

# BACHELOR OF SCIENCE IN ENGINEERING MANAGEMENT

The engineering management program at Illinois Institute of Technology is founded on the tradition of discipline and innovation established by the Armour College of Engineering.

The program offers an opportunity for students to obtain skills and competencies that are highly relevant and driven by the accelerating development of new technologies in the emerging global economy at the intersection of engineering invention and business administration.

The program's objective is to prepare students to become leaders in the corporate world shaped by innovations in engineering. Students learn fundamentals of science, engineering management, and business administration by concentrating on the development of critical thinking skills directed toward practical problem solving and informed decision making.

Students completing this program are uniquely positioned to make decisions concerning product process development in ways that combine technical, financial, marketing, human resources, and strategic considerations. Students are prepared to perform economic analyses for new products, evaluate technologies, and assess business processes. Students completing this program will be able to prepare business plans that include financial details, marketing strategies, and design decisions based on target costs and forecasted rate of return on investment capital.

Students have several possibilities to specialize in engineering disciplines. Specializations include: civil engineering, architectural engineering, materials science and engineering, and mechanical engineering, among others.

The program also includes a business curriculum that focuses on developing organization and management, critical thinking, and entrepreneurship skills.

## Required Courses

Code	Title	Credit Hours
<b>Mathematics/Computer Science Requirements</b>		<b>(20)</b>
MATH 151	Calculus I	5
MATH 152	Calculus II	5
MATH 251	Multivariate and Vector Calculus	4
MATH 252	Introduction to Differential Equations	4
CS 104 or CS 105	Introduction to Computer Programming for Engineers Introduction to Computer Programming	2
<b>Physics Requirements</b>		<b>(8)</b>
PHYS 123	General Physics I: Mechanics	4
PHYS 221	General Physics II: Electricity and Magnetism	4
<b>Chemistry Requirement</b>		<b>(3-4)</b>
Select three to four credit hours		3-4
<b>Introduction to the Profession</b>		<b>(2)</b>
Select an Introduction to the Profession course		2
<b>Core Engineering Specialization</b>		<b>(28)</b>
Select a minimum of 28 credit hours <sup>1</sup>		28
<b>Core Entrepreneurship Requirements</b>		<b>(24)</b>
BUS 211	Financial Accounting	3
BUS 212	Managerial Accounting	3
BUS 301	Organizational Behavior	3
BUS 371	Marketing Fundamentals	3
Select a minimum of four courses from the following:		12
BUS 305	Operation and Supply Chain Design	3
BUS 361	Entrepreneurship	3
CAE 312	Engineering Systems Analysis (for non-CAEE specializations)	3
COM 421	Technical Communication	3
COM 428	Verbal and Visual Communication	3
ECON 423	Economics of Capital Investments	3
EMGT 363	Creativity, Inventions, and Entrepreneurship for Engineers and Scientists	3

EMGT 406	Entrepreneurship and Intellectual Property Management	3
EMGT 470	Project Management	3
INTM 404	Marketing, Sales, and Product Introduction	3
INTM 477	Entrepreneurship in Industry	3
MMAE 232	Design for Innovation (for non-MMAE specializations)	3
<b>Core Engineering or Entrepreneurship Technical Electives</b>		<b>(9)</b>
Select nine credit hours		9
<b>Interprofessional Projects (IPRO)</b>		<b>(6)</b>
See Illinois Tech Core Curriculum, section E		6
<b>Humanities and Social Sciences Requirements</b>		<b>(21)</b>
See Illinois Tech Core Curriculum, sections B and C		21
ECON 211	Introduction to Economics (recommended)	3
<b>Free Electives</b>		<b>(6)</b>
Select six credit hours		6
<b>Total Credit Hours</b>		<b>127-128</b>

<sup>1</sup> Individual department requirements may vary.

## Engineering Management Specializations

Specializations include those listed below. See [engineering.iit.edu/caee](http://engineering.iit.edu/caee) for additional engineering specializations.

### Aerospace Engineering

Code	Title	Credit Hours
MMAE 200		3
MMAE 202	Mechanics of Solids	3
MMAE 304	Mechanics of Aerostructures	3
MMAE 311	Compressible Flow	3
MMAE 312	Aerodynamics of Aerospace Vehicles	3
MMAE 313	Fluid Mechanics	3
MMAE 315	Aerospace Laboratory I	4
MMAE 320	Thermodynamics	3
MS 201	Materials Science	3

### Architectural Engineering

Code	Title	Credit Hours
CAE 100	Introduction to Engineering Drawing and Design	2
CAE 101	Introduction to AutoCAD Drawing and Design	2
CAE 208	Thermodynamics	3
CAE 209	Fluid Mechanics and Heat Transfer	3
CAE 286	Theory and Concept of Structural Mechanics	3
CAE 287	Mechanics of Structural Materials	3
CAE 312	Engineering Systems Analysis	3
CAE 331	Building Science	3
CAE 383	Electrical and Electronic Circuits	3
or CAE 464	HVAC Systems Design	
CAE 461	Plumbing and Fire Protection Design	3

