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)

Course | Title
--- | ---
4 mathematics courses | (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

4 units of basic science:

- PHYSICS 135-2 & PHYSICS 136-2 | General Physics and General Physics Laboratory
- CHEM 131-0 & CHEM 141-0 | General Chemistry 1 and General Chemistry Laboratory 1
- or CHEM 151-0 & CHEM 161-0 | Accelerated General Chemistry 1 and Accelerated General Chemistry Laboratory 1
- or CHEM 171-0 & CHEM 181-0 | Advanced General Inorganic Chemistry and Advanced General Inorganic Chemistry Laboratory

4 engineering analysis and computer proficiency courses | (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

3 design and communications courses | (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

7 social sciences/humanities courses | (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

5 unrestricted electives | (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)

Major Program (21 units)

Course | Title
--- | ---
13 core courses
- CIV_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
- 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
- MECH ENG 340-2 | Computer Integrated Manufacturing: CAD/CAM

or MECH ENG 340-3 | Computer Integrated Manufacturing: Automation

3 project courses

- DSGN 384-1 & DSGN 384-2 | Interdisciplinary Product Design Projects I and Interdisciplinary Product Design Projects II
- DSGN 386-0 | Manufacturing Engineering Design (must be taken in the final spring quarter before graduation)

5 technical elective courses

- 3 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 125-3 General Physics may be substituted for PHYSICS 140-3 Fundamentals of Physics for ISP or PHYSICS 135-3 General Physics. Associated labs are PHYSICS 126-2 Physics for ISP Laboratory or PHYSICS 136-2 General Physics Laboratory and PHYSICS 126-3 Physics for ISP Laboratory or PHYSICS 136-3 General Physics Laboratory.
3 IEMS 303-0 Statistics may be substituted if an additional math course, such as IEMS 202-0 Probability, is also taken.