SCHOOL OF SYSTEMS & ENTERPRISES

SYSTEMS
COMPLEXITY
SECURITY
RESILIENCE
ANALYTICS
ENTERPRISE
SYSTEMIC RISK
SOFTWARE

CHOOSE TO EXCEL
MESSAGE FROM THE DEAN

“The most significant challenges that society faces require solutions which are socio-technical in nature. At SSE, we are empowering the next generation of technical leaders with an education rooted in systems thinking, with technology at the core, to allow our students to have a strong impact in an ecosystem characterized by extreme complexity.”

Dean Dinesh Verma  
School of Systems & Enterprises
CHOOSE THE GRADUATE SCHOOL THAT CLARIFIES COMPLEXITIES

The School of Systems & Enterprises (SSE) at Stevens Institute of Technology is one of the leading institutions in systems innovation and research. The SSE graduate programs are led by faculty whose careers are equally balanced between classical research and industry. And our programs are designed by professionals, for professionals to align with industry priorities. Because they are so relevant to today’s market, these programs will offer you a unique advantage, providing a world-class, practice-based and research-supported education that translates immediately into expertise you can take to your workplace.

When you choose to pursue an advanced degree at SSE, you’ll receive an education that blends engineering, systems and management subjects, giving you the multidisciplinary perspectives needed to excel in your field of interest. In addition, graduate programs employ a systems approach so you can successfully navigate and manage complex systems and enterprises, and ultimately take on a leadership role. This approach will teach you to view challenges from all angles, empowering you to see the big picture. As a systems thinker, you will have the tools to understand the nature and complexity of problems, and create elegant solutions.

CHOOSE THE UNIVERSITY WHERE INNOVATION IS PART OF THE DNA

With a heritage of more than 140 years of innovation, Stevens offers premier, high-impact, applied graduate education to prepare you for today’s technology-centric enterprise. Your educational and research experience here will enable you to climb the career ladder, as you rise to solve the most complex and urgent societal challenges. In today’s world, a degree from Stevens will give you the expertise and recognition that will open many doors.
HOW CAN SSE CREATE OPPORTUNITIES IN LEADERSHIP CAREERS?

Distinguished faculty, from both classical academia and industry, bring their own experience and connections into the classroom and provide a rigorous curriculum that is extremely relevant in current industries.

Connectivity to industry will ultimately enable you to access career opportunities in leading private and government organizations around the world.

Worldwide partnerships with leading academic institutions and government foster research and scholarly activities in the arena of complex systems and enterprises.

Graduate student placements in leading private and government institutions such as Accenture, Bank of America, Boeing, Deloitte, Department of Homeland Security, Goldman Sachs, IBM and JP Morgan create exceptional career opportunities.

HOW STUDENTS EXCEL ▶

“We have leveraged, and continue to leverage, the Stevens Systems and Software Engineering programs robustly within our company. It is a core capability requirement for us.”

Dr. Jeff Wilcox, Corporate VP for Engineering, Lockheed Martin

STEVENS RANKING AND RECOGNITION

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<td>among more than 1300 colleges and universities nationally for 20-year net return on investment in a 2014 national PayScale Survey</td>
<td>in the nation among elite universities in percentage of STEM degrees awarded in a 2013 report from U.S. News &amp; World Report</td>
<td>in the nation for the number of engineering Master’s degrees awarded by the American Society for Engineering Education (ASEE)</td>
<td>the International Distance Learning Award from the United States Distance Learning Association (USDLA) in 2010, 2011 and 2013</td>
<td>faculty and alumni are New Jersey Inventors Hall of Fame awardees</td>
<td>national research centers of excellence and dozens of university-wide research centers in high-impact fields</td>
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SSE offers a variety of fellowships to deserving master’s and doctoral students.

SSE GRADUATE PROGRAMS REPRESENT TOP TECHNOLOGY CAREERS NATIONWIDE

Software Engineer, Ranked #1
Systems Analyst, Ranked #2
Information Security Analyst (Cybersecurity), Ranked #4
Operational Research Analyst, Ranked #4

Based on U.S. News and World Report, National Career Statistics for 2012-2013
DIVISIONS
Our graduate divisions integrate academic research and practical application. Taught by experts in both realms, these programs will equip you with the means to excel in your career.

