# Bachelor of Science in Industrial Engineering - Quality and Statistics

<table>
<thead>
<tr>
<th>Code</th>
<th>Title</th>
<th>Credit Hours</th>
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<tbody>
<tr>
<td>APPH 1040</td>
<td>Scientific Foundations of Health</td>
<td>2</td>
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<tr>
<td>or APPH 10</td>
<td>The Science of Physical Activity and Health</td>
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<tr>
<td>or APPH 10</td>
<td>Flourishing: Strategies for Well-being and Resilience</td>
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**Core IMPACTS**

**Institutional Priority**
- CS 1301 Introduction to Computing

**Mathematics and Quantitative Skills**
- MATH 1552 Integral Calculus
  - 1

**Political Science and U.S. History**
- HIST 2111 The United States to 1877
  - 3
- or HIST 2112 The United States since 1877
- or INTA 1200 American Government in Comparative Perspective
- or POL 1101 Government of the United States
- or PUBP 3000 American Constitutional Issues

**Arts, Humanities, and Ethics**
- Any HUM
  - 6

**Communicating in Writing**
- ENGL 1101 English Composition I
  - 3
- ENGL 1102 English Composition II
  - 3

**Technology, Mathematics, and Sciences**
- PHYS 2211 Introductory Physics I
  - 4
- PHYS 2212 Introductory Physics II
  - 4
- MATH 1551 Differential Calculus
  - 1
- MATH 1553 Introduction to Linear Algebra
  - 1
- or MATH 1553 Linear Algebra
  - 2

**Social Sciences**
- ECON 2100 Economic Analysis and Policy Problems
  - 3
- PSYC 1101 General Psychology
  - 3

**Field of Study**
- CS 2316 Data Manipulation for Science and Industry
  - 3
- CS 4400 Introduction to Database Systems
  - 3
- MATH 2551 Multivariable Calculus
  - 1
- MATH 2553 Introduction to Linear Algebra
  - 2

**Lab Science**

**Major Requirements**

**Ethics Requirement**
- ACCT 2101 Accounting I: Financial Accounting
  - 3
- or MGT 300 Financial and Managerial Accounting

**Environmental Requirement**
- MATH 2603 Introduction to Discrete Mathematics
  - 1

**Engineering Electives**

- Select one of the following:
  - 3
- ECE 2020 Digital System Design
- ECE 2026 Introduction to Signal Processing
- ECE 3710 Circuits and Electronics
- & ECE 3741 Instrumentation and Electronics Lab

- Select 6 credits of the following:
  - 7
  - 8

**Group 1**
- AE 2220 Dynamics
- AE 3450 Thermodynamics and Compressible Flow
- BMED 3100 Systems Physiology
- CHBE 2100 Chemical Process Principles
- CHBE 2110 Chemical Engineering Thermodynamics I
- CHBE 4763 Pulping and Chemical Recovery
- CHBE 4764 Bleaching and Papermaking
- COE 2001 Statics
- COE 3001 Mechanics of Deformable Bodies
- CEE 2040 Dynamics
- CEE 2300 Environmental Engineering Principles
- CEE 3010 Geomatics
- CEE 4100 Construction Engineering and Management
- CEE 4300 Environmental Engineering Systems
- CEE 4600 Transportation Planning, Operations, and Design
- CS 2110 Computer Organization and Programming
- CS 4641 Machine Learning
- CX 4010 Computational Problem Solving for Scientists and Engineers
- CX 4240 Introduction to Computing for Data Analysis
- CX 4242 Data and Visual Analytics
- ECE 2020 Digital System Design
- ECE 2026 Introduction to Signal Processing
- ECE 2040 Circuit Analysis
- ECE 3035 Mechanisms for Computing Systems
- ECE 3076 Computer Communications
- ECE 3710 Circuits and Electronics
- ECE 3741 Instrumentation and Electronics Lab
- ECE 4606 Wireless Communications
- ME 2202 Dynamics of Rigid Bodies
- ME 3322 Thermodynamics
- ME 3720 Introduction to Fluid and Thermal Engineering
- MSE 2001 Principles and Applications of Engineering Materials
- MSE 3012 Thermal and Transport Properties of Materials
- MSE 3015 Electrical, Optical, and Magnetic Properties
- NRE 3301 Radiation Physics

**Group 2**
- AE 4370 Life Cycle Cost Analysis
Breadth Electives (select two of the following):

- ECON 3150 Economic and Financial Modeling
- ECON 4340 Economics of Industrial Competition
- ECON 4350 International Economics
- ISYE 3103 Introduction to Supply Chain Modeling: Logistics
- ISYE 3104 Introduction to Supply Chain Modeling: Manufacturing and Warehousing
- ISYE 3106 Cornerstone Design for Industrial Engineers
- ISYE 4045 Advanced Simulation
- ISYE 4111 Advanced Supply Chain Logistics

ISYE 4133 Advanced Optimization
ISYE 4301 Supply Chain Economics
ISYE 4232 Advanced Stochastic Systems
ISYE 4311 Capital Investment Analysis
ISYE 4501 Energy, Efficiency, and Sustainability
ISYE 4803 Special Topics (Advanced Manufacturing)
ISYE 4803 Special Topics (Facility Layout and Warehousing)
ISYE 4803 Special Topics (Linear and Convex Optimization)

MGT 3078 Finance and Investments

Free Electives

Free Electives

Total Credit Hours 128

Pass-fail only allowed for Free Electives, Core IMPACTS Arts, Humanities & Ethics and the Social Sciences elective.

Students must achieve a minimum GPA of 2.0 in the BSIE Major Requirements to graduate.

1. Students must earn a C or better in all required MATH courses in the BSIE curriculum.
2. Students may also complete MATH 1554 and MATH 2550 to satisfy math requirements. If MATH 1554/MATH 2550 combination is taken, then two hours from MATH 1554 may be used in Field of Study to give Field of Study 18 hours.
3. Only one EAS course can be used toward ISYE Lab Science requirements.
4. PSYC 1101 will satisfy the Ethics requirement.
5. Students must choose from the following to meet the Environmental requirement: BISO 1107 and BISO 1107L, BISO 2300, CEE 2300, CEE 4300, EAS 1600, EAS 1601, EAS 2600, EAS 2750, EAS 3110, EAS 4480, ECON 4440, ISYE 4803 titled “Energy and Environmental Analysis,” ISYE 4501, SLS 3120, or PHYS 2750.
6. Students must complete courses from two different eligible engineering elective subjects.
7. At most, one computing course (CS or CX) is allowed, including courses cross-listed with CS or CX courses.
8. Students must take at least 9 credits of engineering electives. Three credits must be chosen from ECE 2020, ECE 2026, or ECE 3710/ECE 3741. For the remaining 6 credits, at least 2 credits must be from Group 1.
9. To count toward the Engineering Elective Group 2 requirement, all Vertically-Integrated Projects (VIP) courses must be approved by the ISYE Undergraduate Associate Chair. And, at least three, but no more than four, credits of VIP coursework may count toward the Engineering Elective requirement.
10. Students must complete 5 concentration courses: 3 depth courses and 2 breadth courses. A minimum of 4 of the 5 required concentration courses must be ISYE courses. If ISYE 3106 Cornerstone Design is taken as a breadth elective, it must be taken prior to ISYE 4106 Senior Design.
11. MATH 1113, MGT 2250, ISYE 3770, and PHYS 2XXX (AP credit) not allowed.