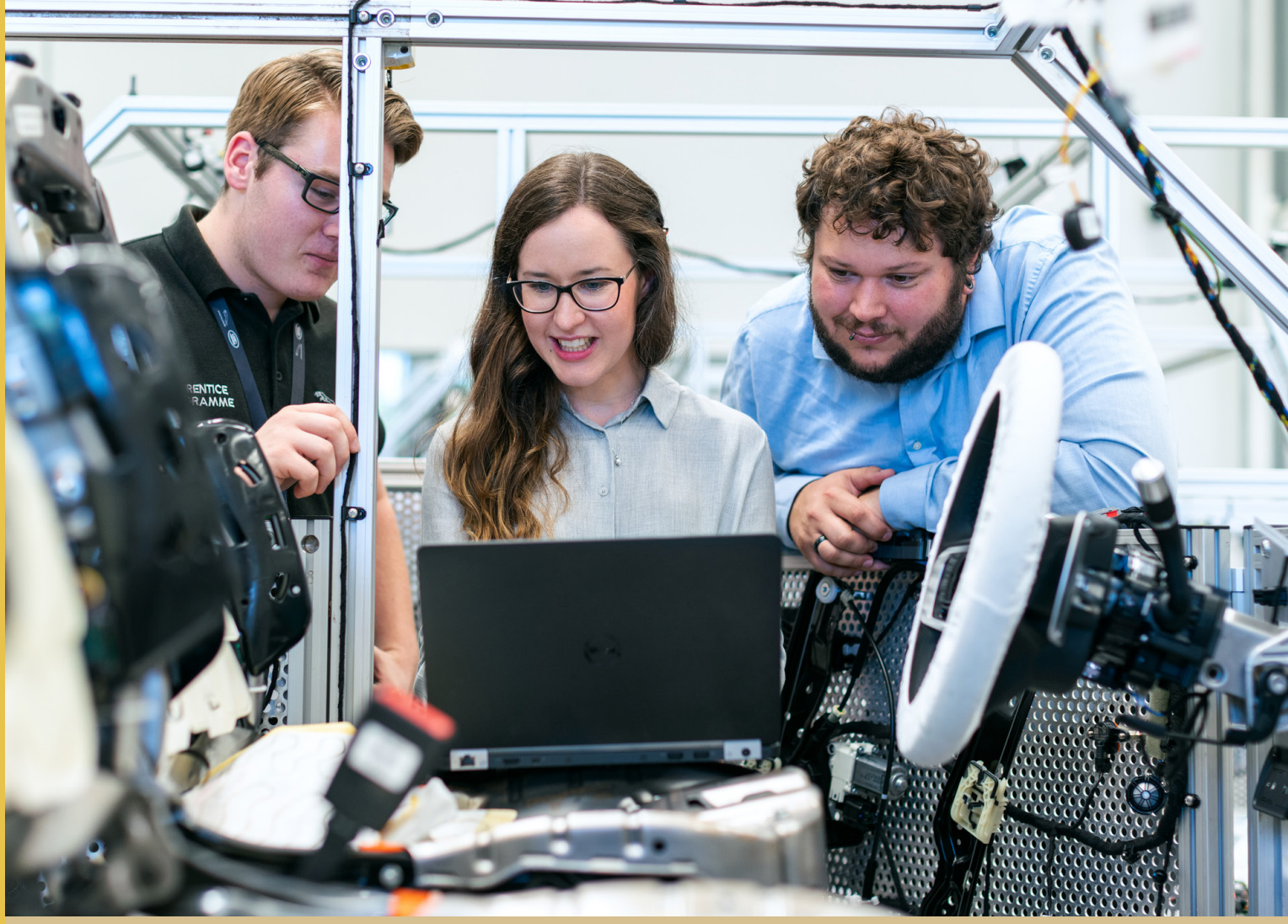

MASTER OF SCIENCE

SYSTEMS ENGINEERING

PURDUE UNIVERSITY®
FORT WAYNE

Office of
Graduate Studies

PFW.EDU/GRADUATE

A MESSAGE FROM THE DIRECTOR

Thank you for considering a Master of Science in Engineering with a concentration in Systems Engineering from Purdue University Fort Wayne. You will be working directly with former MIT Professor Dr. David S. Cochran, who is a world-renowned scholar in the field of System Design and Systems Engineering. Dr. Cochran is a two-time winner of the prestigious Shingo Research Prize for Excellence in Manufacturing for his work in the design of sustainable enterprise systems.

