

(For students admitted in 2021-22 under the 4-year degree)

BEng in Industrial Engineering and Engineering Management

In addition to the requirements of their major programs, students are required to complete the University requirements for graduation. For details please refer to the respective section on this website.

Some courses can be used to fulfill both Major and University Common Core Requirements. Students may reuse a maximum of 6 credits of these courses to count towards both Requirements.

Students may use no more than 6 credits earned from courses offered in self-paced online delivery mode to satisfy the graduation requirements of a degree program. This 6-credit limit does not apply to credits obtained through the credit transfer procedures of the University.

For students graduating with an additional major, they must take all the requirements specified for that major, within which they must complete at least 20 single-counted credits. These 20 credits cannot be used to fulfill any other requirements for graduation except for the 120-credit degree requirement.

Major Requirements

Engineering Fundamental Course(s)

| | | | Credit(s) attained |
|-----------|------------|--|-----------------------|
| COMP | | Note: COMP 1021 <u>OR</u> COMP 1022P <u>OR</u> COMP 2011 <u>OR</u> COMP 2012H | 3-5 |
| | COMP 1021 | Introduction to Computer Science | 3 |
| | COMP 1022P | Introduction to Computing with Java | 3 |
| | COMP 2011 | Programming with C++ | 4 |
| | COMP 2012H | Honors Object-Oriented Programming and Data Structures | 5 |
| ENGG | 1010 | Academic Orientation | 0 |
| CHEM/PHYS | | Note: CHEM 1010 <u>OR</u> CHEM 1020 <u>OR</u> PHYS 1112 <u>OR</u> PHYS 1312 | 3 |
| | CHEM 1010 | General Chemistry IA | 3 |
| | CHEM 1020 | General Chemistry IB | 3 |
| | PHYS 1112 | General Physics I with Calculus | 3 |
| | PHYS 1312 | Honors General Physics I | 3 |
| LANG | 2030 | Technical Communication I | 3 |
| MATH | | Note: [(MATH 1012 <u>OR</u> MATH 1013 <u>OR</u> MATH 1023) <u>AND</u> (MATH 1014 <u>OR</u> MATH 1024)] <u>OR</u> [MATH 1020] | 4-7 |
| | MATH 1012 | Calculus IA | 4 |
| | MATH 1013 | Calculus IB | 3 |
| | MATH 1014 | Calculus II | 3 |
| | MATH 1020 | Accelerated Calculus | 4 |
| | MATH 1023 | Honors Calculus I | 3 |
| | MATH 1024 | Honors Calculus II | 3 |
| MATH | 2011 | Introduction to Multivariable Calculus | 3 |
| MATH | 2111 | Matrix Algebra and Applications | 3 |

| | | | |
|------|------|--|-----|
| SENG | | Engineering Introduction course (If the students take an introduction course included in their major, this course can be counted towards their major requirement.) | 3-4 |
| IEDA | 2010 | Industrial Engineering and Decision Analytics | 3 |
| IEDA | 2200 | Engineering Management | 3 |
| BIEN | 1010 | Introduction to Biomedical Engineering | 3 |
| CENG | 1000 | Introduction to Chemical and Biological Engineering | 3 |
| CENG | 1500 | A First Course on Materials Science and Applications | 3 |
| CENG | 1700 | Introduction to Environmental Engineering | 3 |
| CIVL | 1100 | Discovering Civil and Environmental Engineering | 3 |
| COMP | 1021 | Introduction to Computer Science | 3 |
| ELEC | 1100 | Introduction to Electro-Robot Design | 4 |
| ELEC | 1200 | A System View of Communications: from Signals to Packets | 4 |
| ENGG | 1100 | First Year Cornerstone Engineering Design Project Course | 3 |
| ISDN | 1002 | Redefining Problems for the Real Needs | 3 |
| ISDN | 1006 | Human-centered Innovation | 3 |
| MECH | 1901 | Automotive Engineering | 3 |
| MECH | 1902 | Energy Systems in a Sustainable World | 3 |
| MECH | 1905 | Buildings for Contemporary Living | 3 |
| MECH | 1906 | Mechanical Engineering for Modern Life | 3 |
| MECH | 1907 | Introduction to Aerospace Engineering | 3 |

