

# SYSTEMS ENGINEERING

<b>Graduate Program Head</b>	Raghu Sangwan
<b>Program Code</b>	SYSEN
<b>Campus(es)</b>	Great Valley (M.Eng.) World Campus (M.Eng.)
<b>Degrees Conferred</b>	Master of Engineering (M.Eng.)
<b>The Graduate Faculty</b>	View ( <a href="https://secure.gradsch.psu.edu/gpms/?searchType=fac&amp;prog=SYSEN">https://secure.gradsch.psu.edu/gpms/?searchType=fac&amp;prog=SYSEN</a> )

The newly-redesigned Master of Engineering in Systems Engineering at Penn State Great Valley is intended for today's professional—to fit the needs of busy working adults who are balancing career and life. Courses are either fully online or a 50/50 online/in-person hybrid, combining the personal connection with instructors and intimate classroom setting of in-person education with the flexibility of online learning. This program is STEM designated.

## Admission Requirements

Applicants apply for admission to the program via the J. Jeffrey and Ann Marie Fox Graduate School application for admission (<https://gradschool.psu.edu/admissions/how-to-apply/>). Requirements listed here are in addition to Graduate Council policies listed under GCAC-300 Admissions Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

Admission to the M.Eng in Systems Engineering program will be based on baccalaureate academic records, applicable work experience, and two letters of recommendation from a previous professor or supervisor who can attest to the applicant's academic potential. Applicants with an undergraduate degree in a quantitative discipline such as science or engineering may apply. Students from other disciplines will be considered based on prior course work and/or standardized test scores. Normal admission requirements include two semesters of calculus (Calculus 1 and Calculus 2). Applications must include a statement of professional goals and a curriculum vitae or resume. Test scores from the GMAT or GRE exams are not required. An undergraduate cumulative grade-point average of 3.0 or better on a 4.0 scale in the final two years of undergraduate studies is required.

The language of instruction at Penn State is English. English proficiency test scores (TOEFL/IELTS) may be required for international applicants. See GCAC-305 Admission Requirements for International Students (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-300/gcac-305-admission-requirements-international-students/>) for more information.

## Degree Requirements

### Master of Engineering (M.Eng.)

Requirements listed here are in addition to Graduate Council policies listed under GCAC-700 Professional Degree Policies (<https://gradschool.psu.edu/graduate-education-policies/>).

The M. Eng. in Systems Engineering degree is conferred upon students who earn a minimum of 36 credits of course work while maintaining an average grade-point average of 3.0 or better in all course work, including at least 18 credits at the 500 or 800 level (with at least 6 credits at the

500 level). The program curriculum includes 18 credits of core courses, 15 credits of electives, and 3 credits of capstone experience.

Code	Title	Credits
<b>Required Courses</b>		
SYSEN 520	Systems Engineering	3
SYSEN 522	Systems Verification Validation & Testing	3
SYSEN 532	Simulation in Systems Engineering: Discrete-Time Systems	3
SYSEN 534	Simulation in Systems Engineering: Continuous-Time Systems	3
SYSEN 880	Systems Architecture and Models	3
SWENG 586	Requirements Engineering	3
<b>Electives</b>		
An additional 15 credits of elective courses must be selected from a list of approved elective courses maintained by the graduate program office.		15
<b>Culminating Experience</b>		
All students will complete their program of study with a capstone project that provides students with an opportunity to apply their knowledge of the systems engineering theories, methods, processes, and tools learned throughout their program, in a culminating and summative experience. Students complete the capstone project while enrolled in SYSEN 894.		3
<b>Total Credits</b>		<b>36</b>

## Minor

A graduate minor is available in any approved graduate major or dual-title program. The default requirements for a graduate minor are stated in Graduate Council policy GCAC-218 Minors (<https://gradschool.psu.edu/graduate-education-policies/gcac/gcac-200/gcac-218-minors/>).

## Student Aid

Refer to the Tuition & Funding (<https://gradschool.psu.edu/funding/>) section of the J. Jeffrey and Ann Marie Fox Graduate School's website. Students in this program are not eligible for graduate assistantships.

Financial aid for students in on-campus programs is in the form of student loans and a limited number of small scholarships, as described on the Penn State Great Valley website (<https://greatvalley.psu.edu/tuition-and-financial-aid/>).

World Campus students in graduate degree programs may be eligible for financial aid. Refer to the Tuition and Financial Aid section (<https://www.worldcampus.psu.edu/tuition-and-financial-aid/>) of the World Campus website for more information.

## Courses

Graduate courses carry numbers from 500 to 699 and 800 to 899. Advanced undergraduate courses numbered between 400 and 499 may be used to meet some graduate degree requirements when taken by graduate students. Courses below the 400 level may not. A graduate student may register for or audit these courses in order to make up deficiencies or to fill in gaps in previous education but not to meet requirements for an advanced degree.

Systems Engineering (SYSEN) Course List (<https://bulletins.psu.edu/university-course-descriptions/graduate/sysen/>)

## Learning Outcomes

1. **KNOW.** Develop heterogeneous engineered solutions to complex problems using contemporary methods, processes, and tools.
2. **CRITICAL THINKING.** Understand system interdependencies to analyze the associated tradespaces these generate to identify optimal solution alternatives.
3. **PROBLEM SOLVING.** Use integrated models and simulations for multi-level system analysis and practices.
4. **APPLY.** Manage the budgets and schedules of large-scale projects and programs while delivering.
5. **TEAMWORK.** Work effectively and collaboratively within interdisciplinary teams.

## Contact

<b>Campus</b>	Great Valley
<b>Graduate Program Head</b>	Raghu Sangwan
<b>Director of Graduate Studies (DGS) or Professor-in-Charge (PIC)</b>	Nil Hande Ergin
<b>Program Contact</b>	MICHELLE WHALEN Penn State Great Valley 30 East Swedesford Road Malvern PA 19355 mmw6441@psu.edu (610) 648-3288
<b>Program Website</b>	View ( <a href="http://greatvalley.psu.edu/academics/masters-degrees/systems-engineering/">http://greatvalley.psu.edu/academics/masters-degrees/systems-engineering/</a> )
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<b>Program Website</b>	View ( <a href="http://www.worldcampus.psu.edu/degrees-and-certificates/systems-engineering-masters/overview/">http://www.worldcampus.psu.edu/degrees-and-certificates/systems-engineering-masters/overview/</a> )