



Master of Engineering in Systems Engineering



PennState
World Campus

**A world of possibilities.
Online.**

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“Penn State’s nationally recognized systems engineering program offers an innovative approach to learning for professionals, featuring skill-based stackable certificates in technical management, model-based systems engineering, life-cycle system design, and system quality and risk analysis to address the dynamic needs of designing and managing complex engineering systems. These certificates progressively build expertise in systems engineering areas and can prepare students for leadership roles.”

— Nil Hande Ergin

Professor in Charge, Master of Engineering Management and Master of Engineering in Systems Engineering
Associate Professor of Systems Engineering

Earn a Master of Engineering in Systems Engineering — Online

This online systems engineering master's program helps you prepare to develop the next generation of engineering products, systems, and services for industry and government. You can learn how to identify, design, analyze, and manage complex systems and processes over their life cycles. The program courses are technically focused and meld the skills to manage complex, heterogeneous engineering projects, products, and services with the theoretical understanding you'll need to become a leader in your field.

Benefit from cohort-based learning

From start to finish, you'll progress through the program with others in your cohort. You'll gain valuable experience interfacing, collaborating, and networking with peers and faculty while completing projects remotely, just as teams do in the broader global marketplace.

Earn stackable credentials on the way to your degree

In this 36-credit program, you can earn four valuable graduate certificates to recognize your new skills and knowledge while you work toward your master's degree — without any additional course

work, course fees, or application fees. Stackable credentials are a great way to gain new skills and enhance your résumé while working toward a master's degree. To reach the 36 credits required to earn the Master of Engineering in Systems Engineering, you'll work on:

- › Graduate Certificate in Life-Cycle System Design
- › Graduate Certificate in System Modeling and Analysis
- › Graduate Certificate in System Quality & Risk Evaluation
- › Graduate Certificate in Technical Management
- › Capstone experience

Systems engineering curriculum

The 36-credit program is design-focused and addresses industry challenges like increasing mission complexity, rising development costs, late discovery of design problems, and failure to recognize and deal with risk. The program offers experience in analytical approaches to solving technical and sociotechnical problems, leading technical teams, and managing technical projects in the presence of uncertainty and risk.

In your 3-credit capstone experience, you'll work independently to solve

a complex, real-world problem to develop new insights in your field. You'll work under the guidance and supervision of faculty to ensure you make the most of the experience.

Learning outcomes

As a successful graduate of this program, you can be prepared to:

- › develop heterogeneous engineered solutions to complex problems using contemporary methods, processes, and tools
- › understand system interdependencies to identify optimal solutions
- › use integrated models and simulations for multi-level system analysis and practices
- › manage the budgets and schedules of large-scale projects and programs
- › work effectively and collaboratively within interdisciplinary teams

Graduate Certificate in Life-Cycle System Design

This 9-credit certificate focuses on skills needed to excel at human-centered design thinking, requirements engineering, and systems architecture. It can help you prepare for a variety of careers related to the engineering and development of new products, processes, and systems. You'll take the following courses:

- › Invention and Creative Design
- › Requirements Engineering
- › Systems Architecture and Models

Career opportunities

You can use the knowledge gained from this online program and the support of Penn State career resources to pursue programmatic or technical leadership roles in systems engineering or the management of complex systems.

The following roles are often held by people with this type of degree:

- › chief systems engineer
- › mission systems engineer
- › new mission developer
- › product architect
- › project manager or director
- › technical director
- › systems engineer
- › system architect
- › systems analyst

Graduate Certificate in System Modeling and Analysis

This 9-credit certificate focuses on systems analysis and the skills needed to model, design, and build information systems, computer networks, and other solutions for business. You can prepare for engineering roles including systems test engineer, system analyst, and business analyst by taking the following courses:

- › Simulation in Systems Engineering: Discrete-Time Systems
- › Simulation in Systems Engineering: Continuous-Time Systems
- › Systems Architecture and Models

Graduate Certificate in System Quality & Risk Evaluation

This 9-credit engineering certificate focuses on quality management, statistical analysis, and risk evaluation. It can help you prepare for a variety of quality engineering careers, including systems integration engineer and testing manager, as well as analyst careers. Your courses will include:

- › Systems Engineering
- › Systems Verification Validation and Testing
- › Decision and Risk Analysis in Engineering

Graduate Certificate in Technical Management

This 9-credit certificate focuses on technology management, leadership skills, and problem-solving. It can help you prepare for success in a variety of leadership roles, including program manager, project manager, lead engineer, testing manager, and more. You'll take the following courses:

- › Technical Project Management
- › Systems Thinking
- › Creativity and Problem-Solving 1

All of these graduate certificates can be earned on their own and also used as stackable credentials that apply toward the Master of Engineering in Systems Engineering.



Why Penn State World Campus?

Penn State World Campus is an industry leader in online education, delivering more than 175 undergraduate and graduate degrees and certificates. Our mission is to provide a Penn State education to anyone, anytime — focusing on quality, convenience, and flexibility, while delivering high-quality degrees and certificates online.

A reputation of excellence

Putting a Penn State degree or certificate on your résumé is a great way to broaden your career options and prove to employers that you are a well-educated professional.

Flexibility and convenience

Penn State knows that adults need flexible and convenient learning options in order to continue meeting their professional and personal commitments. You can study when and where you please, earning your credential at your own pace.

Student support services

As a Penn State World Campus student, you will be supported by a team of knowledgeable and caring staff who understand the unique challenges of balancing work and personal responsibilities while learning online. You will have access to traditional student support services, such as 24/7 technical support, career services, and a dedicated student affairs team, along with access to the University Libraries system and the opportunity to join clubs and organizations.

Military and veteran students

We have aligned our online programs, student support services, policies, and procedures to support military personnel, veterans, and military family members.

Begin Your Application Today

When applying to the master's degree or certificate programs, you must include the following:

Application requirements include:

- › application form (completed and submitted online)
- › copy of official transcripts from each undergraduate and graduate institution attended
- › 2 references
- › résumé
- › statement of intent
- › TOEFL or IELTS score, if applicable

Application requirements for the graduate certificates include:

- › application form (completed and submitted online)
- › copy of official transcripts from each undergraduate and graduate institution attended
- › TOEFL or IELTS score, if applicable

For the most up-to-date information about these application materials and to apply, visit: worldcampus.psu.edu/admissions/how-to-apply



Did You Know?

- › Penn State World Campus is consistently ranked as a top provider of online education by *U.S. News & World Report*.
- › Penn State credits and degrees earned online are identical to those earned on campus.
- › Penn State World Campus has enrolled students from all 50 states and all seven continents.
- › Our online courses involve frequent interactions among students and faculty.

Contact Us

Admissions Questions

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Phone: 814-863-5386

worldcampus.psu.edu/admissions

Program Questions

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