

FOR ADDITIONAL INFORMATION:

Dr. Michael Pennotti

*Director, SDOE Program and
Industry Professor of Systems Engineering
Email: Michael.Pennotti@stevens.edu
Phone: 973.632.8836*

Jerry Lore

*Associate Director, Executive Education and Outreach,
SDOE Program
Stevens Institute of Technology
Email: Jerry.Lore@stevens.edu
Phone: 201.216.8121*

The SDOE Program

*Stevens Institute of Technology
201 Carnegie Laboratory of Engineering
Castle Point on Hudson
Hoboken, NJ 07030*

Associate Dean for Executive Education and Outreach

Dr. Dinesh Verma (*Dinesh.Verma@stevens.edu*)

SDOE FELLOWS BOARD:

Dr. George Korfiatis, Chair

Dean, Charles V. Schaefer, Jr. School of Engineering, Stevens Institute of Technology

ACADEMIC FELLOWS

Dr. Wolter J. Fabrycky

*Lawrence Professor Emeritus,
Virginia Tech*

Dr. Harold Lawson

Professor and Chairman, Lawson Konsult, AB

Dr. Richard Nance

*Dahlgren Professor Emeritus of Computer
Science, Virginia Tech*

Dr. Andrew Sage

*Dean Emeritus and First American Bank
Professor, George Mason University*

Dr. Caroline Smith

*Associate Professor, James Madison
University*

Dr. Emre Veral

*Associate Professor of Management, Baruch
College, The City University of New York*



INDUSTRY FELLOWS:

Mr. Bruce Barker, *Industry Professor,
Stevens Institute of Technology*

Mr. Herb Burton, *Chief Technical Officer, AT&T General
Business Systems (ret.)*

Dr. Murray Cantor, *Distinguished Engineer, IBM*

Mr. Rick Dove, *President, Paradigm Shift International*

Ms. Line H. Johannesen, *ILS Manager,
Kongsberg Defense and Aerospace, AS*

Mr. James Long, *Chief Executive Officer, Vitech Corporation*

Mr. Robert L. McCaig, *Chairman, ASSETT, Inc.*

Mr. William D. Miller, *Industry Professor,
Stevens Institute of Technology*

Mr. William Robinson, *President,
Innovation and Quality Solutions*

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 & ARCHITECTING

LEADING TO A MASTER'S DEGREE IN

SYSTEMS ENGINEERING

An offering of the SDOE Program at
Stevens Institute of Technology

Systems Engineering & Architecting is finally being recognized for its potential to impact effective development of complex and multifunctional systems of global scope and relevance. It also enables the extended enterprise, with a global outsourcing model, to realize increasingly ambitious time-to-market or time-to-fielding requirements.

This four course cluster addresses methods and practices involved in the translation of a need, deficiency, or a market opportunity (in the form of a business process, mission capability, a product or product feature) into a feasible system or product architecture. The courses have a significant "how-to" orientation, and case studies and group exercises are used to facilitate understanding of concepts discussed.

www.stevens.edu/sdoe

STEVENS
Institute of Technology

SDOE 625

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.

SDOE 650

System Architecture and Design

This module presents the fundamentals of system architecting, including practical heuristics for developing good architectures. It extends the systems engineering process introduced in SDOE 625 through functional analysis, decomposition and requirements flow-down. The implications of open systems architectures and the use of commercial technologies and standards (COTS) are explicitly addressed, as are the linkages between the early architectural decisions, driven by customer requirements and the concept of operations, and system operational and support costs. Prerequisite: SDOE 625.

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. These tools will be presented within the context of a life cycle and a systems approach. Students will be exposed to advanced project management software. Advanced techniques for managing complex systems will also be presented.

