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) [1]

Course	Title
4 mathematics 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	Fundamentals of Chemistry I and Fundamentals of Chemistry Laboratory I
or CHEM 151-0 & CHEM 161-0	General Chemistry I and General Chemistry Laboratory I
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 [3]
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 Manufactrng
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 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 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.