<table>
<thead>
<tr>
<th>Course</th>
<th>Course Name</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Math 220-0</td>
<td>Diff. Calculus of One-Var Functions</td>
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<tr>
<td>Math 224-0</td>
<td>Int. Calculus of One-Var Functions</td>
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<tr>
<td>Math 230-0</td>
<td>Diff. Calculus of Multivariable Func.</td>
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<tr>
<td>Math 234-0</td>
<td>Int. Calculus of Multivariable Func.</td>
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<tr>
<td>EECS 111</td>
<td>Fundamentals of Computer Programming I</td>
<td>Prerequisite for EECS 211</td>
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<tr>
<td>IEMS 202</td>
<td>Probability</td>
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<tr>
<td>IEMS 303</td>
<td>Statistics</td>
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<td>IEMS 304</td>
<td>Statistical Learning for Data Analysis</td>
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<tr>
<td>IEMS 313</td>
<td>Foundations of Optimization</td>
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<tr>
<td>IEMS 315</td>
<td>Stochastic Models</td>
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<tr>
<td>IEMS 317</td>
<td>Discrete-Event Systems Simulation</td>
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<tr>
<td>IEMS 381, 382, 383, or 385</td>
<td>Choose from IEMS 381, 382, 383, or 385</td>
<td>Junior spring or senior rain</td>
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<tr>
<td>IEMS 394</td>
<td>IE Client Project Challenge</td>
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<tr>
<td>Gen Eng 205-1</td>
<td>EA 1</td>
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<tr>
<td>Gen Eng 205-2</td>
<td>EA 2</td>
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<td>Gen Eng 205-3</td>
<td>EA 3</td>
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<td>Gen Eng 205-4</td>
<td>EA 4</td>
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</tbody>
</table>

**Mathematics Requirement (4 credits)**

**Engineering Analysis and Computer Proficiency (4 credits)**

**Basic Sciences (4 credits)**

**Design and Communications (3 credits)**

**Basic Engineering (5 credits)**

**2 additional courses from two different areas**

**Theme Courses (7 credits)**

**Unrestricted Electives (5 credits)**
Basic Science Courses
Four units, including courses from at least two areas
At most 2 units from Earth Sciences and Astronomy; no more than 3 units from any other area
Lab courses may count only in combination with their corresponding lecture courses

Physics
PHYSICS 135-2 & 136-2 General Physics & Laboratory
PHYSICS 135-3 & 136-3 General Physics & Laboratory
PHYSICS 239 Foundations of Modern Physics

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

Biological Sciences
BIOL_SCI 215 Genetics and Molecular Biology
BIOL_SCI 217 Physiology
BIOL_SCI 219 Cell Biology
BIOL_SCI 220 Genetics and Molecular Processes Laboratory
CHEM_ENG 275 Molecular & Cell Biology for Engineers

Earth Sciences and Astronomy
EARTH 201 Earth Systems Revealed
EARTH 202 Earth’s Interior
EARTH 203 Earth System History
ASTRON 220 Introduction to Astrophysics

Basic Engineering Courses
Five basic engineering courses must come from four distinct areas.
EECS 211 & EECS 317, required, are in the Computer Programming area.
Civ_Env 205, required, is in the Systems Engineering area.
Two additional courses must be chosen from two of the areas below.

Computer Architecture & Numerical Methods
EECS 203 (Comp Arch) Intro to Computer Eng.
EECS 205 (Comp Arch) Fundamentals of Computer Software
ES_APPM 346 (Comp Arch) Modeling & Computation

Electrical Science
EECS 202 (Electrical) Intro to Electrical Eng.
EECS 270 (Electrical) Applications of Electronic Devices
MECH ENG 233 (Electrical) Electronics Design

Fluids & Solids
BMD ENG 270 (Fluids) Fluid Mechanics
BMD ENG 271 (Fluids) Intro to Biomechanics
CHEM ENG 321 (Fluids) Fluid Mechanics
CIV ENV 216 (Fluids) Mechanics of Materials I
MECH ENG 241 (Fluids) Fluid Mechanics I
BMD ENG 270 (Fluids) Fluid Mechanics
BMD ENG 271 (Fluids) Intro to Biomechanics

Thermodynamics
BMD ENG 250 (Thermo) Thermodynamics
CHEM ENG 211 (Thermo) Thermodynamics
MAT SCI 314 (Thermo) Thermodynamics of Materials
MAT SCI 315 (Thermo) Phase Equilibria and Diffusion
MECH ENG 222 (Thermo) Thermo & Statistical Mechanics I
MECH ENG 322 (Thermo) Thermo & Statistical Mechanics II

Theme Requirements
The theme requirement consists of seven courses in humanities and social sciences.
At least three courses (the "theme") must be related in content.
Requires at least two courses in social sciences, and at least two courses in humanities
See the McCormick Undergraduate Engineering website for information on eligible courses.
Note that the following courses may NOT be used towards theme:
Any BUS_INST or Kellogg course

IE/DR Elective Options
IEMS 304 Stat. Methods for Data Mining
IEMS 307 Quality Improvement by Exper. Des.
IEMS 308 Data Science and Analytics
IEMS 351 Optimization Methods for Data Science
IEMS 365 Analytics for Social Good
IEMS 373 Intro. to Financial Engineering
IEMS 381 Supply Chain Modeling
IEMS 382 Production Plan & Sched
IEMS 383 Service Ops. Mgmt.
IEMS 385 Health Systems Eng.

Management Science Elective Options
IEMS 325 Engineering Entrepreneurship
IEMS 341 Social Network Analysis
IEMS 342 Organization Behavior
IEMS 343 Project Management for Engineers
IEMS 344 Leading Organizations and Teams
IEMS 345 Negotiations and Conflict Resolution

General Technical Elective Options
The following courses MAY BE USED as technical electives
Any 200-level or higher course in McCormick, excluding CRDV and PROV courses
Any 200-level or higher course in Biology, Chemistry, or Physics
Any 300-level or higher course in Math, Statistics, or MMSS
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
EIMC 303 Integrated Marketing Communications Strate
ISEN 220 Intro to Energy Systems for the 21st Century
ISEN 230 Climate Change and Sustainability

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 320-1 Statistical Methods I
Stat 383 Probability and Statistics for ISP