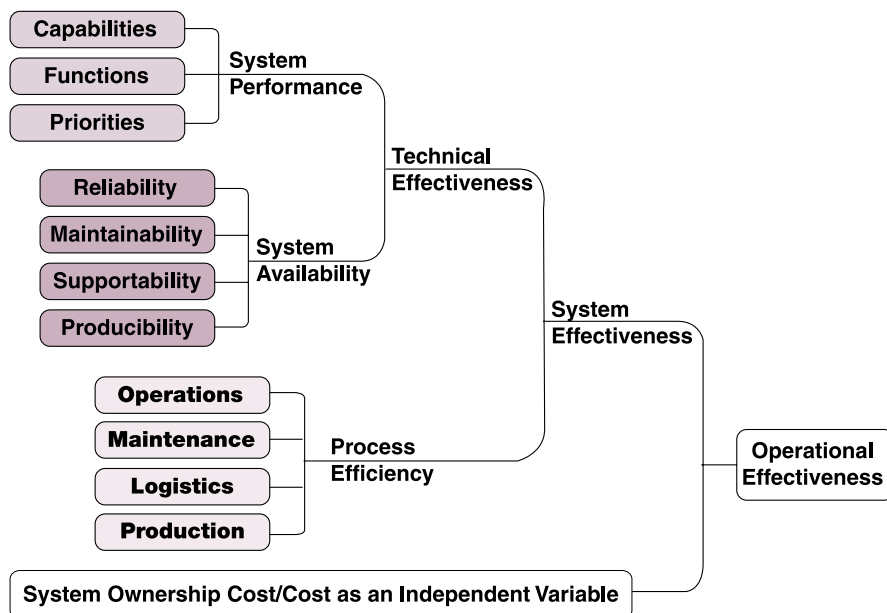
SDOE 605

Systems Integration

This module is designed to provide participants with an understanding of the systems integration (SI) process, the tools and techniques required for successful SI, critical success factors, and best practices. The module objective is to provide participants with an understanding of technical and business process issues involved in systems integration. Case studies and examples from the IT, defense, energy, and financial services domain will be used to illustrate the concepts discussed.

Intended Audience

This course sequence would be of interest to all Engineers, Systems Engineers, Designers and Product Engineers, System and IT Architects, System Analysts, Requirements Engineers, Specialty Engineers, Business Process Analysts, and Program and Project Managers



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

Required Courses

Required Courses for the Systems Engineering and Architecting Graduate Certificate (4 courses, 12 credits)

- SDOE 625: System Operational Effectiveness and Life Cycle Analysis
- SDOE 650: System Architecture and Design
- SDOE 612: Project Management of Complex Systems
- SDOE 605: Systems Integration

Required Courses to complete "core course" requirements for a Master's Degree in Systems Engineering.

With the above 4-course sequence, participants will have satisfied the core course requirements for a Master's Degree in Systems Engineering.

Elective Courses

Applicable Elective Courses (up to 5 elective courses can be selected by the candidate)

- SDOE 611: Modeling and Simulation
- SDOE 775: Systems Thinking
- SDOE 655: Robust System Design
- SDOE 660: Decision and Risk Analysis
- SDOE 665: Integrated Supply Chain Management
- SDOE 670: Forecasting and Demand Modeling Systems
- SDOE 645: Design for System Reliability, Maintainability, and Supportability
- SDOE 640: System Supportability and Logistics

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 SDOE Program website for a listing at www.stevens.edu/sdoe. 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. Project or Thesis work must be coordinated with a faculty advisor.

SDOE 800: Special Topics in Systems Engineering (3 to 6 credit hours for a Project), **OR** **SDOE 900: Thesis in Systems Engineering** (Minimum 6 credit hours for a Thesis)

All courses in the SDOE Program are taught in a modular format and many are also taught in an online format.

Modular Format

Pre-Module Readings: Candidates will receive module related readings in advance as preparation for the module week.	Module Week: Intense week-long lectures and group exercises	Module Homework Assignment and Project (10 Weeks): Candidates have 10 weeks to complete the Module Homework Assignment and Project. Faculty support is provided during these 10 weeks.
---	---	---

Online Format

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