

# Mechanical Engineering and Physics

## Department Information

- **Department Web Site:**  
[www.ndsu.edu/me/](http://www.ndsu.edu/me/) (<http://www.ndsu.edu/me/>)
- **Credential Offered:**  
B.S.M.E
- **Sample Program Guide:**  
[catalog.ndsu.edu/programs-study/undergraduate/mechanical-engineering-physics/](http://catalog.ndsu.edu/programs-study/undergraduate/mechanical-engineering-physics/) (<http://catalog.ndsu.edu/programs-study/undergraduate/mechanical-engineering-physics/>)

## Major Requirements

### Major: Mechanical Engineering & Physics

**Degree Type:** B.S.M.E.

**Minimum Degree Credits to Graduate:** 136

### 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

### Mechanical Engineering & Physics Major Requirements

| Code                 | Title                                                                 | Credits    |
|----------------------|-----------------------------------------------------------------------|------------|
| CHEM 121             | General Chemistry I                                                   | 3          |
| CHEM 122             | General Chemistry II                                                  | 3          |
| ECE 301              | Electrical Engineering I                                              | 3          |
| ECE 306              | Electrical Engineering Lab I                                          | 1          |
| ENGL 321             | Writing in the Technical Professions                                  | 3          |
| ENGR 327             | Ethics, Engineering, and Technology (Humanities and Fine Arts Gen Ed) | 3          |
| IME 330              | Manufacturing Processes                                               | 3          |
| MATH 129             | Basic Linear Algebra                                                  | 3          |
| MATH 165             | Calculus I                                                            | 4          |
| MATH 166             | Calculus II                                                           | 4          |
| MATH 265             | Calculus III                                                          | 4          |
| MATH 266             | Introduction to Differential Equations                                | 3          |
| ME 111               | Introduction to Mechanical Engineering <sup>2,3</sup>                 | 2          |
| ME 212               | Fundamentals of Visual Communication for Engineers                    | 3          |
| ME 213               | Modeling of Engineering Systems                                       | 3          |
| ME 221               | Engineering Mechanics I                                               | 3          |
| ME 222               | Engineering Mechanics II                                              | 3          |
| ME 223               | Mechanics of Materials                                                | 3          |
| ME 331               | Materials Science and Engineering                                     | 4          |
| ME 352               | Fluid Dynamics                                                        | 3          |
| ME 351               | Thermodynamics I                                                      | 3          |
| ME 361               | Product Design and Development                                        | 3          |
| ME 412               | Engineering Measurements                                              | 3          |
| ME 421               | Theory of Vibrations                                                  | 3          |
| ME 442               | Machine Design I                                                      | 3          |
| ME 443               | Machine Design II                                                     | 3          |
| ME 454               | Heat and Mass Transfer                                                | 3          |
| ME 457               | Thermal Systems Laboratory                                            | 3          |
| ME 461               | Design Project I                                                      | 3          |
| ME 462               | Design Project II                                                     | 3          |
| PHYS 171             | Introductory Projects in Physics                                      | 1          |
| PHYS 252             | University Physics II                                                 | 4          |
| PHYS 252L            | University Physics II Laboratory                                      | 1          |
| PHYS 350             | Modern Physics <sup>1</sup>                                           | 3          |
| PHYS 355             | Classical Mechanics <sup>1</sup>                                      | 3          |
| PHYS 361             | Electromagnetic Theory <sup>1</sup>                                   | 3          |
| PHYS 411             | Optics for Scientists & Engineers                                     | 3          |
| PHYS 411L            | Optics for Scientists and Engineers Lab                               | 1          |
| PHYS 485             | Quantum Mechanics I                                                   | 3          |
| PHYS Elective        |                                                                       | 3          |
| <b>Total Credits</b> |                                                                       | <b>116</b> |

1

Mechanical engineering technical electives

2

Students who transfer any 30 or more credits into the program are not required to take ME 111.

3

Students who have completed ABEN 110 or ENGR 111 are not required to take ME 111.

**Degree Notes:**

- No grade less than 'C' is accepted to fulfill any of the degree requirements.
- Admission to the dual major requires a minimum 2.70 GPA
- A 2.50 cumulative GPA is required for graduation.