

Industrial and Systems Engineering BSISE

Overview

The **Bachelor of Science in Industrial and Systems Engineering** is offered by the Department of Engineering, Technology and Management. This program prepares students to become leaders in quality and productivity management. This 128-credit undergraduate program is a blend of engineering and business, preparing students to design, develop, implement and improve the integrated systems that help a wide variety of companies save money and increase operating efficiency.

Industrial and systems engineering applies to more than manufacturing—the work of industrial and systems engineers encompasses nearly every industry and sector. The versatile, interdisciplinary curriculum positions students to graduate with the tools and skills that meet a growing demand for industrial and systems engineers. Compared to other engineering disciplines, Industrial and Systems Engineering students take courses in business and across engineering fields of study, making learning versatile for many types of applications for companies as they continuously seek to increase productivity and efficiency and improve quality. Students will gain the knowledge base to provide these companies with innovative and creative solutions. The curriculum will prepare graduates to design, develop, implement, and improve integrated systems that include people, materials, information and equipment. The curriculum includes in-depth instruction to accomplish the integration of systems using appropriate analytical, computational, and experimental practices.

Campus Location: Main

Program Code: EN-ISE-BSIS

Contact Information

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Learn more about the Bachelor of Science in Industrial and Systems Engineering.

These requirements are for students who matriculated in academic year 2023-2024. Students who matriculated prior to fall 2023 should refer to the Archives to view the requirements for their Bulletin year.

Summary of Requirements

University Requirements

All new students are required to complete the university's General Education (GenEd) curriculum.

All Temple students must take a minimum of two writing-intensive courses for a total of at least six credits. The writing-intensive course credits are counted as part of the major; they are not General Education (GenEd) or elective credits. The writing-intensive courses must be completed at Temple University and students may not transfer in credits to satisfy this requirement. The specific writing-intensive courses required for this major are:

Code	Title	Credit Hours
ENGR 2196 or ENGR 2996	Technical Communication Honors Technical Communication	3
ENGR 4296 or ENGR 4996	Capstone Senior Design Project Honors Capstone Senior Design Project	3

Department Requirements

Code	Title	Credit Hours
Required Math & Basic Science Courses		
MATH 1041 or MATH 1941	Calculus I Honors Calculus I	4

MATH 1042	Calculus II	4
or MATH 1942	Honors Calculus II	
MATH 2041	Differential Equations I	3
or MATH 2941	Honors Differential Equations I	
MATH 2043	Calculus III	4
or MATH 2943	Honors Calculus III	
CEE 3048	Probability, Statistics & Stochastic Methods	3
Select one of the following:		3
ENGR 2011	Engineering Analysis & Applications	
MATH 2101	Linear Algebra	
PHYS 1061	Elementary Classical Physics I	4
or PHYS 1961	Honors Elementary Classical Physics I	
PHYS 1062	Elementary Classical Physics II	4
or PHYS 1962	Honors Elementary Classical Physics II	
CHEM 1035	Chemistry for Engineers	3
CHEM 1033	General Chemistry Laboratory I	1
or CHEM 1953	Honors Chemical Science Laboratory I	
Required General Education Courses		
Select one of the following:		4
ENG 0802	Analytical Reading and Writing	
ENG 0812	Analytical Reading and Writing: ESL	
ENG 0902	Honors Writing About Literature	
IH 0851	Intellectual Heritage I: The Good Life	3
or IH 0951	Honors Intellectual Heritage I: The Good Life	
IH 0852	Intellectual Heritage II: The Common Good	3
or IH 0952	Honors Intellectual Heritage II: The Common Good	
GenEd 08xx or 09xx (Human Behavior)		3
GenEd 08xx or 09xx (Race and Diversity)		3
GenEd 08xx or 09xx (Global/World Society)		3
GenEd 08xx or 09xx (U.S. Society)		3
GenEd 08xx or 09xx (Arts)		3
Required Industrial and Systems Engineering Courses		
ISE 2101	Applied Statistical Methods for Industrial and System Engineers	3
ISE 2102	Production Process Design and Laboratory	4
ISE 2103	Deterministic Models in Operations Research	3
ISE 3101	Product Quality Assurance	3
ISE 3102	Stochastic Models in Operations Research	3
ISE 3103	Systems Thinking and Modeling	3
ISE 4102	Industrial Simulation	3
ISE 4104	Production Planning and Control	3
ISE 4105	Facility Planning	3
ISE 4107	Systems Engineering Fundamentals	3
Required Engineering Courses		
ENGR 1101	Introduction to Engineering & Engineering Technology	3
or ENGR 1901	Honors Introduction to Engineering	
ENGR 1102	Introduction to Engineering Problem Solving	3
ENGR 1117	Engineering Graphics	2
ENGR 2196	Technical Communication	3
or ENGR 2996	Honors Technical Communication	
ENGR 3001	Engineering Economics	3
ISE 4176	Industrial and Systems Engineering Senior Design Project I	3
ENGR 4296	Capstone Senior Design Project	3

