

# Industrial Engineering and Management

## Department Information

- **Department Web Site:**  
[www.ndsu.edu/ime/](http://www.ndsu.edu/ime/) (<http://www.ndsu.edu/ime/>)
- **Credential Offered:**  
B.S.I.E.Mgt.; Minor
- **Sample Program Guide:**  
[catalog.ndsu.edu/programs-study/undergraduate/industrial-engineering-management/#planofstudytext](http://catalog.ndsu.edu/programs-study/undergraduate/industrial-engineering-management/#planofstudytext) (<http://catalog.ndsu.edu/programs-study/undergraduate/industrial-engineering-management/#planofstudytext>)

## Major Requirements

### Major: Industrial Engineering & Management

**Degree Type:** B.S.I.E.Mgt.

**Minimum Degree Credits to Graduate:** 130

### University Degree Requirements

1. Satisfactory completion of all requirements of the curriculum in which one is enrolled.
2. Earn a minimum total of 120 credits in approved coursework. Some academic programs exceed this minimum.
3. Satisfactory completion of the general education requirements as specified by the university.
4. A minimum institutional GPA of 2.00 based on work taken at NDSU.
5. At least 30 credits must be NDSU resident credits. Resident credits include credits registered and paid for at NDSU.
6. At least 36 credits presented for graduation must be in courses numbered 300 or higher.
7. Students presenting transfer credit must meet the NDSU residence credits and the minimum upper level credit. Of the 30 credits earned in residence, a minimum of 15 semester credits must be in courses numbered 300 or above, and 15 semester credits must be in the student's curricula for their declared major.

For complete information, please refer to the Degree and Graduation Requirements (<http://catalog.ndsu.edu/past-bulletin-archive/2024-25/academic-policies/undergraduate-policies/degree-and-graduation/>) section of this Bulletin.

### University General Education Requirements

A list of university approved general education courses and administrative policies are available here (<http://catalog.ndsu.edu/past-bulletin-archive/2024-25/academic-policies/undergraduate-policies/general-education/#genedcoursestext>).

| Code                                                           | Title                           | Credits   |
|----------------------------------------------------------------|---------------------------------|-----------|
| <b>Category C: Communication</b>                               |                                 | <b>12</b> |
| ENGL 110                                                       | College Composition I           |           |
| ENGL 120                                                       | College Composition II          |           |
| COMM 110                                                       | Fundamentals of Public Speaking |           |
| Upper Division Writing <sup>†</sup>                            |                                 |           |
| <b>Category R: Quantitative Reasoning <sup>†</sup></b>         |                                 | <b>3</b>  |
| <b>Category S: Science and Technology <sup>†</sup></b>         |                                 | <b>10</b> |
| <b>Category A: Humanities and Fine Arts <sup>†</sup></b>       |                                 | <b>6</b>  |
| <b>Category B: Social and Behavioral Sciences <sup>†</sup></b> |                                 | <b>6</b>  |
| <b>Category W: Wellness <sup>†</sup></b>                       |                                 | <b>2</b>  |
| <b>Category D: Cultural Diversity <sup>*†</sup></b>            |                                 |           |
| <b>Category G: Global Perspectives <sup>*†</sup></b>           |                                 |           |
| <b>Total Credits</b>                                           |                                 | <b>39</b> |

\*

Courses for category D & G are satisfied by completing D & G designated courses in another general education category.

†

General education courses may be used to satisfy requirements for both general education and the major, minor, and program emphases, where applicable. Students should carefully review major requirements to determine if specific courses can also satisfy these general education categories.

