



# ISE FOCUS AREA: Computer & Information Systems

Department of Industrial and Systems Engineering

General Education (19 sh)		sh
ALL	RHET:1030 Rhetoric	4
F/S	Diversity & Inclusion	3
ALL	Be Creative	3
ALL	Required Gen Ed Course: PSY:1001 Elementary Psychology	3
ALL	Approved Gen Ed Course	3
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Math & Basic Science Core (24 sh)		sh
F/S	MATH:1550 Math I: Single Variable Calculus (P: ALEKS score $\geq$ 75 or MPT Level 3 score $\geq$ 9)	4
F/S	MATH:1560 Math II: Multivariable Calculus (P: MATH:1550)	4
ALL	MATH:2550 Math III: Matrix Algebra (P: MATH:1550)	2
ALL	MATH:2560 Math IV: Differential Equations (P: MATH:1560 & MATH:2550)	3
ALL	STAT:2020 Probability & Statistics For Engr & Phys Sci (P: MATH:1560)	3
ALL	CHEM:1110 Principles of Chemistry I (P: ALEKS score $\geq$ 55 or MPT Level 3 score $\geq$ 9)	4
F/S	PHYS:1611 Introductory Physics I / Lab (C: MATH:1550)	4

Engineering Core (7 sh)		sh
F	ENGR:1000 Engineering Success for First-Year Students (First semester standing)	1
F	ENGR:1100 Introduction to Engineering Problem Solving	3
F/S	ENGR:1300 Introduction to Engineering Computing (C: MATH:1550)	3

ISE Requirements (40 sh)		sh
F/S	PHYS:1612 Introductory Physics II / Lab (P: PHYS:1611; C: MATH:1560)	4
F	ISE:2360 Design for Manufacturing	3
S	ISE:2500 Engineering Economy (C: STAT:2020)	3
S	ISE:3300 Manufacturing Systems (P: ISE:2360 & ISE:3700)	3
F	ISE:3350 Process Engineering (P: ISE:3700)	3
F	ISE:3400 Human Factors (P: PSY:1001)	3
S	ISE:3450 Ergonomics	3
F	ISE:3500 Information Systems Design (P: ENGR:1300)	3
F	ISE:3600 Quality Control (P: STAT:2020 or BAIS:9100 or STAT:3100 & STAT:3101 & STAT:3200)	3
F	ISE:3610 Stochastic Modeling (P: STAT:2020; C: ISE:3700)	3
S	ISE:3660 Data Analytics with R (P: STAT:2020)	3
F	ISE:3700 Operations Research (P: MATH:2550; C: STAT:2020)	3
S	ISE:3750 Digital Systems Simulation (P: ISE:3700 & ISE:3610)	3

ISE Capstone Design Courses (4 sh)		sh
F/S	ISE:4600 Industrial Engineering Design Project (IEDP) (C: ALL ISE Required Courses - ISE:2360, ISE:2500, ISE:3300, ISE:3350, ISE:3400, ISE:3450, ISE:3500, ISE:3600, ISE:3660, & ISE:3750)	4

ISE Departmental Seminars (0 sh)		sh
F	ISE:2000 Sophomore Seminar: Industrial Engineering (Status: Sophomore)	0
S	ISE:3000 Professional Seminar: Industrial Engineering (Status: Junior)	0

Engineering Fundamentals Electives (11 sh)		sh
Select at least 11 sh from the list of courses below		
ALL	ENGR:2110 Statics (P: MATH:1550; C: MATH:1560, PHYS:1611)	2
ALL	ENGR:2120 Electrical Circuits (C: MATH:2560)	3
ALL	ENGR:2130 Thermodynamics (P: CHEM:1110, PHYS:1611; C: MATH:1560)	3
ALL*	ENGR:2710 Dynamics (P: ENGR:2110 & MATH:1550)	3
ALL*	ENGR:2720 Materials Science (P: CHEM:1110; C: MATH:1550)	3
F/S	ENGR:2730 Computers in Engineering (P: ENGR:1300)	3
ALL*	ENGR:2750 Mechanics of Deformable Bodies (P: ENGR:2110; C: MATH:2560)	3
S	ENGR:3110 Intro to AI & Machine Learning in Engr (P: ENGR:1300; C: MATH:2550)	3
F	BME:2710 Engineering Drawing, Design, and Solid Modeling	3
S	CBE:2040 Environment, Energy, and Climate Change	3
F/S	ECE:2400 Linear Systems I (P: ENGR:2120 & MATH:2560)	3
F/S	ECE:2410 Principles of Electronic Instrumentation (P: ENGR:2120 & PHYS:1612 & MATH:2560)	4

Required: Computer & Information Systems (16 sh)		sh
F/S	ENGR:2730 Computers in Engineering (P: ENGR:1300)	3
F/S	MATH:3800 Introduction to Numerical Methods* (P: (MATH:2550 or MATH:2700) & (MATH:1560 or MATH:1860))	3
F/S	ECE:3330 Introduction to Software Design (P: ENGR:2730)	3
ALL	CS:2210 Discrete Structures	3
ALL	CS:2230 Computer Science II: Data Structures (P: CS:1210 w/min C- or ENGR:2730 w/min C-)	4

Electives: Computer & Information Systems (9 sh)		sh
Elective: Focus Area - Technical Electives		
(Students wanting to complete the Computer Science Minor need to take CS:3330 and CS:3210 or CS:3980) select two courses from this list:		
F/S	CS:2630 Computer Organization (P: CS:2210 w/min C- & CS:2230 w/min C-)	4
S	CS:3210 Programming Languages and Tools (P: CS:1210 w/min C-, CS:2210 w/min C- or ENGR:2730 w/min C-)	3
ALL	CS:3330 Algorithms (P: CS:2210 w/min C- & CS:2230 w/min C-)	3
F/S	CS:3820 Programming Language Concepts (P: CS:2230 w/min C- & CS:2210 w/min C- & (CS:2630 w/min C- or ECE:3330 w/min C- or CS:2820 w/min C- or ECE:3350 w/min C-))	3
F/S	CS:3980 Topics in Computer Science I (P: CS:1210 w/min C-, CS:2210 w/min C- or ENGR:2730 w/min C-)	3
F/S	CS:4400 Database Systems (P: CS:2210 w/min C- & CS:2230 w/min C- & CS:3330 w/min C-)	3
F/S	CS:5800 Fundamentals of Software Engineering (P: ECE:3330 or CS:2820)	3

Elective: Focus Area - Systems		sh
select one course from this list		
F/S	ISE:4172 Big Data Analytics (P: STAT:2020 or BAIS:9100)	3
F	ISE:4175 Safety Engineering	3
S	ISE:4900 Introduction to Six Sigma (P: ISE:3600)	3
ALL	Any 5000 or above Industrial Engineering (ISE) course	3

## KEY

\* Satisfies the Focus Area - Math/Science requirement