Industrial Engineering Major, B.S.I.E.
Automated Systems Program
Department of Mechanical and Industrial Engineering

Industrial Engineering integrates topics from manufacturing, management, and traditional design. Industrial engineers are proficient in the design, improvement, and management of complex systems of people, materials, equipment, and energy. They study and adapt product designs and the associated plant facilities to optimize production while considering economic, technical, and human factors. The Automated Systems track emphasizes the overall perspective of people and productivity, concentrating on intelligent manufacturing systems. Track electives allow students to study systems of interest to them.

Typical Program of Study:

Fall Semester		*Spring Semester*	
First Year			
Comp 1120 College Writing	3 cr	Chem 1151 General Chemistry I	5 cr
CS programming alternative[a]	3-5 cr	Math 1297 Calculus II	5 cr
Math 1296 Calculus I *	5 cr	IE 1225 Intro to Engineering Design, Mfg	4 cr
Literature/arts elective (Lib Ed category 9)	3 cr	Phys 2011 General Physics I	4 cr
	14-16 cr		18 cr
Second Year			
Engr 2015 Statics	3 cr	Econ 1023 Principles of Economics: Micro	
IE 2105 Intro to Material Science	3 cr	or Econ 1022 Principles of Economics: Macro	3 cr
Math 3280 Diff Equations/Linear Algebra	4 cr	Engr 2016 Mechanics of Materials	3 cr
Phys 2012 General Physics II	4 cr	Engr 2026 Dynamics	3 cr
	14 cr	ECE 2006 Electrical Circuit Analysis	4 cr
		Stat 3611 Probability & Statistics	4 cr
			17 cr
Third Year			
Comp 31xx Advanced Writing		IE 3255 Statistical Quality Control	3 cr
or Comp 5220 Document Design & Graphics		IE 3265 Production & Operations Mgt	4 cr
or Comp 5230 Web Pages, Appl/Presentation	3 cr	ME 4135 Robotics & Controls	4 cr
IE 3105 Human Factors	4 cr	Automated Systems elective[b]	3 cr
IE 3115 Operations Research	4 cr	History/philosophy elective (Lib Ed category 7)	3 cr
IE 3125 Engineering Economic Analysis	3 cr		17 cr
IE 3135 Materials Processing	4 cr		
	18 cr		
Fourth Year			
IE 4115 Facility Planning & Simulation	4 cr	IE 4255 Multidisciplinary Senior Design	4 cr
EMgt 4110 Engr. Professionalism and Practice	2 cr	Automated Systems elective[b]	3 cr
IE 4235 Manufacturing Systems Integration	4 cr	Contemp Soc Issues elective (Lib Ed cat 8)	3 cr
Automated Systems elective[b]	3 cr	Literature/arts elective (Lib Ed cat 9 or 10)	3 cr
	14 cr		12 cr

* First math course is determined by math placement exam. This schedule presupposes placement into Math 1296
[a]Course options include CS 1121 Intro. to Programming in Visual BASIC, CS 1131 Intro. to Programming in FORTRAN, CS 1211 Intro to Programming in C, CS 1511 Computer Science I, CS 2121 Intro to Programming in Java **or** FMIS 3201 Management Information Systems.
[b]See IE/ME website for automated systems elective options

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Industrial Engineering Major, B.S.I.E.-Automated Systems