The PFW Systems Engineering concentration is designed to provide you with the skills and mindset to facilitate the practice of system design to lead change in your organization. The course projects in the program provide you with the skills to resolve real-world issues to address your business growth challenges. You will learn how to make the best use of the resources that you are entrusted with to meet internal and external customer needs within your enterprise.

David S. Cochran, Ph.D.

Professor of Systems Engineering
Director of the Center of Excellence in Systems Engineering
Systems Engineering Graduate Program Director
cochrand@pfw.edu

BENEFITS

SHARPEN YOUR SKILLS AND ACHIEVE YOUR GOALS

The Master of Science in Engineering (MSE) with a concentration in Systems Engineering equips you with system design thinking that can help you become a:

- Director of Engineering
- Director of Operations
- Director of Quality & Continuous Improvement
- Operations Manager
- Supply Chain Manager
- Systems Engineering Professional

By practicing collective system design - Tone, Thinking, Structure, and Actions - you can grow your organization and meet the needs of your internal and external customers.

THE PURDUE FORT WAYNE DIFFERENCE

Stand out with a graduate degree that enhances your qualifications through:

- Course offerings designed for working adults
- Internationally recognized degree at a fraction of the cost
- Personal attention from dedicated faculty
- Small class sizes

LEARN FROM DEDICATED, EXPERT FACULTY

Our faculty have expertise in a wide range of areas. Students benefit from the distinct and renowned breadth of knowledge our professors and instructors have developed throughout their careers.

Systems engineering research and engagement areas include:

- Collective System Design and Leadership
- Enterprise Design to Become Lean
- Healthcare System Design and Improvement
- Language for System Design
- Lean-Linked Cell System Design
- Physical Simulation and Modeling of Systems
- Supply Chain Material and Information Flow
- Sustainable Enterprise Design
- Systems Architecture

"The MSE program at Purdue University Fort Wayne, with the Systems Engineering concentration, opens for students the opportunity to explore new horizons. The tone and attitude of the faculty greatly facilitates students to learn. Interactive lessons, guest speakers, and more importantly, application of theoretical knowledge to engineering practice, makes Systems Engineering the best program for perspective graduate students. I believe that my program will help me to become a professional in the systems engineering field and encourage me to conquer new peaks."

Kamran Veliyev

COURSES

COURSE OF STUDY

- Students are required to complete 30 credits of coursework to earn a Master of Science in Engineering degree. The Systems Engineering (SE) concentration is flexible in allowing students to tailor their program courses to their specific career goals.
- Our students complete a Plan of Study during their first semester to document their intended curriculum.

CORE COURSES

Four 500-level graduate Systems Engineering core courses are required.

SYSTEMS ENGINEERING CORE REQUIREMENTS (12 CREDIT HOURS)

- SE 52000 Engineering Economics — In-Person, Spring - Odd Years
- SE 53000 Systems Engineering Management — In-Person, Fall - Odd Years
- SE 54000 System Architecture — In-Person, Spring - Even Years
- SE 55000 Manufacturing System Design for Sustainability — In-Person, Fall - Even Years and Asynchronous Online*
- SE 58301 Engineering Statistics for Industry — Asynchronous Online*

***Offered second half of Fall, Summer, and Spring semesters each year.**

ENGINEERING ELECTIVE COURSES

Students have the opportunity to take courses from the following departments:

ENGINEERING/MATH/STAT/ACS/CS/TECHNOLOGY REQUIREMENT

A minimum of two graduate-level courses from engineering (ECE, ME, ENGR), mathematics (MA), statistics (STAT), computer science (ACS or CS), or engineering technology (ET) are required.**

Math (MA), Statistics (STAT) or Computer Science (CS)

- SE 58301 Engineering Statistics for Industry
- STAT 51400 Design of Experiments
- MA 51100 Linear Algebra
- CS 59000 Topics In Computer Science
- ACS 57700 Knowledge Discovery and Data Mining

Mechanical Engineering Electives

- ME 54400 Modeling and Simulation of Mechanical Engineering Systems
- ME 54500 Finite Element Analysis: Advanced Theory and Applications
- ME 54600 CAD/CAM Theory and Advanced Applications
- ME 54700 Mechatronics, Robotics, and Automation

Electrical Engineering Elective Courses

- ECE 54300 Wireless Communication Networks
- ECE 56900 Introduction to Robotics
- ECE 58400 Linear Control Systems

Computer Engineering Electives

- ECE 53800 Digital Signal Processing I
- ECE 54700 Introduction to Computer Communication Networks
- ECE 56700 FPGA Designs for Signal Processing Applications

****The above courses are some of the options students have in the program.**

GENERAL GRADUATE ELECTIVES REQUIREMENT

A non-thesis option student successfully completes two general elective graduate-level courses in consultation with their advisor. Appropriate areas for coursework include: Engineering, Physics, Math, Computer Science, Technology, Business, Organizational Leadership, etc. The purpose of these courses is to give students flexibility to tailor the program to meet their specific needs.

