

Industrial Engineering Major, B.S.I.E.

International Engineering Program

Mission: The mission of the Bachelor of Science in Industrial Engineering program is to deliver a hands-on, laboratory-intensive undergraduate education to provide students with the tools and skills to excel in the profession, as they pursue life-long learning and make positive contributions to society. With an emphasis on integrated systems and a strategic partnership with Luleå University of Technology in Sweden, the BSIE program will offer unique opportunities for study abroad, undergraduate research, and technical electives to develop an enhanced global perspective.

Educational Objectives: The educational objectives of the Bachelor of Science in Industrial Engineering program are to produce graduates who can:

1. Solve industrial engineering problems by applying contemporary engineering tools to propose and implement effective solutions.
2. Design, develop, implement, and improve integrated systems that include people, materials, information, equipment, and energy.
3. Contribute as informed, ethical, and responsible members of the engineering profession and society as a whole.
4. Continue lifelong professional development throughout their career.
5. Collaborate and communicate effectively with others as a member or leader of an engineering or multidisciplinary team in an international setting.

Typical Program of Study:

Fall Semester

First Year

Comp 1120 College Writing	3 cr
CS elective course ^a	3-5 cr
Math 1296 Calculus I*	5 cr
Liberal education course ^b	<u>3 cr</u>
	14-16 cr

Second Year

Engr 2015 Statics	3 cr
Engr 2110 or ME 2105 Intro to Material Science	3 cr
Math 3280 Diff Equations/Linear Algebra	4 cr
Phys 2012 General Physics II	4 cr
Liberal education course ^b	<u>3 cr</u>
	17 cr

Third Year

Comp 3130: Advanced Writing: Engineering or Comp 3150 Advanced Writing: Science or Comp 3180 Advanced Writing: Honors	3 cr
IE 3105 Human Factors	4 cr
IE 3115 Operations Research	4 cr
IE 3125 Engineering Economic Analysis	3 cr
IE 3135 Materials Processing	<u>4 cr</u>
	18 cr

Fourth Year (in Luleå, Sweden)

IE 4801 International Engineering Report	1 cr
IE 4803 Simulation of Swedish Manufacturing	3 cr
IE 4827 Manufacturing Systems Project	8 cr
IntS 1070 Intro to Scandinavia	<u>3 cr</u>
	15 cr

Spring Semester

Chem 1151 General Chemistry I	5 cr
Math 1297 Calculus II	5 cr
IE 1225 Intro to Engineering Design, Mfg	4 cr
Phys 2011 General Physics I	<u>4 cr</u>
	18 cr

Econ 1023 Principles of Economics: Micro or Econ 1022 Principles of Economics: Macro	3 cr
Engr 2016 Mechanics of Materials	3 cr
Engr 2026 Dynamics	3 cr
ECE 2006 Electrical Circuit Analysis	4 cr
Stat 3611 Probability & Statistics or Stat 3411 Engineering Statistics	<u>4 cr</u>
	17 cr

IE 3255 Statistical Quality Control	3 cr
IE 3265 Production & Operations Mgt	4 cr
ME 4145 CAD/CAM	4 cr
Liberal education course ^b	<u>3 cr</u>
	14 cr

IE 4801 International Engineering Report	1 cr
IE 4812 Computer Integrated Manufacturing (CIM)	4 cr
IE 4823 Proj Mgt & Swedish Industrial Design Proj	6 cr
IE 4870 Advanced Manufacturing Processes	<u>4 cr</u>
	15 cr

* First math course is determined by math placement exam. This schedule presupposes placement into Math 1296

^a Students must choose one of the following computer science courses: CS 1121, CS 1131, CS 1211, CS 1511, CS 1521 **or** CS 2121.

^b Students must complete **one course each** from liberal education categories 7 and 9, and one course from 9 **or** 10 (total 9 credits); **courses from 9 and 10 must have different course designators.**

For further information:

Department of Mechanical and Industrial Engineering
105 Voss-Kovach Hall • 1305 Ordean Court • Duluth, MN 55812-2496
218-726-6161 • Fax: 218-726-8596 • mie@d.umn.edu • www.d.umn.edu/mie