**Biomedical Engineering: Cell and Tissue Track**

Code	Title	Credit Hours
BIOL 115	Human Biology	3
BIOL 117	Human Biology Laboratory	1
BME 301	Bio-Fluid Mechanics	3
BME 309	Biomedical Imaging	3
BME 310	Biomaterials	3
BME 315	Instrumentation and Measurement Laboratory	1
BME 330	Analysis of Biosignals and Systems	3
CAE 383 or ECE 211	Electrical and Electronic Circuits Circuit Analysis I	3
CHE 202	Material Energy Balances	3
CHEM 125	Principles of Chemistry II with Laboratory	4
MMAE 200		3

**Biomedical Engineering: Medical Imaging Track**

Code	Title	Credit Hours
BIOL 115	Human Biology	3
BIOL 117	Human Biology Laboratory	1
BME 309	Biomedical Imaging	3
BME 310	Biomaterials	3
BME 315	Instrumentation and Measurement Laboratory	1
BME 330	Analysis of Biosignals and Systems	3
CHEM 125	Principles of Chemistry II with Laboratory	4
CS 201	Accelerated Introduction to Computer Science	4
ECE 211	Circuit Analysis I	3
PHYS 224 or CHEM 237	General Physics III for Engineers Organic Chemistry I	3-4

**Biomedical Engineering: Neural Engineering Track**

Code	Title	Credit Hours
BIOL 115	Human Biology	3
BIOL 117	Human Biology Laboratory	1
BME 309	Biomedical Imaging	3
BME 315	Instrumentation and Measurement Laboratory	1
BME 330	Analysis of Biosignals and Systems	3
CHEM 125	Principles of Chemistry II with Laboratory	4
CHEM 237	Organic Chemistry I	4
ECE 211	Circuit Analysis I	3
ECE 216	Circuit Analysis II	3
ECE 218	Digital Systems	4

**Chemical Engineering**

Code	Title	Credit Hours
CHE 101	Introduction to the Profession II	2
CHE 202	Material Energy Balances	3
CHE 301	Fluid Mechanics	3
CHE 302	Heat and Mass Transfer Operations	3
CHE 351	Thermodynamics I	3
CHE 451	Thermodynamics II	3
CHEM 125	Principles of Chemistry II with Laboratory	4
CHEM 237	Organic Chemistry I	4

CHEM 239	Organic Chemistry II	3
CHEM 343	Physical Chemistry I	3

### Civil Engineering

Code	Title	Credit Hours
CAE 100	Introduction to Engineering Drawing and Design	2
CAE 101	Introduction to AutoCAD Drawing and Design	2
CAE 286	Theory and Concept of Structural Mechanics	3
CAE 287	Mechanics of Structural Materials	3
CAE 302	Fluid Mechanics	3
CAE 303	Steel Structures I	3
or CAE 304	Structural Analysis I	
CAE 312	Engineering Systems Analysis	3
CAE 315	Materials of Construction	3
CAE 323	Introduction to Geotechnical Engineering	3
MMAE 305	Dynamics	3

### Computer Engineering

Code	Title	Credit Hours
CS 116	Object-Oriented Programming II	2
CS 331	Data Structures and Algorithms	3
ECE 211	Circuit Analysis I	3
ECE 213	Circuit Analysis II	4
ECE 218	Digital Systems	4
ECE 242	Digital Computers and Computing	3
ECE 307	Electrodynamics	4
ECE 308	Signals and Systems	3
ECE 311	Engineering Electronics	4

### Computer Science

Code	Title	Credit Hours
CS 116	Object-Oriented Programming II	2
CS 330	Discrete Structures	3
or MATH 230	Introduction to Discrete Math	
CS 331	Data Structures and Algorithms	3
CS 350	Computer Organization and Assembly Language Programming	3
CS 351	Systems Programming	3
CS 425	Database Organization	3
CS 430	Introduction to Algorithms	3
CS 440	Programming Languages and Translators	3
MATH 332	Elementary Linear Algebra	3
or MATH 333	Matrix Algebra and Complex Variables	
MATH 474	Probability and Statistics	3
or MATH 475	Probability	

## Electrical Engineering

Code	Title	Credit Hours
CS 116	Object-Oriented Programming II	2
ECE 211	Circuit Analysis I	3
ECE 213	Circuit Analysis II	4
ECE 218	Digital Systems	4
ECE 307	Electrodynamics	4
ECE 308	Signals and Systems	3
ECE 311	Engineering Electronics	4
MATH 333	Matrix Algebra and Complex Variables	3
MATH 374	Probability and Statistics for Electrical and Computer Engineers	3

## Materials Science and Engineering

Code	Title	Credit Hours
MMAE 200		3
MMAE 202	Mechanics of Solids	3
MMAE 232	Design for Innovation	3
MMAE 320	Thermodynamics	3
MMAE 365	Structure and Properties of Materials I	3
MMAE 370	Materials Laboratory I	3
MMAE 463	Structure and Properties of Materials II	3
MS 201	Materials Science	3
Select two courses from the following:		6
MMAE 372	Aerospace Materials Lab	3
MMAE 470	Introduction to Polymer Science	3
MMAE 476	Materials Laboratory II	3
MMAE 485	Manufacturing Processes	3

## Mechanical Engineering

Code	Title	Credit Hours
MMAE 200		3
MMAE 202	Mechanics of Solids	3
MMAE 232	Design for Innovation	3
MMAE 313	Fluid Mechanics	3
MMAE 315 or MMAE 319	Aerospace Laboratory I Mechanical Laboratory I	4
MMAE 320	Thermodynamics	3
MS 201	Materials Science	3
Two MMAE electives		6