or ENGR 4996	Honors Capstone Senior Design Project	
Select one of the following:		4
CIS 1051	Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
ECE 1111	Engineering Computation I	
Industrial & Systems Technical Electives		6
Select two of the following:		
CEE 3711	Environmental Engineering	
CEE 4201	Transportation Systems Management	
CEE 4221	Intelligent Transportation Systems	
ECE 3822	Engineering Computation II	
ENGR 2181	Co-Op Work Experience I	
ENGR 3181	Co-Op Work Experience II	
ENGR 3033	Entrepreneurial Engineering	
ISE 4101	Human Factors (Ergonomics)	
ISE 4103	Engineering Cost Analysis	
ISE 4106	Service Systems Engineering	
Required Business Courses		
ACCT 2501	Survey of Accounting	3
MSOM 3101	Operations Management	3
SCM 3515	Principles of Supply Chain Management	3
Total Credit Hours		128

Suggested Academic Plan

Please note that this is a **suggested** academic plan. Depending on your situation, your academic plan may look different.

Bachelor of Science in Industrial and Systems Engineering

Suggested Plan for New Students Starting in the 2023-2024 Academic Year

Year 1		
Fall		Credit Hours
ENGR 1101 or ENGR 1901	Introduction to Engineering & Engineering Technology or Honors Introduction to Engineering	3
ENGR 1117	Engineering Graphics	2
MATH 1041 or MATH 1941	Calculus I or Honors Calculus I	4
PHYS 1061 or PHYS 1961	Elementary Classical Physics I or Honors Elementary Classical Physics I	4
ENG 0802 or ENG 0812 or ENG 0902	Analytical Reading and Writing or Analytical Reading and Writing: ESL or Honors Writing About Literature	4
Credit Hours		17
Spring		
PHYS 1062 or PHYS 1962	Elementary Classical Physics II or Honors Elementary Classical Physics II	4
CHEM 1035	Chemistry for Engineers	3
CHEM 1033 or CHEM 1953	General Chemistry Laboratory I or Honors Chemical Science Laboratory I	1
MATH 1042 or MATH 1942	Calculus II or Honors Calculus II	4
ENGR 1102	Introduction to Engineering Problem Solving	3
Credit Hours		15

Year 2		
Fall		
MATH 2043 or MATH 2943	Calculus III or Honors Calculus III	4
IH 0851 or IH 0951	Intellectual Heritage I: The Good Life or Honors Intellectual Heritage I: The Good Life	3
ACCT 2501	Survey of Accounting	3
ISE 2101	Applied Statistical Methods for Industrial and System Engineers	3
ISE 2102	Production Process Design and Laboratory	4
Credit Hours		17
Spring		
MATH 2041 or MATH 2941	Differential Equations I or Honors Differential Equations I	3
IH 0852 or IH 0952	Intellectual Heritage II: The Common Good or Honors Intellectual Heritage II: The Common Good	3
MSOM 3101	Operations Management	3
ISE 2103	Deterministic Models in Operations Research	3
Select one of the following:		3
ENGR 2011	Engineering Analysis & Applications	
MATH 2101	Linear Algebra	
Credit Hours		15
Year 3		
Fall		
CEE 3048	Probability, Statistics & Stochastic Methods	3
ENGR 2196 or ENGR 2996	Technical Communication or Honors Technical Communication	3
ENGR 3001	Engineering Economics	3
SCM 3515	Principles of Supply Chain Management	3
ISE 3103	Systems Thinking and Modeling	3
GenEd Breadth Course		3
Credit Hours		18
Spring		
ISE 3101	Product Quality Assurance	3
ISE 3102	Stochastic Models in Operations Research	3
ISE 4104	Production Planning and Control	3
Select one of the following:		4
CIS 1051	Introduction to Problem Solving and Programming in Python	
CIS 1057	Computer Programming in C	
ECE 1111	Engineering Computation I	
GenEd Breadth Course		3
Credit Hours		16
Year 4		
Fall		
ISE 4102	Industrial Simulation	3
ISE 4105	Facility Planning	3
ISE 4176	Industrial and Systems Engineering Senior Design Project I	3
Industrial & Systems Technical Elective #1		3
GenEd Breadth Course		3
Credit Hours		15
Spring		
ENGR 4296 or ENGR 4996	Capstone Senior Design Project or Honors Capstone Senior Design Project	3
ISE 4107	Systems Engineering Fundamentals	3

Industrial & Systems Technical Elective #2	3
GenEd Breadth Course	3
GenEd Breadth Course	3
Credit Hours	15
Total Credit Hours	128

Code	Title	Credit Hours
Approved Industrial & Systems Technical Electives		
CEE 3711	Environmental Engineering	3
CEE 4201	Transportation Systems Management	3
CEE 4221	Intelligent Transportation Systems	3
ECE 3822	Engineering Computation II	3
ENGR 2181	Co-Op Work Experience I	3
ENGR 3181	Co-Op Work Experience II	3
ENGR 3033	Entrepreneurial Engineering	3
ISE 4101	Human Factors (Ergonomics)	3
ISE 4103	Engineering Cost Analysis	3
ISE 4106	Service Systems Engineering	3