BS in Industrial Engineering
Degree Requirements, AY 2023-2024

Full degree requirements available at catalogs.northwestern.edu

Done	Course	Course Name	Notes
Mathematics Requirement (4 credits)			
☐	Math 220-1	Single-variable Differential Calculus	
☐	Math 220-2	Single-variable Integral Calculus	
☐	Math 228-1	Multivariable Diff. Calc. for Eng.	
☐	Math 228-2	Multivariable Int. Calc. for Eng.	
Engineering Analysis and Computer Proficiency (4 credits)			
☐	Gen Eng 205-1	EA 1	
☐	Gen Eng 205-2	EA 2	
☐	Gen Eng 205-3	EA 3	
☐	ESAM 245	ESAM 245	
Basic Sciences (4 credits; see "Basic Science Details" tab)			
☐			Required Lab Course
☐			
☐			
☐			
Design and Communications (3 credits)			
☐	DSGN 106-1/Engl 106-1	DTC 1	
☐	DSGN 106-2/Engl 106-2	DTC 2	
☐	Communications Course	Choose one option	
☐			
Theme Courses (7 credits; see "Theme Details" tab)			
☐	Department		Soc. Science or Humanities
☐	Department		Soc. Science or Humanities
☐	Department		Soc. Science or Humanities
☐	Department		Soc. Science or Humanities
☐	Department		Soc. Science or Humanities
☐	Department		Soc. Science or Humanities
☐	Department		Soc. Science or Humanities
Unrestricted Electives (5 credits)			
☐			
☐			
☐			
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☐			

Done	Course	Course Name	Notes
IEMS Major Program: Engineering Econ (1 credit)			
☐	CIV_ENV 205	Engineering Econ	
IEMS Major Program: Computing (3 credits)			
☐	COMP_SCI 111	Fundamentals of Computer Programming I	Prerequisite for COMP_SCI 211
☐	COMP_SCI 150	Fundamentals of Computer Programming 1.5	
☐	COMP_SCI 217	Data Management	
IEMS Major Program: Methods Core + PL + Project (8 credits)			
☐	IEMS 302	Probability	
☐	IEMS 303	Statistics	
☐	IEMS 304	Statistical Learning	IE/OR Methods Core
☐	IEMS 313	Foundations of Optimization	
☐	IEMS 315	Stohastic Models	
☐	IEMS 317	Discrete-Event Systems Simulation	
☐	Prodn & Logistics	Choose one option	
☐	IEMS 394	IE Client Project Challenge	Junior spring or Senior fall
IEMS Major Program: IE/OR Electives (3 credits)			
☐	IE/OR Elective	Choose course option	May not count course used for Prodn & Logistics above
☐	IE/OR Elective	Choose course option	
☐	IE/OR Elective	Choose course option	
IEMS Major Program: MS Electives (2 credits)			
☐	Elective-MS	Choose course option	
☐	Elective-MS	Choose course option	
IEMS Major Program: General Technical Electives (4 credits)			
☐			Elective 1
☐			Elective 2
☐			Elective 3
☐			Elective 4
See "Approved GTEs" tab for details			

BASIC SCIENCE REQUIREMENT

Four units from at least two areas (2019-2021); catalog years 2022+ have NO area requirements
Catalog years 2022 or later must take at least ONE course with a credit-bearing lab
Lab courses may count only in combination with their corresponding lecture courses
Courses in red are only accepted in catalog years 2022 or later
Note that lab courses are each 0.34 credit
The following courses fulfill the basic sciences requirement

Physics

PHYSICS 125-2	General Physics for ISP
PHYSICS 135-2	General Physics
PHYSICS 135-3	General Physics
PHSYICS 140-2	Fundamentals of Physics (uses lab 136-2)
PHYSICS 239	Foundations of Modern Physics
PHYSICS 126-2	General Physics for ISP Laboratory
PHYSICS 136-2	General Physics Laboratory
PHYSICS 136-3	General Physics Laboratory

Chemistry

CHEM 131 or 151 or 171	General/Accelerated/Advanced Chemistry 1
CHEM 132 or 152 or 172	General/Accelerated/Advanced Chemistry 2
CHEM 210-1	Organic Chemistry
CHEM 210-2	Organic Chemistry
CHEM 141 or 161 or 181	General/Accelerated/Advanced Chemistry Laboratory 1
CHEM 142 or 162 or 182	General/Accelerated/Advanced Chemistry Laboratory 2