## Major Requirements

| Code                                                                                    | Title                                                                                                    | Credits |
|-----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|---------|
| <b>Industrial Engineering &amp; Management Core Requirements</b>                        |                                                                                                          |         |
| IME 111                                                                                 | Introduction to Industrial and Manufacturing Engineering                                                 | 3       |
| IME 311                                                                                 | Work/Station Design and Measurement                                                                      | 3       |
| IME 330                                                                                 | Manufacturing Processes                                                                                  | 3       |
| IME 440                                                                                 | Engineering Economy                                                                                      | 3       |
| IME 450                                                                                 | Systems Engineering and Management                                                                       | 3       |
| IME 456                                                                                 | Program and Project Management                                                                           | 3       |
| IME 460                                                                                 | Evaluation of Engineering Data                                                                           | 3       |
| IME 461                                                                                 | Quality Assurance and Control                                                                            | 3       |
| IME 470                                                                                 | Operations Research I                                                                                    | 3       |
| IME 472                                                                                 | Simulation of Business and Industrial Systems                                                            | 3       |
| IME 480                                                                                 | Production and Inventory Control                                                                         | 3       |
| IME 482                                                                                 | Automated Manufacturing Systems                                                                          | 3       |
| IME 485                                                                                 | Industrial and Manufacturing Facility Design                                                             | 3       |
| IME 489                                                                                 | Industrial and Manufacturing Engineering Capstone                                                        | 3       |
| MATH 129                                                                                | Basic Linear Algebra                                                                                     | 3       |
| MATH 165                                                                                | Calculus I (May satisfy general education category R)                                                    | 4       |
| MATH 166                                                                                | Calculus II                                                                                              | 4       |
| MATH 259                                                                                | Multivariate Calculus                                                                                    | 3       |
| MATH 266                                                                                | Introduction to Differential Equations                                                                   | 3       |
| ME 212                                                                                  | Fundamentals of Visual Communication for Engineers                                                       | 3       |
| ME 221                                                                                  | Engineering Mechanics I                                                                                  | 3       |
| ME 222                                                                                  | Engineering Mechanics II                                                                                 | 3       |
| CHEM 121<br>& 121L                                                                      | General Chemistry I<br>and General Chemistry I Laboratory (May satisfy general education category S)     | 4       |
| CHEM 122                                                                                | General Chemistry II (May satisfy general education category S)                                          | 3       |
| ENGL 321                                                                                | Writing in the Technical Professions (May satisfy general education category C)                          | 3       |
| ENGR 327                                                                                | Ethics, Engineering, and Technology                                                                      | 3       |
| PHYS 252<br>& 252L                                                                      | University Physics II<br>and University Physics II Laboratory (May satisfy general education category S) | 5       |
| <b>Industrial Engineering and Management Electives</b>                                  |                                                                                                          |         |
| Computer Science Electives: Select one of the following:                                |                                                                                                          | 3       |
| CSCI 122                                                                                | Visual BASIC                                                                                             |         |
| CSCI 159                                                                                | Computer Science Problem Solving                                                                         |         |
| CSCI 160                                                                                | Computer Science I                                                                                       |         |
| CSCI 227                                                                                | Computing Fundamentals in Python I                                                                       |         |
| ECE 173                                                                                 | Introduction to Computing                                                                                |         |
| Programming Language: Any programming language course must be approved by your adviser. |                                                                                                          |         |
| Engineering Science Electives: Select 12 credits from the following:                    |                                                                                                          |         |
| CE 309                                                                                  | Fluid Mechanics                                                                                          | 3       |
| ME 223                                                                                  | Mechanics of Materials                                                                                   | 3       |
| ME 350                                                                                  | Thermodynamics and Heat Transfer                                                                         | 3       |
| Select one of the following:                                                            |                                                                                                          | 3-4     |
| EE 206                                                                                  | Circuit Analysis I                                                                                       |         |
| ECE 275                                                                                 | Digital Design                                                                                           |         |
| ECE 301                                                                                 | Electrical Engineering I                                                                                 |         |
| Technical Electives: Select 9 credits from the following:                               |                                                                                                          | 9       |

|                                                                             |                                                  |
|-----------------------------------------------------------------------------|--------------------------------------------------|
| IME 335                                                                     | Welding Technology                               |
| IME 380                                                                     | CAD/CAM for Manufacturing                        |
| IME 411                                                                     | Human Factors Engineering                        |
| IME 427                                                                     | Packaging for Electronics                        |
| IME 430                                                                     | Process Engineering                              |
| IME 431                                                                     | Production Engineering                           |
| IME 432                                                                     | Composite Materials Manufacturing                |
| IME 437                                                                     | Methods for Precision Manufacturing              |
| IME 433                                                                     | Additive Manufacturing                           |
| IME 435                                                                     | Plastics and Polymer Processing in Manufacturing |
| IME 451                                                                     | Logistics Engineering and Management             |
| IME 453                                                                     | Hospital Management Engineering                  |
| IME 462                                                                     | Total Quality In Industrial Management           |
| IME 463                                                                     | Reliability Engineering                          |
| IME 464                                                                     | Reliability Analysis                             |
| IME 465                                                                     | Introduction to Machine Learning                 |
| Only one of the following 5 courses may be counted as a technical elective. |                                                  |
| BUSN 340                                                                    | International Business                           |
| BUSN 431                                                                    | Business Law I-Contracts, Property and Torts     |
| MGMT 320                                                                    | Foundations of Management                        |
| MRKT 320                                                                    | Foundations of Marketing                         |
| MIS 320                                                                     | Management Information Systems                   |

**Total Credits****110-111**

## Degree Requirements and Notes

- Grades less than 'C' will not be accepted for required courses in CHEM, MATH, and PHYS.
- Students may request approval for other 300-400 level engineering or related courses to be approved as technical electives. To request approval, a student should submit a memo to the IME Department indicating the course of interest and why the course should be approved as a technical elective. This memo will be reviewed by the IME Department Chair for approval.
- 300-400 level BUSN courses require at least junior standing and a minimum 2.50 cumulative GPA.

## Accelerated subplan:

| Code                                  | Title                                                                                     | Credits |
|---------------------------------------|-------------------------------------------------------------------------------------------|---------|
| ACCT 200<br>& ACCT 201<br>or ACCT 102 | Elements of Accounting I<br>and Elements of Accounting II<br>Fundamentals of Accounting   | 3 or 6  |
| ECON 201<br>& ECON 202<br>or ECON 105 | Principles of Microeconomics<br>and Principles of Macroeconomics<br>Elements of Economics | 3 or 6  |
| FIN 320                               | Principles of Finance                                                                     | 3       |
| IME 640                               | Engineering Economy (in place of IME 440; cannot take as 4 credits)                       | 3       |
| IME 656                               | Program and Project Management (in place of IME 456)                                      | 3       |
| IME 670                               | Operations Research I (in place of IME 470)                                               | 3       |
| IME 672                               | Simulation of Business and Industrial Systems (in place of IME 472)                       | 3       |
| IME 680                               | Production and Inventory Control (in place of IME 480)                                    | 3       |
| MGMT 320                              | Foundations of Management (take as tech elective for IE&M major)                          | 3       |
| MRKT 320                              | Foundations of Marketing (take as tech elective for IE&M major)                           | 3       |
| STAT 330                              | Introductory Statistics (or IME 460)                                                      | 3       |

**Total Credits****33-39**

## Degree Requirements and notes

- To be eligible for the accelerated program, students must complete 60 credits and have a GPA of 3.0 or higher to apply to the graduate school.