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 mathematics courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 4 units of basic science:
  - PHYSICS 135-2 and PHYSICS 135-3: General Physics and General Physics Laboratory
  - PHYSICS 136-2 and PHYSICS 136-3: General Physics Laboratory
  - CHEM 131-0 and CHEM 141-0 or CHEM 151-0 and CHEM 161-0 or CHEM 171-0 and CHEM 181-0: Fundamentals of Chemistry I and General Chemistry Laboratory I or 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)

- 13 core courses
  - CIV_ENV 216-0: Mechanics of Materials I
  - COMP_SCI 150-0 or MECH_ENG 224-0: Fundamentals of Computer Programming 1.5 or Scientific and Embedded Programming in Python
  - DSGN 308-0 or MECH_ENG 315-0: Human-Centered Product Design or 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
  - DSGN 346-0: Manufacturing Methods for Product Design
- 3 project courses
  - DSGN 388-1: M ade Capstone Sequence I
  - DSGN 388-2: M ade Capstone Sequence II
  - DSGN 388-3: M ade 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 125-3 General Physics for ISP or PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are 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.