

# INDUSTRIAL AND SYSTEMS/ MANUFACTURING ENGINEERING

Students with an interest in both areas can pursue a dual BSE program in Industrial Systems and Manufacturing Engineering and thus can earn two BSE degrees at the same time:

- BSE degree in Industrial and Systems Engineering
- BSE degree in Manufacturing Engineering

The dual degree program requires specified coursework that equals a minimum of 143 total credits.

## Dearborn Discovery Core

Please see the Dearborn Discovery Core (General Education) (<https://umdearborn.edu/dearborn-discovery-core/>) webpage or additional information.

## Foundational Studies

Writing and Communication (GEWO) – 6 Credits

Upper-Level Writing Intensive (GEWI) – 3 Credits

Quantitative Thinking and Problem Solving (GEQT) – 3 Credits

Critical and Creative Thinking (GECC) – 3 Credits

## Areas of Inquiry

Natural Science (GENS) – 7 Credits

- Lecture/Lab Science Course
- Additional Science Course

Social and Behavioral Analysis (GESB) – 9 Credits

Humanities and the Arts (GEHA) – 6 Credits

Intersections (GEIN) – 6 Credits

## Capstone

Capstone (GECE) – 3 Credits

## Major Requirements

A candidate for the dual Bachelor of Science in Engineering (B.S.E. in Industrial and Systems Engineering and B.S.E. in Manufacturing Engineering) is required to pursue scholastic quality and to complete satisfactorily the following program of study:

### Prerequisite Courses

Code	Title	Credit Hours
COMP 270	Tech Writing for Engineers (Also fulfills 3 credits of DDC Written and Oral Communication)	3
ECON 201 or ECON 202	Prin: Macroeconomics (Also fulfills 3 credits of DDC Social and Behavioral Analysis) Prin: Microeconomics	3
MATH 115	Calculus I	4

MATH 116	Calculus II	4
MATH 215	Calculus III	4
MATH 228	Diff Eqns with Linear Algebra	4
CHEM 134	General Chemistry IA	4
CHEM 136 or BIOL 140	General Chemistry IIA Intro Molec & Cellular Biology	4
PHYS 150	General Physics I	4
PHYS 151	General Physics II	4
ENGR 100	Introduction to Engineering and Engineering Design	3
ENGR 126	Engineering Computer Graphics	2
ME 230	Thermodynamics	4
IMSE 255	Computer Programming for Eng	3
ENGR 250	Principles of Eng Materials	3
ME 260 or ME 265	Design Stress Analyses Applied Mechanics	4
ECE 305	Intro to Electrical Eng	4

### Dual Major in IEMG Courses

Code	Title	Credit Hours
<b>Major Core Courses:</b>		
IMSE 3005	Intro to Operations Research	4
IMSE 317	Eng Probability and Statistics	3
IMSE 382	Manufacturing Processes	4
IMSE 421	Eng Economy and Dec Anlys	3
IMSE 440	Applied stat models in engin	3
IMSE 4555	Systems Engineering: Processes, Methods and Practice	4
IMSE 4425	Human Factors and Ergonomics	4
IMSE 4585	Simulation in Systems Design	4
IMSE 4675	Six Sigma & Stat Proc Improv	4
IMSE 4745	Facilities Design	4
IMSE 4795	Prod, Inven Control & Lean Mfg	4
IMSE 4825 or ME 442	Industrial Controls Control Systems Analysis and Design	4
IMSE 4835	Comp.-Aided Prcs Design & Mfg	4
IMSE 4951	Design Project I	2
IMSE 4952	Design Project II	2

Choose one course from:

IMSE 381	Industrial Robots	4
IMSE 488	Metal Forming Processes	3
ENGR 350	Nanoscience and Nanotechnology	4
ME 460	Design for Manufacturing	3
ME 4191	Structural Mech & Design	4

### Technical & Professional Electives

Select minimum 7 credits from the following:

ACC 298	Financial Accounting
ACC 299	Managerial Accounting
CIS 421	Database Mgmt Systems
ENGR 360	Design Thinking : Process, Method & Practice
ENGR 400	Appl Business Tech for Engr
ENGR 399	Experiential Honors Prof. Prac

ENGR 492	Exper Honors Directed Research
ENGR 493	Exper Hnrs Dir Dsgn
ENT 400	Entrepreneurial Thinking&Behav
IMSE 351	Data Struc & Algorithm Anlysis
IMSE 477	Human Computer Interaction for UI & UX Design
IMSE 486	Design for Assembly & Mfg
OB 354	Behavior in Organizations
OB 401	Management Skills Development
OB 402	Organizational Change & Devlp
LE 452	The Legal Environment of Bus
MKT 352	Mktg Principles and Policies

**General Electives**

General Electives - as needed to reach at least 143 credits.