HOW STUDENTS EXCEL
“As an international student from China, coming to Stevens has been a very enriching experience for me. The Engineering Management program at SSE is excellent and provides essential tools for getting ahead in the world. Along with technical knowledge, we learn about the workings of day-to-day business, strategic planning and most importantly, building relationships and having confidence. We are taught to see the big picture.”

Guoquan Xu
Student, Master’s in Engineering Management
BECOME A STRATEGIC LEADER IN THE BUSINESS OF ENGINEERING

The engineer’s role has evolved from solely performing technical operations to being involved in the integration of engineering, technology and business operations. The Engineering Management Division at the School of Systems & Enterprises gives engineers and decision-makers the skills to create, apply and manage technology in order to solve complex problems, invent new processes and products, and build new enterprises.

The program will prepare you to assume professional positions of increasing responsibility across a broad range of industries, such as: healthcare, technology, finance, business and software systems.

“Today’s complex systems and enterprises need leaders with a strong understanding of the technology involved in engineering projects and the ability to manage them. Our goal is to create decision-makers who can interface between the technical and business aspects.”

Jose Emmanuel Ramirez-Marquez, Division Director, Engineering Management

HOW STUDENTS EXCEL

“The best aspect of the doctoral studies in Engineering Management is the multidisciplinary collaborations that can take place. Not only is the technical knowledge that is acquired of the highest quality, the collaboration with researchers in financial engineering, environmental engineering, mathematics, computer science and other areas enriches the quality of research and learning experience.”

Dante Gamma Dessavre
Doctoral Student in Engineering Management

THREE WAYS TO EXCEL

WHERE CAN AN ADVANCED DEGREE TAKE YOU?
Data Analyst
Project Management
Research and Development
Operational Research Analyst
Risk Management
Application Engineering

Top hiring firms:
BMW, Exxon, Goldman Sachs, IBM,
Lockheed Martin, UPS
WHERE CAN AN ADVANCED DEGREE TAKE YOU?

Quantitative Analysis
Risk Management
Algorithmic Trading
Complex Derivatives Structuring
High-Frequency Trading and Analysis
Structured Products Sales and Marketing

Top hiring firms:
Accenture, Bank of America, Citigroup,
Goldman Sachs, Nomura, Prudential, UBS

BE A LEADER IN TODAY’S FINANCIAL MARKET

Today’s complex financial markets require experts who not only understand how the markets work, but who also have the mathematical knowledge to uncover patterns and the technological skills to exploit them. The Financial Engineering Division at the School of Systems & Enterprises will enable you to integrate quantitative methods with the theoretical framework and institutional settings in which they are applied.

Taught by a renowned faculty of prominent scholars and industry luminaries, this intensive and highly focused program will prepare you for a career in industries such as investment banking, risk management, securities trading and portfolio management.

“The demand on Wall Street has never been greater for people with strong expertise in mathematical methods, computational tools, computer programming and systems thinking. SSE gives students a real-world, hands-on experience that makes them very successful in the world of high finance.”

Dr. Khaldoun Khashanah, Division Director, Financial Engineering

HOW STUDENTS EXCEL

“The Stevens FE program is challenging, with a high ROI. The faculty is exceptional with a great mix of academic and pragmatic experience which I believe makes the program unique.”

Saverio Minervini
Associate in Investment Banking, Nomura
Part-time student, Master’s in Financial Engineering, 2012
CHOOSE TO EXCEL

FINANCIAL ENGINEERING AREAS OF FOCUS:

Quantitative Finance
Financial Services Analytics
Financial Risk
Algorithmic Trading
Financial Systems Engineering
Financial Software Systems
“The Systems Engineering graduate program at SSE is exactly what I was looking for after I finished my undergraduate in Aerospace Engineering. The program curriculum is a perfect balance of systems theory and practice, and we have the unique opportunity to work on real-world problems. With faculty who are at the top of their game and more than willing to impart their knowledge and experience, coming to Stevens has been my best decision ever.”

