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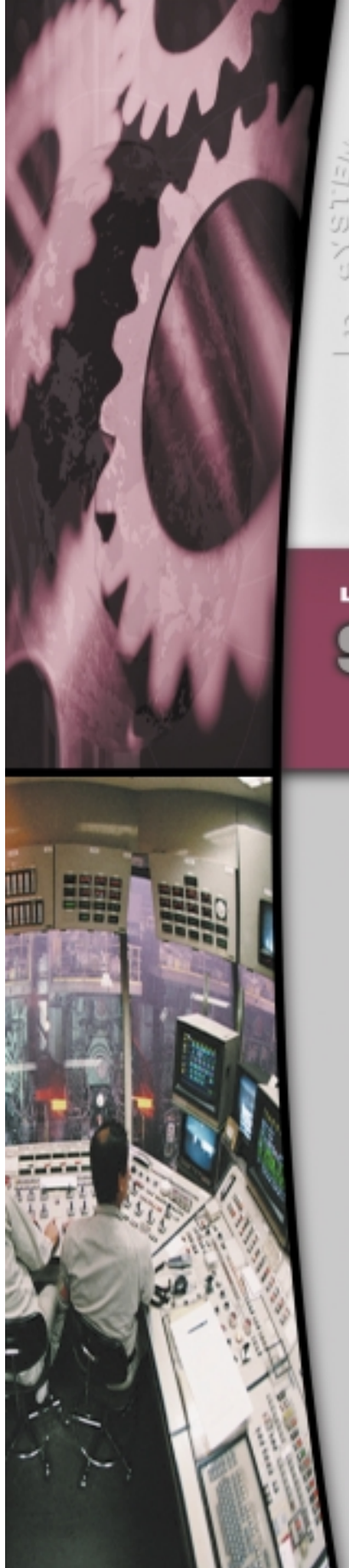
Mr. Mark Wilson, *CEO, Strategy Bridge International*

The Fellows serve in an advisory capacity with regard to curriculum development, program design, doctoral committees, research and project ideas, and program assessment.



GRADUATE CERTIFICATE IN

SYSTEMS ENGINEERING MANAGEMENT

LEADING TO A MASTER'S DEGREE IN

SYSTEMS ENGINEERING

An offering of the SDOE Program at Stevens Institute of Technology

As systems become more complex, their realization increasingly requires a modern engineering enterprise, characterized by geographically dispersed, dynamic, and multicultural organizations. In this context, the traditional project and program management concepts must be re-examined and integrated with systems engineering. At the strategic level, this results in a new discipline called systems engineering management, which combines the scientific, engineering, and managerial skills needed to transform systems engineering processes into system solutions.

At Stevens, a Master's Degree in Systems Engineering or Engineering Management provides students with an interdisciplinary approach to the design of complex systems that will be effective, reliable and supportable throughout their operational life. As a component of this degree, a four course Graduate Certificate in Systems Engineering Management introduces the leadership, interpersonal, financial, organizational, and systems integration skills necessary to provide project teams with better strategic focus and enhanced productivity. With a common systems engineering process serving as a framework, courses in project management, costing and acquisition, decision and risk analysis and organizational systems are integrated to form this certificate that bridges engineering, management and systems integration.

www.stevens.edu/sdoe

STEVENS Institute of Technology

COURSES

EM/SYS/SDOE 612

Project Management of Complex Systems

This project-based course exposes students to tools and methodologies useful for the effective management of systems engineering and engineering management projects. This course presents the tools and techniques for project definition, work breakdown, estimating, resource planning, critical path development, scheduling, project monitoring and control, and scope management. Reinforcing these fundamentals in project management, the course will introduce advanced concepts in project management, and establish the building blocks for the management of complex systems.

SYS/SDOE 625

System Operational Effectiveness and Life Cycle Analysis

System Operational Effectiveness and Life Cycle Analysis

This module presents the fundamental principles and processes for designing effective systems, including how to determine customer needs, how to distinguish between needs and solutions, and how to translate customer requirements into design specifications. The focus is on designing systems that not only provide the required capabilities, but that are reliable, supportable and maintainable throughout their life cycle. The course concludes with a Systems Requirements Review (SRR) in which students present their class projects."

EM/SYS/SDOE 660

Decision and Risk Analysis for Complex Systems

This course is a study of analytic techniques for rational decision-making that addresses uncertainty, conflicting objectives and risk attitudes. This course covers modeling uncertainty; rational decision-making principles; representing decision problems with value trees, decision trees and influence diagrams; solving value hierarchies; defining and calculating the value of information; incorporating risk attitudes into the analysis; and conducting sensitivity analyses.
Prerequisite: Course in Probability and Statistics.

