engineers.** Basics of probability theory and statistics, with a focus on engineering applications, particularly in the realm of systems. Topics include simulation, uncertainty analysis, central limit theorem, systems examination and analysis, and application to systems design and management.


**EMSE 6765 Data Analysis for Engineers and Scientists.** Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, data compression. Model validation.

**EMSE 6790 Logistics Planning.** Quantitative methods in model building for logistics systems, including organization, procurement, transportation, inventory, maintenance, and their interrelationships. Stresses applications.

**EMSE 6992H Sustainability for Engineering Managers.** Fundamentals of sustainability for practicing engineers, engineering planners and managers: social, environmental, economic. Sustainable measures, technologies and systems in energy, manufacturing, building design and construction, transportation, agriculture to preserve natural resources while advancing economic well-being and long-term welfare of humans and animals.

**EMSE 8030 Risk Management Process for the Engineering Manager.** Risk-based planning and management as vital tools for engineering managers. How to communicate the value of risk management for avoiding catastrophic failure. The efficient and effective risk management process, the critical roles and responsibilities of program and engineering managers, the practical applications of risk-based planning and risk management essential to success. Case studies.

**EMSE 8099 Survey of Research Formulation for Engineering Management.** Designs, methods and common approaches for conducting applied research in engineering management. Introduction to a range of research methods by which to plan substantiated, rigorous, applied research for the praxis. Approaches necessary to integrate research intent, techniques and constraints. Emphasis on problem formulation, literature review, experimentation. Restricted to candidates for the Doctor of Engineering degree in the field of Engineering Management.

**EMSE 8100 The Praxis Proposal.** Overview of research methods. Aims and purposes of the praxis. Development of praxis research strategies, formulation and defense of a proposal for a praxis that synthesizes engineering management theory and practice to create, using the latest engineering management concepts and tools, a new, practicable solution to an existing engineering management problem. Restricted to students who have completed all required course work for the Doctor of Engineering in the field of engineering management. Praxis proposal defense must be passed before student is admitted to degree candidacy to work on the praxis.

**EMSE 8199 Praxis Research.** Independent applied research in engineering management culminating in the final praxis report and final examination for the degree of doctor of engineering. May be repeated for credit. Restricted to students in the DEng in the field of engineering management program who have passed the praxis proposal defense.

*The University reserves the right to adjust course offerings, schedules, and tuition rates.*