Doermer School of Business MBA Programs Electives

- BUS 54202 - Leadership and Management of People in Organizations
- BUS 55200 - Management Of Information Technology
- BUS 56000 - Marketing and Customer Relationship Management

Organizational Leadership

- OL 51000 - Foundations of Behavior and Leadership in Organizations
- OL 53000 - System Change and Organization Development
- OL 54000 - Leading Collaborative Projects and Work Teams

THESIS OPTION

A student can opt to replace six elective credits with thesis research. To take advantage of this option, the student must prepare a thesis proposal and gain departmental approval prior to signing up for thesis credits.

A thesis option is available for students who would like to do research in the area of Systems Engineering. Six hours of thesis research replaces the two general electives in the generic Plan of Study. Thesis research can be focused on a project sponsored by the student's employer or in conjunction with work being done by the Center of Excellence in Systems Engineering.

"Although a master's degree was not in my original plan, my professors (and the overall environment) encouraged me to pursue an MSE degree in Systems Engineering. This program provides the theory behind system design, but the major emphasis is on the application of this theory. Systems engineering can be applied to so many concepts and the classes are structured to tailor the applications to your specific interest. I believe this approach allows me to best adapt my education to my career goals in addition to making the learning environment enjoyable."

Joseph Smith

"Systems Engineering has taught me how to unlock the value of people (organization's human capital and customer relationship capital) to maximize the return on tangible assets (technology, product, structural capital). I have learned to see the hidden waste in organizations working in Silos. Thanks to Prof. Cochran, who mentored me on how to define customersupplier connections throughout the organization for achieving system goals, I learned how to exchange my knowledge, energy, wisdom, and viewpoints with the people in my organization, our customers, and the community at large."

Shahab Shah

PLAN OF STUDY

You can find guidelines for developing your Plan of Study here.
You can find the Graduate Program Guideline information for the MSE program here.

CERTIFICATE IN SYSTEMS ENGINEERING (12 CREDIT HOURS)

The Certificate in Systems Engineering is designed to recognize students who have completed any four courses in systems engineering. Any engineering or non engineering student with an undergraduate bachelor's degree can apply for the Systems Engineering Certificate. In addition, the courses taken for the Systems Engineering Certificate will be counted towards the MSE degree with Systems Engineering concentration. The curriculum provides students with a background in systems engineering fundamentals, system architecture, economics, and engineering management that can be applied to any industry including manufacturing, healthcare, or education. The systems engineering body of knowledge prescribes techniques and "best practices" for developing complex or interdisciplinary products. Professional engineers will find the SE program beneficial in helping them understand modern product development principles and best practices.

SYSTEMS ENGINEERING CERTIFICATE REQUIREMENTS

The Systems Engineering Certificate will require satisfactory completion of 12 credit hours of course work (B or better) in the specified engineering courses. No course with a grade below a "B" may be applied toward the certificate.

Choose any four of the following Systems Engineering course options:

- SE 52000 Engineering Economics (3 cr.)
- SE 53000 Systems Engineering Management (3 cr.)
- SE 54000 System Architecture (3 cr.)
- SE 55000 Manufacturing System Design for Sustainability (3 cr.)
- SE 58301 Engineering Statistics for Industry (3 cr.)

VALUE OF THE SYSTEMS ENGINEERING CERTIFICATE

Systems engineering is a structured approach to developing technical solutions that satisfy customer needs. Unlike traditional forms of engineering, systems engineering focuses on processes used to design, develop, verify, and validate new products and systems. The Systems Engineering Certificate addresses the needs of professional engineers that already possess a master's degree or do not have the time or financial resources to commit to an MSE program.

HOW TO APPLY

To apply for the Certificate in Systems Engineering follow the application instructions outlined on the **APPLY** page.
Admission to the certificate program requires that students meet the requirements of the Purdue University Graduate School. Candidates to the certificate program are expected to have earned a bachelor's degree in an engineering discipline.

APPLICATION
DEADLINES

	International	U.S. Citizen		International	U.S. Citizen
FALL	MAY 1	JUL 15	SPRING	NOV 1	DEC 1

STEPS TO APPLY

Application:
To begin your application create an account through the portal at **pfw.edu/grad-apply**. Applicants can make and save changes before submitting by logging in with the username and password used to create the account.