Lana Brooke Miller
Student, Master’s in Systems Engineering
TAKE A SYSTEMS APPROACH TO LEADERSHIP

Today’s complex global markets present challenges that require engineers to have both the technical knowledge to design cutting-edge systems and the skills to understand and manage them. At the School of Systems & Enterprises, the Systems Division offers a range of programs with the depth and breadth of expertise to prepare you for leadership roles that support innovation and problem solving across industry and government. Our Systems Division programs include:

- Systems Engineering
- Space Systems Engineering
- Software Engineering
- Systems Security Engineering
- Socio-Technical Systems

“We strive to produce technical leaders who apply a systems approach to navigate and manage complex systems and enterprises, and who can address systems integration, life cycle issues and systems thinking at the system, systems of systems and enterprise levels.”

Ralph Giffin, Division Director, Systems

HOW STUDENTS EXCEL ▶

“IBM students across the globe have participated in systems engineering programs from Stevens with significant benefits for our business.”

Ralph Nelson, Vice President, IBM

SYSTEMS

WHERE CAN AN ADVANCED DEGREE TAKE YOU?

Systems Engineer
Software Engineer
Lead Engineer
Project Manager
Logistics Operations Manager

Top hiring firms:
Accenture, AT&T, Cisco, IBM, Lockheed Martin, Rockwell Collins, Verizon
MESSAGE FROM DR. WILLIAM B. ROUSE DIRECTOR, CCSE

“The goal of CCSE is to produce knowledge and skills that contribute to fundamental transformation of complex systems by enhancing human abilities, overcoming human limitations and fostering human acceptance of solutions carefully tailored to their need and desires.”
IMPROVE THE SYSTEMS THAT IMPROVE OUR SOCIETY

There are many public-private enterprises, such as healthcare and the global financial system that our society depends on and these continue to become increasingly dependent on technology for power, processing, communications and transportation.

The Center for Complex Systems & Enterprises (CCSE) was created to empower you to find human solutions for these complex socio-technical systems. Understanding and improving these systems requires knowledge and expertise that span across several disciplines, such as:

- Engineering and Physical Sciences
- Economics
- Finance and Management
- Behavioral and Social Sciences

At CCSE, we have merged these disciplines in a rich, collaborative research environment to help you better solve the intricate challenges of our world.

IMMERSE YOURSELF IN A REVOLUTIONARY LEARNING EXPERIENCE

The Immersion Lab is aptly named. When you walk into the lab, you'll be astounded by the 8x20 foot, 180-degree set of interactive, touch-sensitive monitors. This environment literally immerses problem-solvers and decision-makers in the exploration of real or computationally imagined complex systems. Combined with Stevens’ educational programs, the Immersion Lab fosters the skills to create and deploy high value, affordable solutions in a wide range of complex systems and enterprises.

CENTER FOR COMPLEX SYSTEMS & ENTERPRISES

CCSE FOCUSES ON SEVERAL KEY DOMAINS

- Healthcare Delivery
- Financial Systems
- Urban Resilience
- National Security

CCSE charter partners:

Lockheed Martin, Accenture,
Northern Light

HOW STUDENTS EXCEL ▲

“CCSE has admirably leveraged the hands-on, results-oriented culture of Stevens. Their focus on understanding complex enterprises and influencing improvements in their operations reflects Stevens’ long tradition of invention and innovation.”

C. David Seuss, CEO, Northern Light
FINANCIAL SYSTEMS CENTER

FSC SUPPORTS GRADUATE PROGRAMS IN
Financial Engineering
Software Engineering
Systems Security Engineering

Features include:
Trading room
Latest software suites, including Bloomberg, Thomson Reuters, FactSet, Capital IQ and Morningstar
Touch screen master control monitor
Dual high definition projectors and screens, and video conferencing

FINANCIAL RESEARCH THAT’S STATE-OF-THE-ART AND STATE-OF-THE-WORLD

The Financial Systems Center (FSC) is the first of its kind in the United States. It serves as a platform for financial systems research and the development, testing and evaluation of software for financial networks and the investigation of cyber-security challenges in the financial domain. With state-of-the-art technology, complete with the latest high-definition audio-visual instrumentation, the FSC has multiple workstations to provide you with access to actual data feeds from leading providers of financial information. Most importantly, you will work alongside faculty on crucial areas of research, such as systemic risk, dynamic risk measures, portfolio optimization, high-frequency finance and financial networks.