Major Course Requirements	Credits	Prerequisites	Semester to be Completed	Grade when Completed
Year 1				
IE 1225 Intro to Engineering Design, Mfg	4	Math 1296		
Chem 1151 General Chemistry I	5	High school chemistry and algebra		
CS programming course*	3 to 5	3.5 years high school math		
Math 1296 Calculus I	5	Math placement test		
Math 1297 Calculus II	5	Math 1296		
Phys 2011 General Physics I	4	Math 1296		
Comp 1120 College Writing	3			
Literature/arts elective (Category 9)	3			
Year 2				
IE 2105 Introduction to Material Science	3	Chem 1151		
ECE 2006 Electrical Circuit Analysis	4	Phys 2011; conc reg in Math 3280, Phys 2012		
Econ 1023 Micro **OR** Econ 1022 Macro	3			
Engr 2015 Statics	3	Math 1297; Phys 2011		
Engr 2016 Mechanics of Materials	3	Engr 2015; conc reg in Math 3280		
Engr 2026 Dynamics	3	Engr 2015; conc reg in Math 3280		
Math 3280 Diff Equations w/Lin Algebra	4	Math 1297		
Phys 2012 General Physics II	4	Phys 2011; Math 1297		
Stat 3611 Probability and Statistics	4	Math 1296		
Year 3**				
IE 3105 Human Factors	4			
IE 3115 Operations Research	4	Math 3280; Stat 3611		
IE 3125 Engineering Economic Analysis	3	Stat 3611		
IE 3135 Materials Processing I	4	IE 2105; Stat 3611		
IE 3255 Statistical Quality Control	3	Stat 3611		
IE 3265 Production & Operations Mgt	4	IE 3115, IE 3125		
ME 4135 Robotics & Controls	4	Math 3280		
Automated Systems Elective***	3			
History/philosophy elective (Category 7)	3			
Comp 31xx Advanced Writing	3	Comp 1120; 60 credits		
OR Comp 5220 Doc Design & Graphics	3	Comp 1120; 60 credits		
OR Comp 5230 Web Pages, Appl/Pres	3	60 credits		
Year 4**				
IE 4115 Facility Planning & Simulation	4	IE 3265		
EMgt 4110 Engr. Prof. and Practice	2	No more than 2 semesters prior to graduation		
IE 4235 Mfg Systems Integration	4	IE 4135		
IE 4255 Multidisciplinary Senior Design	4	EMgt 4110		
Automated Systems Elective***	3			
Automated Systems Elective***	3			
Contemp Soc Issues elective (Category 8)	3			
Literature/arts elective (Category 9 or 10)	3			

*__Or__ CS 1521 Computer Science II **or** CS 2121 Intro to Java **or** FMIS 3201 Management Information Systems

**Admission to upper division IE program is competitive and based on performance in lower division courses.
Departmental Honors requires minimum 3.5 GPA, active participation in Tau Beta Pi and at least one professional society (ASME or IIE), and faculty nomination.

***9 credits of Automated Systems electives are required. Courses cannot apply twice. Choose from:**
ChE 2111 Material/Energy Balances (3), ChE 3111 or ME 3111 Fluid Mechanics (3), ChE 5895 Special Topics (1-4);
CS 1521 Computer Science II (5), CS 2121 Intro to Java (3); ECE 1315 Digital System Design (4), ECE 2111 Linear Systems/Signal Analysis (4), ECE 2325 Microcomputer Systems Design (4), ECE 3151 Control Systems (4), ECE 4995 Special Topics (1-3);
FMIS 3201 Mgt Info Systems (3) (cannot apply twice), FMIS 3222 Systems Analysis and Design (3), FMIS 3226 Expert Systems (3);
IE 4196 Coop Ed (2), IE 4993 Seminar (1), IE 4495 Special Topics (1-4); Math 3298 Calculus III (4), Math 3355 Discrete Math (4),
Math 5260 Dynamical Systems (3), Math 5270 Modeling w/Dynamical Systems (3), ME 3111 or ChE 3111 Fluid Mechanics (3),
ME 3211 ME Thermodynamics (3), ME 4112 Heat & Mass Transfer (3), ME 4122 Heat, Thermodynamics, Fluids Lab (2),
ME 4145 CAD/CAM (4), ME 4175 Machine Design (3), ME 4245 Machining (4); MgtS 4472 Entrepreneurship (3);
Safe 6001 OSHA and Other Regulatory Stds (3 cr), Stat 5411 Analysis of Designed Experiments (3), Stat 5511 Regression Analysis (3 cr).