MAJOR: INDUSTRIAL ENGINEERING, B.S.

INDUSTRIAL AND SYSTEMS ENGINEERING PROGRAM

The industrial and systems engineering program emphasizes the overall perspective of people and productivity in any type of system, including manufacturing, service, health care, transportation, communication, and agriculture. The educational objectives of the industrial engineering program are to produce graduates who are able to: 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							
FIRST YEAR							
FALL SEMESTER	SPRING SEMESTER						
WRIT 1120 College Writing	3 cr	CHEM 1151 General Chemistry I	5 cr				
CS programming course ¹	3-5	IE 1225 Intro to Design and Manufacturing Engineering ³	4 cr				
MATH 1296 Calculus I^		MATH 1297 Calculus II					
or MATH 1596 Honors Calculus I	5 cr	or MATH 1597 Honors Calculus II	5 cr				
Liberal education requirement ²	<u>3 cr</u>	PHYS 2011 General Physics I	<u>4 cr</u>				
Total:	14-16cr	Total:	18 cr				
Second Year							
ENGR 2015 Statics	3 cr	ENGR 2016 Mechanics of Materials	3 cr				
ENGR 2110 Intro to Material Science for Engineers	3 cr	ENGR 2026 Dynamics	3 cr				
MATH 3280 Differential Equations w/Linear Algebra	4 cr	ECE 2006 Electrical Circuit Analysis	4 cr				
PHYS 2012 General Physics II	4 cr	STAT 3411 Engineering Statistics	3 cr				
ECON 1022 Principles of Economics: Macro		Liberal education Category 8 option ⁴	<u>3 cr</u>				
or ECON 1023 Principles of Economics: Macro	<u>3 cr</u>	Total:	16 cr				
Total:	17 cr						
THIRD YEAR							
IE 3115 Operations Research	4 cr	WRIT 3130 Advanced Writing: Engineering ⁵	3 cr				
IE 3122 Materials Engineering lab	2 cr	IE 3222 Occupational Systems lab	2 cr				
IE 3125 Engineering Economic Analysis	3 cr	IE 4010 Six Sigma Quality Control	3 cr				
IE 3130 Materials Processing Engineering	3 cr	IE 4020 Lean Enterprises Management	3 cr				
IE 3140 Human Factors & Ergonomic Design	<u>3 cr</u>	IE elective ⁶	3 cr				
Total:	15 cr	Liberal education ²	3 <u>cr</u>				
		Total:	17 cr				
Fourth Year							
EMGT 4110 Engineering Professionalism & Practice	2 cr	IE 4255 Multidisciplinary Senior Design	4 cr				
IE 4115 Facility Planning & Simulation	4 cr	IE 4993 Industrial Engineering Seminar	1 cr				
IE 4222 Systems Integration lab	2 cr	IE elective ⁶	3 cr				
IE 4230 Systems Integration	3 cr	IE technical elective ⁸	3-4 cr				
COMM 1112 Public Speaking ⁷	3 cr	Liberal Education requirement ²	<u>3-4 cr</u>				
IE technical elective ⁸	<u>3-4 cr</u>		14-16cr				
Total:	17-18cr						
[^] First math course is determined by math placement exam. This schedule presupposes placement into Math 1296.							

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¹ Students must choose one computer programming course from the following: CS 1121, CS 1131, CS 1511 or CS 2121.

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³Students may take both ENGR 1210 and IE 2222 in place of IE 1225.

⁴Students are required to take one of the following liberal education category 8 courses: ACCT 2005, LSBE 1101, BLAW 2001

⁵ Students may take WRIT 3150 or WRIT 3180 in place of WRIT 3130.

⁶ Take 2 courses (6 or more credits) of IE electives (list in the 2007-09 catalog.) Courses cannot be used to fulfill more than one requirement in the major. ⁷ Students may take PSY 1003 or ACCT 2001 or INTB 3201 in place of COMM 1112.

⁸Take 6 or more credits of technical electives chosen from the following: IE 4495, IE 5305, IE 5315, IE 5325, IE 5335, SAFE 6002, SAFE 6051, ME 3111 or ChE 3111.

For additional information:

Department of Mechanical & Industrial Engineering • 105 Voss-Kovach Hall 218-726-6161 • mie@d.umn.edu • http://www.d.umn.edu/mie

INDUSTRIAL ENGINEERING, B.S.

INDUSTRIAL AND SYSTEMS ENGINEERING PROGRAM

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