

INDUSTRIAL ENGINEERING (M)

Industrial Engineering is a discipline that involves efficient design and continuous improvement of critical processes and systems by integrating people and technology. Industrial engineers address challenges to make businesses more effective and productive. The need for industrial engineers is very clear in manufacturing and service industries- for example, in arenas such as quality control, system optimization, data driven design, organizational improvement, safety, and sustainability. With strong foundation in math and basic sciences, the curriculum includes engineering economics, science and strength of materials, quality/ design of experiments, manufacturing systems and processes, work design and human interaction, facilities design, production and operation analysis, project management, modeling and optimization, scholastic processing, and simulation, to prepare you for a versatile career to do the world a lot of good.

The Concordia University Wisconsin Bachelor's of Science in Industrial Engineering program will provide students with technical and creative problem-solving skills that meet professional expectations. The curriculum will be grounded in a Christian approach to making the workplace safer and more efficient.

The Industrial Engineering program consists of 131 credits, completed over eight semesters. Students will practice skills with hands-on experiential learning opportunities under the supervision of qualified and experienced faculty. Students will complete a capstone design project and are strongly encouraged to complete an internship. The total typical time to complete the program is four years. Concordia University will seek to have its B.S. Industrial Engineering program accredited by the Accreditation Board of Engineering and Technology; the application is due upon the graduation of the first cohort in Spring 2028.

Based on the University Mission and the Engineering programs mission, the Program Educational Objectives (PEO) of the Industrial Engineering program are to produce graduates who during their professional career will be:

PEO1: Productive Contributors with strong skills in teamwork and communication

PEO2: Creators of value in product or process or service at workplace with a commitment to professional growth

PEO3: Holistic and responsible professionals impacting society.

Program Learning Outcomes

Students will:

- identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- apply engineering design to produce solution that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- communicate effectively with a range of audiences.
- recognize ethical and professional responsibilities in engineering situation and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and social contexts.

- function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- acquire and apply new knowledge as needed, using appropriate learning strategies.

Curriculum

Code	Title	Hours
Core Requirements (https://catalog.cuw.edu/undergraduate/university/acad-prog/trad/core/)		45
Major Requirements (Basic Sciences and Mathematics 27 + Discipline 50)		77
Electives		9
Minor: Optional		
Total Hours		131

Major Requirements

Code	Title	Hours
Required Core Courses		
CHEM 1414	General Chemistry I	
MATH 2050	Statistics I	
Required Courses		
<i>Basic Sciences and Mathematics</i>		
MATH 2010	Calculus I	4
MATH 2020	Calculus II	4
MATH 2030	Calculus III	4
MATH 3250	Linear Algebra and Differential Equations	4
MATH 3050	Statistics II	3
PHYS 1714	University Physics I	4
PHYS 1724	University Physics II	4
<i>Discipline</i>		
ENGR 1010	Engineering Introduction, Design and Ethics	3
ENGR 1020	Engineering Applications and Programming	3
ENGR 2410	Engineering Economics	3
ENGR 2420	Materials- Science & Strength	4
ENGR 3410	Quality/Design of Experiments	3
ENGR 3420	Facilities Design	3
ENGR 3430	Manufacturing Systems & Processes	4
ENGR 3440	Production & Operation Analysis	4
ENGR 3450	Work Design & Human Interaction	3
ENGR 3460	Project Management	3
ENGR 3470	Modeling & Optimization	4
ENGR 3480	Stochastic Processing	3
ENGR 4480	Simulation	4
ENGR 4910	Engineering Capstone Project I	3
ENGR 4920	Engineering Capstone Project II	3
<i>Elective (Select 9 credits of the following)</i>		9
Technical Elective (Any ENGR/CSC/MGMT/BUS above 2000)		
Technical Elective (Any ENGR/CSC/MGMT/BUS above 2000)		
Engineering Elective (Any ENGR 3000/4000 course)		

ENGR 4991	Internship Experience	
Total Hours		86

COMM 4100	Cross-Cultural Communication	3
	Hours	15
	Total Hours	131

Plan

Course	Title	Hours
Semester 1		
CHEM 1414	General Chemistry I	4
MATH 2010	Calculus I	4
ENGR 1010	Engineering Introduction, Design and Ethics	3
ENG 1040	Introduction to Writing	3
CCE 1010	Christian Citizen	3
	Hours	17
Semester 2		
ENGR 1020	Engineering Applications and Programming	3
MATH 2020	Calculus II	4
MATH 2050	Statistics I	3
CCE 1030	Western Thought & Worldview	3
CCE 1040	Science & Humanity	3
	Hours	16
Semester 3		
PHYS 1714	University Physics I	4
MATH 3050	Statistics II	3
MATH 2030	Calculus III	4
ENGR 2410	Engineering Economics	3
CCE 1020	Western Culture & Worldview	3
	Hours	17
Semester 4		
MATH 3250	Linear Algebra and Differential Equations	4
PHYS 1724	University Physics II	4
REL 1100	Christian Faith	3
ENGR 2420	Materials- Science & Strength	4
HHP 1100	Stewardship of the Body	1
HHP ACTIVITY		1
	Hours	17
Semester 5		
ENGR 3410	Quality/Design of Experiments	3
ENGR 3430	Manufacturing Systems & Processes	4
ENGR 3450	Work Design & Human Interaction	3
ENGR 3470	Modeling & Optimization	4
COMM 3300	Technical Writing and Speaking	3
	Hours	17
Semester 6		
ENGR 3420	Facilities Design	3
ENGR 3440	Production & Operation Analysis	4
ENGR 3460	Project Management	3
ENGR 3480	Stochastic Processing	3
HUMAN CREATIVITY & EXPRESSION		3
	Hours	16
Semester 7		
ENGR 4910	Engineering Capstone Project I	3
ENGR 4480	Simulation	4
TECHNICAL ELECTIVE		3
HUMAN BEINGS & BEING HUMAN		3
REL 1000	The Bible	3
	Hours	16
Semester 8		
ENGR 4920	Engineering Capstone Project II	3
ENGINEERING ELECTIVE		3
TECHNICAL ELECTIVE		3
FAITH & LIFE		3

Course options and schedule are subject to change.