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 chosen according to McCormick basic science guidelines (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)
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
1 engineering economics course
   CIV_ENV 205-0  Economics and Finance for Engineers 2
3 computer programming courses
   COMP_SCI 111-0  Fundamentals of Computer Programming
   COMP_SCI 150-0  Fundamentals of Computer Programming 1.5
   COMP_SCI 217-0  Data Management & Information Processing
6 industrial engineering methods core courses
   IEMS 202-0  Probability
   IEMS 303-0  Statistics
   IEMS 304-0  Statistical Learning for Data Analysis
   IEMS 313-0  Foundations of Optimization
   IEMS 315-0  Stochastic Models
   IEMS 317-0  Discrete Event Systems Simulation
1 production and logistics course chosen from the options below
   IEMS 381-0  Supply Chain Modeling and Analysis
   IEMS 382-0  Operations Engineering and Management
   IEMS 383-0  Service Engineering and Management
   IEMS 385-0  Introduction to Health Systems Management
1 client project course
   IEMS 394-0  Industrial Engineering Client Project Challenge
5 IEMS elective courses
   3 industrial engineering/operations research electives (p. 1)
   2 management science electives (p. 1)
4 general technical elective courses chosen from areas below
   Any IEMS course not applied towards another degree requirement
   Any 200-level or higher course in McCormick, excluding CRDV and PRDV courses
   Any 200-level or higher course in Biology, Chemistry or Physics, except for exclusions listed below

Other Approved Non-engineering Technical Electives (p. 1)
The following courses may not be used as General Technical Electives:
   CHEM 201-0, MATH 310-1, MATH 311-1, MATH 314-0, MATH 385-0, MATH 386-1, PHYSICS 311-1, PHYSICS 311-2, PHYSICS 335-0, STAT 301-1, STAT 301-2, STAT 301-3, STAT 303-1, STAT 303-2, STAT 303-3, STAT 320-1, STAT 383-0
May include up to 2 units of IEMS 399-0
At most 2 General Technical Electives may be taken P/N; no other electives may be taken P/N.

1 See general requirements (https://catalogs.northwestern.edu/undergraduate/engineering-applied-science/#requirementstext) for details.
2 May not be taken with or after KELLG_FE 310-0 Principles of Finance; see adviser for alternatives.

• Concentration (optional): at least 4 courses from an approved list
  • Students may pursue more than one concentration.
  • Concentrations may be created from courses that satisfy other requirements or concentrations.
  • A list of available concentration areas may be found on the department website.

Major Program Electives
Industrial Engineering/Operations Research Electives
Course   Title
3 courses chosen from the following list. Course used towards Production & Logistics requirement may not be used here.
   IEMS 307-0  Quality Improvement by Experimental Design
   IEMS 308-0  Data Science and Analytics
   IEMS 351-0  Optimization Methods in Data Science
   IEMS 365-0  Analytics for Social Good
   IEMS 373-0  Intro to Financial Engineering
   IEMS 381-0  Supply Chain Modeling and Analysis
   IEMS 382-0  Operations Engineering and Management
   IEMS 383-0  Service Engineering and Management
   IEMS 385-0  Introduction to Health Systems Management
   IEMS 395-0  Special Topics in Industrial Engineering (pre-approved topics only)

Management Science Electives
Course   Title
2 courses chosen from:
   IEMS 325-0  Engineering Entrepreneurship
   IEMS 340-0  Qualitative Methods in Engineering Systems
   IEMS 341-0  Social Networks Analysis
   IEMS 342-0  Organizational Behavior
   IEMS 343-0  Project Management for Engineers
   IEMS 344-0  Whole-Brain Leadership
   IEMS 345-0  Negotiations and Conflict Resolution for Engineers
   IEMS 395-0  Special Topics in Industrial Engineering (pre-approved topics only)

Other Approved Non-engineering Technical Electives
Course   Title
BUS_INST 302-0  Marketing Management
ECON 309-0  Public Finance
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<tr>
<th>Course Code</th>
<th>Course Title</th>
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<tbody>
<tr>
<td>ECON 331-0</td>
<td>Economics of Risk and Uncertainty</td>
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<tr>
<td>ECON 336-0</td>
<td>Analytic Methods for Public Policy Analysis</td>
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<td>ECON 339-0</td>
<td>Labor Economics</td>
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<td>ECON 349-0</td>
<td>Industrial Economics</td>
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<td>ECON 350-0</td>
<td>Monopoly Competition &amp; Public Policy</td>
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<td>ECON 355-0</td>
<td>Transportation Economics and Public Policy</td>
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<td>ECON 360-2</td>
<td>Investments</td>
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<td>ECON 362-0</td>
<td>International Finance</td>
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<td>ECON 371-0</td>
<td>Economics of Energy</td>
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<td>ECON 380-1</td>
<td>Game Theory</td>
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<tr>
<td>IMC 303-0</td>
<td>Integrated Marketing Communications Strategy</td>
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<tr>
<td>ISEN 220-0</td>
<td>Introduction to Energy Systems for the 21st Century</td>
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<tr>
<td>ISEN 230-0</td>
<td>Climate Change and Sustainability: Ethical Dimensions</td>
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