

What is Systems Engineering?

Systems are all around you! The world is a network of systems that provide us with food, water, shelter, transportation, and the technology we need to manage our daily lives. Without these systems, life as we know it would not be possible. The same logic applies in Systems Engineering.

Systems Engineers study contemporary issues facing the military and industry, build models, conduct analysis, and create simulation environments to help clients and senior leadership identify problems, assess risks, save resources and refine and test new ideas to avoid major mistakes before large scale systems are designed and implemented.

The study of systems has far reaching implications on the military, technology, urban planning and infrastructure, business, government, medicine and more.

Why Study Systems Engineering? (SE)

SE is a program that provides an excellent opportunity to learn more about the art and science of making decisions in complex, dynamic environments. Systems Engineering will expose you to innovative methods of decision-making and can open doors to opportunities offered in fields such as business and finance, engineering, and management. SE introduces topics that are the basic foundations of several graduate degrees, such as a Masters in Systems Engineering, Industrial Engineering, Operations Research, or an MBA.

Systems Engineering also prepares you for several critical secondary Army career specialties, including Operations Research/Systems Analysis (ORSA), Acquisition, and Research and Development (R&D).

ABET Accredited

This program is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (ABET).

Academic Individual Advanced Development (AIAD) Program

The SEAIAD program is similar to an internship. AIADs are opportunities to apply your SE skills at Department of Defense and Department of the Army agencies. AIADs work with experienced civilian and military systems engineers, operations research analysts, and scientists. In recent years, cadets have worked with The Army Science Board, the Environmental Protection Agency, Raytheon, Boeing, TRADOC Research and Analysis Command (TRAC) and NATO. These opportunities allow cadets to travel to such places as Portugal, Australia, East Timor, Washington, DC, Monterey, CA, Huntsville, AL, Orlando, FL, Croatia, and Panama. Some AIADs have been offered for academic credit and lead to Capstone research projects in the following academic year.



SYSTEMS ENGINEERING MAJOR



Department of
Systems Engineering

Class of 2009

United States Military Academy
West Point, New York 10996

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Systems Engineering* graduates will become Military leaders and business professionals prepared to offer engineering solutions to management and resource problems. Gain the skills, as well as the technical and intellectual knowledge required of future military leaders and civilian industry professionals when you become a Systems Engineer.

I. Complete twenty six (26) core courses as specified in the general section of the Redbook. SE Majors do not take IT 305.

2. Take the following fifteen (15) directed electives.

SE 301	Foundations of Eng. & Systems Management
SE 370	Computer Aided Systems Engineering
SE 375	Statistics for Engineers
EM 381	Engineering Economy
SE 385	Decision Analysis
SE 387	Deterministic Models
SE 388	Stochastic Models
SE 400	Professional Engineering Seminar
SE 402	Systems Design I
SE 403	Systems Design II
EM 411	Project Management
EM 420	Production Operations Management
EE 301	Fundamentals of Electrical Engineering
ME 311	Thermal-Fluid Systems I
CE 300	Fund. of Eng. Mech. and Design

3. Take one (1) of the following mathematics electives.

MA 364	Engineering Mathematics
MA 366	Vector Calculus and Intro PDE
MA 371	Linear Algebra
MA 381	Nonlinear Optimization
MA 386	Introduction to Numerical Analysis
MA 391	Mathematical Modeling
MA 476	Mathematical Statistics
MA 481	Mathematical Programming

4. Take one (1) of the following simulation electives.

SE 481	Systems Simulation
EM 484	Dynamic Systems Analysis
SE 485	Combat Modeling

5. Take one (1) elective from the following or another from #3 or #4 above:

EE 360	Digital Computer Logic
ME 370	Computer Aided Design
MG 382	Human Resource Management
MS 365	Campaigning: Operational Warfighting
PL 385	Organizational Systems, Theory & Design
PL 475	Human-Computer Interaction
SE 382	Decision Support Systems
SE 475	Statistical Models
XE 472	Dynamic Modeling and Control

Typical Systems Engineering Problems and Applications

As a Systems Engineer, you will apply your broad range of skills to a multitude of modern systems and important contemporary issues. These issues will usually require an inter-disciplinary perspective and include some of the examples listed below:

- Combat Simulation/JANUS Analysis
- Command, Control, Communications, and Intelligence (C3I) Systems
- Decision Support Systems
- Economic Systems Analysis
- Environmental Protection and Pollution
- Force Structuring and Costing
- Force Effectiveness and Integration
- Infrastructure Renewal and Maintenance
- Management Information Systems
- Military Planning and Project Management
- Personnel Management
- Policy Analysis
- Resource Allocation and Management
- Systems Acquisition and Management
- Transportation Planning & Traffic Control

To Learn More About Systems Engineering
Come visit us! The Department of Systems Engineering is located on 4th Floor of Mahan Hall. Come by the department or call 938-2701 and ask for an academic

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Department of Systems Engineering website:
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Systems Engineering Major

Systems Engineers are meeting the needs of the future.

Systems is Relevant

The Army and American industry seeks to gain a competitive advantage in the high-tech global marketplace. Learn to think 'systems', analyze, model and solve problems as they relate to design, development and operations in today's economy.

Systems is Timely

As resources become more constrained, systems skills are in high demand. Use engineering principles to better understand real world systems and how to support the decision making process.

Training and Techniques

Utilize state-of-the art technology with the latest simulation, management, modeling and analysis software.

Graduate School Preparation

Your education doesn't stop here. The breadth of Systems courses provides excellent opportunities for graduate studies in academic disciplines ranging from an MBA to a master's degree in information systems, operations research or other engineering fields.

Capstone and AIAD Opportunities

Real World Problems. Real World Clients. Real World Application. Evaluate dynamic problems that involve resources such as technology, people, equipment, money and information.

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