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.

### Course Requirements (48 units)

#### Core Courses (32 units)

- 4 mathematics courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 4 engineering analysis and computer proficiency courses (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext)
- 4 units of basic science:
  - PHYSICS 135-2 General Physics
  - & PHYSICS 135-3 and General Physics
  - & PHYSICS 136-2 and General Physics Laboratory
  - & PHYSICS 136-3 and General Physics Laboratory
  - or CHEM 131-0 General Chemistry 1
  - & CHEM 141-0 and General Chemistry Laboratory 1
  - or CHEM 151-0 Accelerated General Chemistry 1
  - & CHEM 161-0 and Accelerated General Chemistry Laboratory 1
  - or CHEM 171-0 Advanced General Inorganic Chemistry
  - & CHEM 181-0 and Advanced General Inorganic Chemistry Laboratory

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

- 5 basic engineering courses:
  - MECH_ENG 233-0 Electronics Design
  - CIV_ENV 216-0 Mechanics of Materials I
  - MAT_SCI 201-0 Introduction to Materials
  - CIV_ENV 205-0 Economics and Finance for Engineers

- 1 additional course from any McCormick basic engineering category except Probability, Statistics & Quality Control (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 (16 units)

- 9 core courses:
  - DSGN 308-0 Human-Centered Product Design
  - or MECH_ENG 315-0 Theory of Machines - Design of Elements
  - IEMS 201-0 Introduction to Statistics
  - or IEMS 307-0 Quality Improvement by Experimental Design
  - IEMS 310-0 Operations Research
  - IEMS 382-0 Production Planning and Scheduling
  - MAT_SCI 318-0 Materials Selection
  - MECH_ENG 240-0 Intro to Mechanical Design & Manufactrng
  - MECH_ENG 340-1 Comp Integ Manufacturing: Manufacturing Processes
  - MECH_ENG 340-2 Computer Integ Manufacturing: CAD/CAM
  - or MECH_ENG 340-3 Computer Integ Manuf: Automation

- 3 project courses:

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

2. PHYSICS 140-2 Fundamentals of Physics may be substituted for PHYSICS 135-2 General Physics. PHYSICS 140-3 Fundamentals of Physics may be substituted for PHYSICS 135-3 General Physics. Associated labs are PHYSICS 136-2 General Physics Laboratory and 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.