INDUSTRIAL AND SYSTEMS ENGINEERING - Catalog Year 2021

Total Credits = 120

Freshman Year *Fall* Semester

Course Code	Description	Cr	
CHM 101	General Chemistry Lec I (A1)	3	
CHM 102	General Chemistry I Lab	1	
EGR 105	Foundations of Engineering I (A4)	1	
MTH 141 +	Calculus I (A1, B3)	4	
	General Education Outcome(s)*	3	
	General Education Outcome(s)*	3	
		15	

Freshman Year *Spring* Semester

Course Code	Description	Cr	
EGR 106	Foundations of Engineering II (A4)	2	
MTH 142 +	Calculus II (A1, B3)	4	
PHY 203	Elementary Physics I (A1)	3	
PHY 273	Elementary Physics Lab I (A1)	1	
	General Education Outcome(s)*	3	
	General Education Outcome(s)*	3	
		16	

Sophomore Year *Fall* Semester

Course Code	Description	Cr	
ISE 240 and 241 *or* MCE 201	Mfg Processes and Systems (3), Mfg Processes and Systems Lab (1) / Engineering Graphics (3)	3-4	
ISE/SUS 261G	Sustainable Lean Production (A1, B4, G)	3	
MCE 262	Statics	3	
MTH 362	Advanced Engineering Mathematics	3	
PHY 204	Elementary Physics II Lab (A1)	3	
PHY 274	Elementary Physics II (A1)	1	
		16-17	

Sophomore Year *Spring* Semester

Course Code	Description	Cr	
EGR 316G	Engineering Ethics (A3, C1, G)	3	
ISE 240 and 241 *or* MCE 201	Mfg Processes and Systems (3), Mfg Processes and Systems Lab (1) / Engineering Graphics (3)	3-4	
MTH 243 +	Calculus for Functions of Several Vars (A1, B3)	3	
	Science Elective**	3	
	Technical Elective***	3	
		15-16	

Admission to the COE required for enrollment in "300" level and higher COE courses. Admission requires at least a 2.0 cumulative GPA and a C- or higher in each of the following; EGR 105 & 106, CHM 101/102, MTH 141 & 142, PHY 203/273, and either PHY 204/274 *or* CHM 112/114

Junior Year *Fall* Semester

Course Code	Description	Cr	
ACC (BUS) 201	Financial Accounting	3	
CHE 333	Engineering Materials	3	
ISE 311	Probability and Statistics for Engineers	3	
ISE 325	Computer Tools for Engineers	3	
ISE 332	Deterministic Systems	3	
		15	

Junior Year *Spring* Semester

Course Code	Description	Cr	
ISE 304	Engineering Economy and Proj Planning	3	
ISE 312	Statistical Methods and Quality Systems	3	
ISE 333	Stochastic Systems	3	
ISE 334	Simulation Modeling and Analysis	3	
	Professional Elective****	3	
		15	

Senior Year *Fall* Semester

Course Code	Description	Cr	
ISE 401	ISE Capstone Design I	3	
ISE 420	Intro to Human Factors and Ergonomics	3	
ISE 451	Production System Design	3	
	Professional Elective****	3	
	General Education Outcome(s)*	3	
		15	

Senior Year *Spring* Semester

Course Code	Description	Cr	
ISE 402	ISE Capstone Design II (D1)	3	
	Professional Elective****	3	
	Professional Elective****	3	
	Technical Elective***	3	
		12	

* **General Education Outcomes:** if all Outcomes are satisfied in fewer spaces than provided, you must complete additional coursework of your choice (Free Elective) to ensure you have earned at least 120 credits as required to earn a BS degree. See the "General Education Outcomes" section at the bottom of page two for more information on satisfying these requirements.

