

# 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
<b>Requirements (48 units)</b>	
<i>Core Courses (32 units)</i> <sup>1</sup>	
4 mathematics courses ( <a href="https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext">https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext</a> )	
4 engineering analysis and computer proficiency courses ( <a href="https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext">https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext</a> )	
4 units of basic science:	
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 ( <a href="https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext">https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext</a> )	
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 ( <a href="https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext">https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext</a> )	
7 social sciences/humanities courses ( <a href="https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext">https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext</a> )	
5 unrestricted electives ( <a href="https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext">https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext</a> )	
<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 <sup>2</sup>
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 or MECH_ENG 340-3	Computer Integ Manufacturing: CAD/CAM Computer Integ Manuf: 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.

- <sup>1</sup> See general requirements (<https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext>) for details.
- <sup>2</sup> IEMS 303-0 Statistics may be substituted if an additional math course, such as IEMS 202-0 Probability, is also taken