Application Fee:
The Graduate School application fee is $60 (U.S. dollars) for domestic applicants and $75 (U.S. dollars) for international applicants. Your application will not be processed until your nonrefundable application fee has been paid.

Transcripts:
Through the application portal, you must upload transcript(s) and/or academic document(s) for every institution of higher education you attended regardless of whether or not a degree was received. If a degree was received then it must be printed on the transcripts. If no degree conferral is printed on the transcripts then a copy of the original diploma (degree certificate) is needed. If the documents are not in English, you must upload an English translation certified by the college or university that issued it. For those who have completed degrees in the People's Republic of China, you will also be required to submit the Graduation Certificate.

Statement of Purpose (Essay):
The Academic Statement of Purpose is typically a 500-word statement that outlines:

- Your academic and professional background, detailing how your experiences have prepared you for graduate study in this field.
- Your career goals and how a graduate degree from Purdue Fort Wayne will help you achieve them.

Focus on demonstrating how you fit with the program by discussing faculty members you want to work with, the program's qualities, or specific research or career opportunities.

Personal History Statement:
Approximately 500 words, highlights your unique experiences, challenges, and achievements that have shaped who you are today. This is your chance to share:

- Your personal background, such as your upbringing, or life events that influenced your perspective.
- Why you're a good fit for Purdue Fort Wayne's program beyond academics, emphasizing personal qualities like resilience, leadership, or community engagement.

This statement is your opportunity to stand out and present a compelling narrative about your journey and why you want to earn your graduate degree at Purdue Fort Wayne.

Recommendations:
Submit names of at least two individuals who are qualified to evaluate your academic or on-the-job performance who can attest to your ability to pursue a graduate degree. In the online application to the Purdue Graduate School, once you click "Send to Recommender," each individual will receive an email with instructions for submitting their recommendation online.
Once submitted, the graduate program to which you applied will have access to view your recommendation(s).

INTERNATIONAL APPLICANTS

All international applicants must also submit the following items to be considered for admission:

English Proficiency Scores:

(For exams taken before January 21, 2026)

TOEFL iBT
Overall Score: 80 with the following minimum section requirements:
- Reading: 19
- Listening: 14
- Speaking: 18
- Writing: 18

TOEFL Essentials
Overall Score: 8 with the following minimum section requirements:
- Reading: 8
- Listening: 8
- Speaking: 8
- Writing: 8

(For exams taken after January 21, 2026)

TOEFL iBT
Overall Score: 4.0 with the following minimum section requirements:
- Reading: 4.0
- Listening: 3.5
- Speaking: 3.5
- Writing: 4.0

TOEFL Essentials
Overall Score: 8 with the following minimum section requirements:
- Reading: 8
- Listening: 8
- Speaking: 8
- Writing: 8

IELTS
Overall Score: 6.5 with the following minimum section requirements:
- Reading: 6.5
- Listening: 6.0
- Speaking: 6.0
- Writing: 5.5

Duolingo English Test
Overall Score: 115 with the following minimum section requirements:
- Literacy: 115
- Comprehension: 115
- Conversation: 115
- Production: 115

ELS- Certificate
Level 112

Waiver of English Proficiency Scores

Routine waivers of an English Proficiency exam are granted for applicants that meet an alternate criterion:

- Earned a Baccalaureate, graduate, or professional degree within the last 36 months prior to the time of recommendation for admission - from a school where English is the primary language of instruction, in a country where English is the native language.
- Citizen of official English-speaking country

Note: Some graduate programs may still require a test of English proficiency, please confirm the acceptance of the waiver with your department.

OFFICIAL TRANSCRIPTS

You must provide official transcripts and/or academic records at the request of the graduate program or if you are admitted and choose to enroll. An official transcript bears the original signature of the registrar and/or the original seal of the issuing institution.

An unofficial transcript printed from your current/previous institution(s) student system is not an acceptable document. Official documents should be submitted to:

Purdue University Fort Wayne
Office of Graduate Studies
Doermer School of Business Room 304
2101 E. Coliseum Blvd.
Fort Wayne, IN 46805-1499, USA
graduate@pfw.edu

Domestic transcripts must be sent directly from a Registrar's office to the Office of Graduate Admissions via mail or email.
If you mail them yourself, it must be in an envelope sealed by the registrar.

PURDUE UNIVERSITY®
FORT WAYNE

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