Biological Sciences

BIOL_SCI 201	Molecular Biology
BIOL_SCI 202	Cell Biology (requires BIOL_SCI 201)
BIOL_SCI 203	Genetics and Evolution (requires BIOL_SCI 202)
CHEM_ENG 275	Molecular & Cell Biology for Engineers
CIV_ENV 202	Biological & Ecological Principles
BIOL_SCI 150	**Human Genetics**
BIOL_SCI 232	Molecular & Cell Processes Lab (concurrent with 202)
BIOL_SCI 233	Genetics & Molecular Proc. Lab (concurrent with 203)
BIOL_SCI 234	Investigative Laboratory
COG_SCI 210	**Language & the Brain**

Neuroscience

CSD 202	**Neurobiology of Communication**
CSD 303 (also PSYCH 327)	**Brain and Cognition**
PSYCH 221	**Introduction to Neuroscience**

Earth Sciences and Astronomy

ASTRON 220	Introduction to Astrophysics
CIV_ENV 203	Earth in the Anthropocene
EARTH 201	Earth Systems Revealed
EARTH 202	Earth's Interior
EARTH 203	Earth System History
GEOG 235	**Atmosphere and Climate**

GENERAL TECHNICAL ELECTIVES

The following courses MAY NOT BE USED as technical electives

Chem 201	Chemistry of Nature and Culture	
Math 310-1	Probability and Stochastic Processes	
Math 311-1	MENU: Probability & Stochastic Processes	
Math 314	Probability and Statistics for Econometrics	
Math 385	Probability and Statistics for MMSS	
Math 386-1	Econometrics for MMSS	
Physics 311-1	Mathematical Tools for the Physical Sciences	
Physics 311-2	Mathematical Tools for the Physical Sciences	
Physics 335	Physics of Magic	
Stat 301-1,2,3	Data Science with R	**Catalog years 2021 or earlier**
Stat 303-1,2,3	Data Science with Python	**may use these courses**
Stat 320-1	Statistical Methods I	
Stat 383	Probability and Statistics for ISP	

The following courses MAY BE USED as technical electives
Any 200-level or higher course in McCormick,
   excluding CRDV and PRDV courses
Any 200-level or higher course in Biology, Chemistry, or Physics
Any 300-level or higher course in Math, Statistics, or MMSS

BUS_INST 301-0	Accounting
BUS_INST 302	Marketing Management
BUS_INST 303-0	Leadership in Organizations
Econ 309	Elements of Public Finance
Econ 331	Economics of Risk and Uncertainty
Econ 336	Analytic Methods for Public Policy Analysis
Econ 339	Labor Economics
Econ 349	Industrial Economics
Econ 350	Monopoly, Competition, and Public Policy
Econ 355	Transportation Economics and Public Policy
Econ 360-2	Investments
Econ 362	International Finance
Econ 380-1,2	Game Theory
Econ 381-1,2	Econometrics
Econ 383	Economic Forecasting
IMC 303	Integrated Marketing Communications Strategy
ISEN 220	Intro to Energy Systems for the 21st Century
ISEN 230	Climate Change and Sustainability

May include up to 2 units of IEMS 399

At most 2 courses may be taken P/N; no other electives may be taken P/N

THEME REQUIREMENT

Three courses must be related
At least 2 courses from each of Social Sciences and Humanities

The following courses MAY NOT BE USED to

Any BUS_INST course	ENGLISH 106-1
Any Kellogg course	ENGLISH 106-2
ECON 281	GEOG 341
ECON 380-1	PSYCH 201
ECON 380-2	
ECON 381-1	

ECON 381-2

The following courses MAY BE USED towards theme as Social Science

MMSS 211-1	Social Science Theories & Methods
MMSS 211-3	Social Science Theories & Methods
MMSS 311-2	Social Science Theories & Methods
NAV_SCI 120	Sea Power and Maritime Affairs
NAV_SCI 230	Leadership and Management Seminar
NAV_SCI 341	Naval Leadership and Ethics
PRDV 325	Emotional Intelligence
TEACH_ED 329	Early Adolescent Development and Intervention
TRANS 310	Seminar in Transporation and Logistics

SEE LINK BELOW FOR A COMPLETE LIST OF ALLOWED/NOT ALLOWED COURSES
https://www.mccormick.northwestern.edu/students/undergraduate/social-science-humanities-theme/