MANUFACTURING AND DESIGN ENGINEERING DEGREE

Students must also complete the Undergraduate Registration Requirement (https://catalogs.northwestern.edu/undergraduate/requirements-policies/undergraduate-registration-requirement/) and the degree requirements of their home school.

Requirements (48 units)

Core Courses (27 units)

4 units of basic science:

- PHYSICS 135-2: General Physics
- & PHYSICS 135-3: General Physics
- & PHYSICS 136-2: General Physics Laboratory
- & PHYSICS 136-3: General Physics Laboratory
- CHEM 131-0: Fundamentals of Chemistry I
- & CHEM 141-0: Fundamentals of Chemistry Laboratory I
- or CHEM 151-0: General Chemistry I
- & CHEM 161-0: General Chemistry Laboratory I
- or CHEM 171-0: Advanced General Inorganic Chemistry
- & CHEM 181-0: Advanced General Inorganic Chemistry Laboratory

4 units of basic science:

- PHYSICS 125-2: General Physics for ISP
- & PHYSICS 140-3: Fundamentals of Physics

PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics.

PHYSICS 126-2: Physics Laboratory for ISP
- or PHYSICS 136-2: General Physics Laboratory

PHYSICS 126-3: Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.

3 project courses

- DSGN 388-1: MaDE Capstone Sequence I
- DSGN 388-2: MaDE Capstone Sequence II
- DSGN 388-3: MaDE Capstone Sequence III

1 Manufacturing Engineering Design course

- DSGN 386-0: Manufacturing Engineering Design

4 technical elective courses

- 2 engineering courses at the 200- or 300-level
- 2 engineering courses at the 300-level

Courses numbered 395 will need a petition

Students may only count up to two 399 course towards their tech electives

1 See general requirements (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext) for details.

2 PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics.

PHYSICS 126-2: Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3: Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.

3 IEMS 303-0: Statistics may be substituted if an additional math course, such as IEMS 302-0: Probability, is also taken.

Major Program (21 units)

Course

- CIEN_ENV 216-0: Mechanics of Materials I
- COMP_SCI 150-0: Fundamentals of Computer Programming 1.5
- or MECH_ENG 224-0: Scientific and Embedded Programming in Python
- DSGN 308-0: Human-Centered Product Design
- or MECH_ENG 315-0: Theory of Machines: Design of Elements
- IEMS 201-0: Introduction to Statistics
- IEMS 307-0: Quality Improvement by Experimental Design
- IEMS 310-0: Operations Research
- IEMS 382-0: Operations Engineering and Management
- MAT_SCI 201-0: Introduction to Materials Science and Engineering Principles
- MAT_SCI 318-0: Materials Selection
- MECH_ENG 240-0: Intro to Mechanical Design and Manufacturing
- MECH_ENG 233-0: Electronics Design
- MECH_ENG 340-1: Computer Integrated Manufacturing: Manufacturing Processes
- or DSGN 346-0: Manufacturing Methods for Product Design

3 project courses

- DSGN 388-1: MaDE Capstone Sequence I
- DSGN 388-2: MaDE Capstone Sequence II
- DSGN 388-3: MaDE Capstone Sequence III

1 Manufacturing Engineering Design course

- DSGN 386-0: Manufacturing Engineering Design

4 technical elective courses

- 2 engineering courses at the 200- or 300-level
- 2 engineering courses at the 300-level

Courses numbered 395 will need a petition

Students may only count up to two 399 course towards their tech electives

1 See general requirements (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext) for details.

2 PHYSICS 125-2 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics.

PHYSICS 126-2: Physics Laboratory for ISP or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3: Physics Laboratory for ISP or PHYSICS 136-3 General Physics Laboratory.

3 IEMS 303-0: Statistics may be substituted if an additional math course, such as IEMS 302-0: Probability, is also taken.