

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	Title
Requirements (48 units)	
<i>Core Courses (32 units)</i> ¹	
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: ²	
PHYSICS 135-2 & PHYSICS 135-3 & PHYSICS 136-2 & PHYSICS 136-3	General Physics and General Physics and General Physics Laboratory and General Physics Laboratory
CHEM 131-0 & CHEM 141-0 or CHEM 151-0 & CHEM 161-0 or CHEM 171-0 & CHEM 181-0	General Chemistry 1 and General Chemistry Laboratory 1 Accelerated General Chemistry 1 and Accelerated General Chemistry Laboratory 1 Advanced General Inorganic Chemistry 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)	
<i>Major Program (16 units)</i>	
9 core courses:	
DSGN 308-0 or MECH_ENG 315-0	Human-Centered Product Design Theory of Machines: Design of Elements
IEMS 201-0	Introduction to Statistics ³
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 and Manufactrng
MECH_ENG 340-1	Computer Integrated Manufacturing: Manufacturing Processes
MECH_ENG 340-2 or MECH_ENG 340-3	Computer Integrated Manufacturing: CAD/CAM Computer Integrated Manufacturing: Automation

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

4 technical electives:	
2 200-level or 300-level engineering courses.	
2 300-level engineering courses.	
Courses numbered 395 will need a petition.	
Students may only count up to two 399 course towards their tech electives.	

- See general requirements (<https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext>) for details.
- 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 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.
- IEMS 303-0 Statistics may be substituted if an additional math course, such as IEMS 202-0 Probability, is also taken.