Required Course(s)

| | | | Credit(s) attained |
|------|------|---|-------------------------------|
| IEDA | 1010 | Academic and Professional Development I | 0 |
| IEDA | 1020 | Academic and Professional Development II | 0 |
| IEDA | 1901 | Industrial Training and Experience | 0 |
| IEDA | 2520 | Probability for Engineers | 3 |
| IEDA | 2540 | Statistics for Engineers | 3 |
| IEDA | 3010 | Prescriptive Analytics | 3 |
| IEDA | 3230 | Engineering Economics and Accounting | 3 |
| IEDA | 3250 | Stochastic Models | 3 |
| IEDA | 3300 | Industrial Data Systems | 3 |
| IEDA | 4100 | Integrated Production Systems | 3 |
| IEDA | 4130 | System Simulation | 3 |
| IEDA | | Note: IEDA 4901 <u>OR</u> IEDA 4960 (Students taking the Research Option must take IEDA 4901) | 6 |
| IEDA | 4901 | Final Year Thesis | 6 |
| IEDA | 4960 | Industrial Engineering and Engineering Management Final Year Project | 6 |
| ENGG | 2010 | Engineering Seminar Series | 0 |
| ECON | | Note: ECON 2103 <u>OR</u> ECON 2113 | 3 |
| ECON | 2103 | Principles of Microeconomics | 3 |
| ECON | 2113 | Microeconomics | 3 |

| | | | |
|------|------|--|---|
| LANG | 4032 | Technical Communication II for IEDA and ISDN | 3 |
|------|------|--|---|

Elective(s)

| | | | Minimum credit(s) required |
|---|---|---|-----------------------------------|
| IEDA | Industrial Engineering Electives (Courses from the specified elective list, of which at least 15 credits should be taken from 1 of the 2 areas and at least 6 credits outside that area.) | | 21 |
| Group 1: Engineering Management Area | | | |
| IEDA | 2100 | Computing in Industrial Applications | 3 |
| IEDA | 3130 | Ergonomics and Safety Management | 3 |
| IEDA | 3302 | E-Commerce Technology and Applications | 3 |
| IEDA | 4180 | Service Engineering and Management | 3 |
| IEDA | 4510 | Systems Risk Management | 3 |
| Group 2: Logistics Management Area | | | |
| IEDA | 2410 | Logistics and Freight Transportation Operations | 3 |
| IEDA | 3410 | Routing and Fleet Management | 3 |
| IEDA | 3901 | Transportation Systems | 3 |
| IEDA | 4200 | Design of Logistics and Manufacturing Systems | 3 |
| IEDA | 4410 | Data Driven Supply Chain Management | 3 |

Students may opt to graduate with or without an option. Students who take an option MUST complete all requirements specified in addition to the major requirements.

Option(s)

Financial Engineering Option

Students with CGA of 3.0 or above may apply for enrollment in the Financial Engineering Option.

Required Course(s)

| | | | Credit(s) attained |
|------|------|---------------------------------------|---------------------------|
| IEDA | 3330 | Introduction to Financial Engineering | 3 |

Elective Course(s)

| | | | Minimum credit(s) required |
|-------------------------|--|--|-----------------------------------|
| IEDA/FINA/ ISOM/RMBI | Financial Engineering Electives (2 courses from the specified elective list) | | 6 |
| IEDA | 3180 | Data-Driven Portfolio Optimization | 3 |
| FINA | 3103 | Intermediate Investments | 3 |
| ISOM | 4530 | Statistical Analysis of Financial Data in R/S-plus | 4 |
| RMBI | 4210 | Quantitative Methods for Risk Management | 3 |

Research Option

Students in the Research Option should also take IEDA 4901 as specified in the major requirements.

| <i>Elective Course(s)</i> | | | Minimum credit(s) required |
|---------------------------|------|--|-----------------------------------|
| IEDA | | IEEM Advanced Electives (2 courses from the specified elective list. Students should seek approval of their advisor for the choices of courses.) | 6 |
| IEDA | 4900 | Independent Study in Industrial Engineering and Decision Analytics | 3 |
| IEDA | 5170 | Advanced Production Planning and Control | 3 |
| IEDA | 5230 | Deterministic Models in Operations Research | 3 |
| IEDA | 5260 | Design and Analysis of Engineering Experiments | 3 |