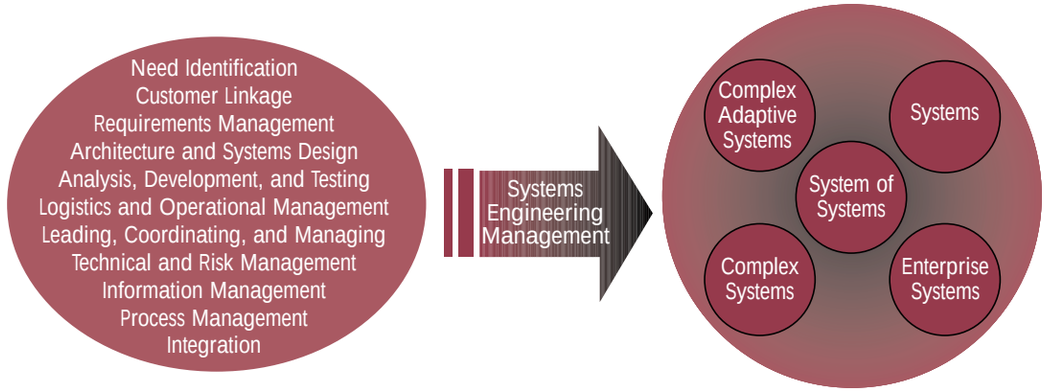
EM/SYS/SDOE 680

Designing and Managing the Development System

This course introduces the attributes associated with the design and management of the human activity system that is responsible for designing, developing, testing, operating, and maintaining the system. It is built on a fundamental that the successful development of a system is directly contingent on the human system. Using foundational constructs related to network theory and the extended enterprise, it covers topics in Globalization and the Extended Enterprise; Structure and Design of Organizations; Organizational Diversity; Leadership and Power; Personality, Attitude, and Values; Learning and Perception; Work Motivation; Group Behavior and Teamwork; Conflict and Politics; Managing Communication Process; Decision Making; and Organizational Change and Development. Case studies and academic research are used to provide a practical and advanced understanding of the subject.

Intended Audience

This course sequence would be of interest to program managers, project managers, and lead systems engineers involved with conceiving, defining, architecting, integrating and testing complex and multi-functional systems.



Please visit our website at: www.stevens.edu/sdoe

MASTER'S PROGRAM

The Graduate Certificate in Systems Engineering Management can be used as a stepping stone towards a Master's Degree in Systems Engineering or Engineering Management. The Master's Degree requires candidates to complete 10 courses (equivalent to 30 credits). At least 3 credits, and up to 6 credits, must be applied towards a project or thesis.

Required Courses

Required Courses for the Systems Engineering Management Graduate Certificate (4 courses, 12 credits):

EM/SYS/SDOE 612:	Project Management of Complex Systems
SYS/SDOE 625:	System Operational Effectiveness and Life Cycle Analysis
EM/SYS/SDOE 660:	Decision and Risk Analysis
EM/SYS/SDOE 680:	Designing and Managing the Development System

Required Courses to complete "core course" requirements for a Master's degree in:

Systems Engineering	*or*	*Engineering Management*
SYS/SDOE 650: System Architecture and Design		EM 600: Engineering Economics and Cost Analysis
		EM 605: Elements of Operations Research
		EM 611: Modeling and Simulation

Elective Courses

Applicable Elective Courses

EM 618:	Engineering Economics and Management Policy	SYS/SDOE 655:	Robust Engineering Design
SYS/SDOE 640:	System Supportability and Logistics	SYS/SDOE 665:	Integrated Supply Chain Management
SYS/SDOE 645:	Design for System Reliability, Maintainability, & Supportability	SYS/SDOE 775:	Systems Thinking
		SYS/SDOE 785:	Architecting the Extended Enterprise

The electives listed here are for illustrative purposes only. Additional electives from other engineering disciplines and management are also available to students. Please see the Stevens course catalog for a listing. Selection of electives must be approved and coordinated with the faculty advisor.

Project or Thesis Courses

The candidate has the option of working on a project (3 to 6 credit hours) or a thesis (minimum of 6 credit hours) to complete the requirements for a Master's Degree in Systems Engineering or Engineering Managment. Project or Thesis work must be coordinated with a faculty advisor.

EM/SYS 800: Special Topics in Systems Engineering or Engineering Management
(3 to 6 credit hours for a Project), **OR**
EM/SYS 900: Thesis in Systems Engineering or Engineering Management
(Minimum 6 credit hours for a Thesis)

Multiple delivery formats exist for the Graduate Certificate in Systems Engineering Management program to include:

Traditional

Courses are taught one night a week on the Hoboken campus and at numerous sites in the New Jersey area.

Online Format

Online courses are run in an asynchronous format. Students are often required to collaborate with each other and to complete weekly assignments. Online courses run on a traditional semester schedule and are spread out over 15 weeks.

Executive Format

Many of the courses are available through the Systems Design and Operational Effectiveness Executive Program in Systems Engineering. These intense one-week classes consist of a pre-reading, a weeklong class, and a post module assignment.