The FSC is a unique university financial center. Here’s what sets it apart:
- A focus on systems thinking
- An emphasis on contextual learning
- A cutting-edge financial laboratory to explore market dynamics

THE HANLON FINANCIAL SYSTEMS LAB IS THE HEART OF THE FSC

The Hanlon Lab is where teaching and research come together to provide a platform for developing and training future financial systems experts. It integrates the latest hardware and software technologies, accessing real-time data, as well as historical time series data, to support innovative research into the most urgent problems in contemporary finance. You will gain hands-on experience using real-time trading terminals, such as Bloomberg, RealTick, Thomson Reuters and Gain Capital. The Lab also offers 1-credit courses on trading platforms, as well as on programming languages such as R, C++, MATLAB, SAS and Python, that count toward your degree.
“The lab is an extremely helpful resource. It enables us to use software to solve financial challenges and provides several financial databases which we can use for research, particularly Bloomberg which is widely used in the industry. The hands-on experience gives us both a powerful skill and an advantage when we are applying for jobs.”

Xiaodi Zhu
Doctoral Student in Financial Engineering
SERC DOCTORAL FELLOWS PROGRAM

The Doctoral Fellows Program is an extension of SERC’s mission and commitment to nurture the next generation of technical leaders.

• Consists of selected SERC Collaborator Universities and participating US based organizations
• Ph.D. students focus on systems-related research that is consistent with the SERC’s vision and develop one-on-one relationships with thought leaders who serve as mentors during the doctoral process
• Fellows receive tuition reimbursement through their employers
• Fellows are allocated one work day per week to dedicate toward their doctoral studies and research from their sponsoring organizations
INNOVATION TO MEET THE GROWING CHALLENGES OF OUR NATION

The Systems Engineering Research Center (SERC), a University Affiliated Research Center (UARC) awarded by the Department of Defense (DoD) to Stevens Institute of Technology, is unprecedented in the depth and breadth of its reach, leadership and citizenship in Systems Engineering. The SERC leverages the expertise of senior lead researchers from over 20 collaborator universities to manage critical 21st century challenges facing the nation’s defense and intelligence communities.

HOW STUDENTS EXCEL

“Participating in the SERC Doctoral Fellows Program gives Boeing an opportunity to invest in valuable systems engineering research that benefits our employees, businesses and customers. The program’s rich and diverse community of leaders is committed to cutting-edge systems engineering research in a unique environment of industry, academia and government.”

Marc Nance
Director, Systems Engineering
Boeing Engineering, Operations & Technology

In each of the SERC’s four research areas, “Grand Challenges” have been identified, for which solutions will make a large difference in many lives.
CHOOSE A PROGRAM THAT WILL DRIVE YOUR SUCCESS

MASTER’S PROGRAMS

The Master’s Degree curriculum consists of 10 courses (equivalent to 30 credits). Students are required to complete 6 core and 4 elective courses. The following are required core courses for each Master’s Degree.

MASTER OF ENGINEERING (M.E.) IN ENGINEERING MANAGEMENT
EM 600 Engineering Economics
EM 605 Elements of Operations Research
EM 612 Project Management of Complex Systems
or EM 680 Designing and Managing the Development Enterprise
EM 624 Informatics for Engineering Management
SYS 660 Decision and Risk Analysis
SYS 611 Modeling and Simulation
or SYS 681 Dynamic Modeling of Systems and Enterprise

MASTER OF SCIENCE (M.S.) IN FINANCIAL ENGINEERING
FE 610 Stochastic Calculus for Financial Engineers
FE 620 Pricing and Hedging
FE 621 Computational Methods in Finance
FE 630 Portfolio Theory and Applications
FE 680 Advanced Derivatives
FE 800 Special Problems in Financial Engineering

MASTER OF SCIENCE (M.S.) IN SOFTWARE ENGINEERING
SSW 540 Fundamentals of Quantitative Software Engineering
SSW 533 Software Estimation and Measurement
SSW 564 Software Requirements Analysis and Engineering
SSW 565 Software Architecture and Component-Based Design
SSW 567 Software Testing, Quality Assurance and Maintenance
SSW 800 Master’s Project

MASTER OF SCIENCE (M.S.) IN SYSTEMS SECURITY ENGINEERING
SES 602 Secure Systems Foundation
SES 622 Fundamentals of Systems Engineering Security
SES 623 Systems Security Architecture and Design
SYS 605 Secure Systems Integration
SYS 625 Systems Engineering Fundamentals
SYS 660 Decision and Risk Analysis

MASTER OF SCIENCE (M.S.) IN SOCIOTECHNICAL SYSTEMS
ES 621 Fundamentals of Enterprise Systems
EM 600 Engineering Economics and Cost Analysis
EM 612 Project Management of Complex Systems
SYS 681 Dynamic Modeling of Systems and Enterprises
ES 684 Systems Thinking
ES 800 Special Problems in Enterprises Systems

MASTER OF ENGINEERING (M.E.) IN SPACE SYSTEMS ENGINEERING
SYS 625 Fundamentals of Systems Engineering
SYS 650 System Architecture and Design
SYS 632 Designing Space Missions and Systems
or SYS 635 Human Spaceflight
SYS 633 Mission and Systems Design Verification and Validation
or SYS 605 Systems Integration
EM 612 Project Management of Complex Systems
SYS 800 Master’s Project

For a full list of courses, please visit
stevens.edu/sse/academics/graduate/course-catalog
DOCTORAL PROGRAMS

The Doctor of Philosophy (Ph.D.) degree consists of 54 credits, post Master’s and a minimum of 15 research credits. The curriculum for the doctoral program is designed to develop the ability of the student to perform high-impact research and high-level design that will contribute significantly in the advancement and growth of their chosen arena.

DOCTOR OF PHILOSOPHY IN ENGINEERING MANAGEMENT

DOCTOR OF PHILOSOPHY IN FINANCIAL ENGINEERING

DOCTOR OF PHILOSOPHY IN SYSTEMS

For more details on the doctoral program and requirements, please visit stevens.edu/sse/academics/doctoral-studies

GRADUATE CERTIFICATES

The School of Systems and Enterprises offers several four-course, 12-credit Graduate Certificate programs geared to practitioners and students who are interested in improving their current skills or are considering new career paths. Students are encouraged to complement the six required core courses of the Master’s program with one of the following certificates applicable to their respective divisions.

ENGINEERING MANAGEMENT

Data Exploration and Visualization for Risk and Decision-Making
Financial Risk Engineering
Systems and Supportability Engineering
Logistics and Supply Chain Analysis

FINANCIAL ENGINEERING

Financial Services Analytics
Algorithmic Trading
Financial Risk Management
Financial Mathematics

SYSTEMS

Systems Engineering and Architecting
Software Design and Development
Systems and Supportability Engineering
Systems Engineering Security

For a full list of certificates, visit stevens.edu/sse/graduatecertificates

Applicants may apply online at stevens.edu/applications

“The education and research at Stevens in complex systems and data analytics ties into an entire class of problems that we are addressing with clients at Accenture. Stevens graduates are well prepared to work on some of the most important business challenges of our times in financial services, health care, technology and government.”

Brian McCarthy
Managing Director, Accenture Analytics – Information & Analytics Strategy
APPLICATION REQUIREMENTS

Applicants may apply online at stevens.edu/applications

All applicants must submit the following:

- Online application
- $60 non-refundable fee
- An undergraduate degree in engineering or computer science or a related discipline, with a “B” average or better from an accredited college or university
- Two letters of recommendation*
- Official transcripts from all institutions attended
- GRE/GMAT scores (Part-time students do not require GRE/GMAT scores)

*Some programs may require additional materials. Check with your program’s website or email the Office of Graduate Admissions at graduate@stevens.edu to confirm your program’s requirements.

RECOMMENDED APPLICATION DEADLINES FOR MASTER’S DEGREE

International Applicants:
- Fall semester: April 15
- Spring semester: November 1

Domestic Applicants:
- Fall semester: June 1
- Spring semester: November 30

Applications for Master’s degrees are accepted on a rolling admissions basis throughout the school year.

REQUIRED APPLICATION DEADLINE FOR PH.D. APPLICANTS

- Fall semester and seeking funding: March 15
- Spring semester and seeking funding: August 15

For details and more information, visit www.stevens.edu/sse/admissions/graduate