** **Science Elective:** choose *one (1)* from CHM 112, CHM 124, KIN 122, NRS 100, or PHY 205/275

*** **Technical Electives:** choose *two (2)* from CVE 220, ELE 220, or MCE 263

**** **Professional Electives:** Must be satisfied by *twelve (12) credits* of professional electives, *at least six (6)* of which must be 400- or 500-level ISE courses not required by the ISE major. The *remaining courses* may be any 300-, 400-, or 500- level courses offered by the College of Engineering not required by the ISE major, CSC, MTH, or PHY (*except* CHE 428, 451, 452; CSC 320; MTH 381, 420, 451, 452; PHY 322, 381, 382; courses in professional practice; seminars); FIN 420, INE 449, MGT 341, 344, 443, 444, 448, 450; ECN 323, 324, 327, 328, 344, 363, 368, 376; any 500-level STA courses (except STA 532); MBA 530, 550 (requires ISE/MBA 4+1 Admission); PSY 335, 384, 385, 434. Note: Only ISE 513 or STA 513 will be allowed – not both (these are cross-listed courses).

+ Course prerequisites include grade requirements in previous coursework, see catalog or eCampus course description for details

Name _____   ID # _____

INDUSTRIAL AND SYSTEMS ENGINEERING - Catalog Year 2021

Total Credits = 120

SPECIFIED MATHEMATICS, SCIENCE, AND ENGINEERING COURSES

INTRODUCTORY ENGINEERING

Sem	Course	Cr	Grade	QP	Note
	EGR 105 (A4)	1			
	EGR 106 (A4)	2			
		3			

MATHEMATICS

Sem	Course	Cr	Grade	QP	Note
	MTH 141 (A1 & B3)	4			
	MTH 142 (A1 & B3)	4			
	MTH 243 (A1 & B3)	3			
	MTH 362	3			
		14			

NATURAL SCIENCES

Sem	Course	Cr	Grade	QP	Note
	CHM 101 (A1)	3			
	CHM 102	1			
	PHY 203 (A1)	3			
	PHY 273 (A1)	1			
	PHY 204 (A1)	3			
	PHY 274 (A1)	1			
		12			

**SCIENCE ELECTIVE

Sem	Course	Cr	Grade	QP	Note
		3			

***TECHNICAL ELECTIVES

Sem	Course	Cr	Grade	QP	Note
		3			
		3			
		6			

BUSINESS

Sem	Course	Cr	Grade	QP	Note
	ACC (BUS) 201	3			

ENGINEERING SCIENCE AND DESIGN

Sem	Course	Cr	Grade	QP	Note
	CHE 333	3			
	EGR 316G (A3, C1, G)	3			
	ISE 240	3			
	ISE 241	1			
	ISE/SUS 261G (A1, B4, G)	3			
	ISE 304	3			
	ISE 311	3			
	ISE 312	3			
	ISE 325	3			
	ISE 332	3			
	ISE 333	3			
	ISE 334	3			
	ISE 401 [capstone]	3			
	ISE 402 [capstone] (D1)	3			
	ISE 420	3			
	ISE 451	3			
	MCE 201	3			
	MCE 262	3			
		52			

****PROFESSIONAL ELECTIVES

Sem	Course	Cr	Grade	QP	Note
		3			
		3			
		3			
		3			
		12			

*GENERAL EDUCATION OUTCOMES

Sem	Course	Cr	Grade	QP	Note
Science, Technology, Engineering, and Math (STEM) (A1)					
---	CHM & PHY (see above)	11	---	---	---
Social and Behaviorial Sciences (A2)					
Humanities (A3)					
---	EGR 316G (see above)	3	---	---	---
Arts & Design (A4)					
---	EGR 105 & 106 (see above)	3	---	---	---
Write Effectively (B1)					
Communicate Effectively (B2)					
Mathematical, Statistical, or Computational Strategies (B3)					
---	MTH (see above)	11	---	---	---
Information Literacy (B4)					
---	ISE/SUS 261G (see above)	3	---	---	---

Sem	Course	Cr	Grade	QP	Note
Civic Knowledge & Responsibilities (C1)					
---	EGR 316G (see above)	---	---	---	---
Global Responsibilities (C2)					
Diversity & Inclusion (C3)					
Ability to Synthesize (D1)					
---	ISE 402 (see above)	3	---	---	---
Grand Challenge (at least one course must be coded with a "G")					
---	ISE/SUS 261G & EGR 316G (see above)	---	---	---	---
Free Elective					
If you fulfill all Outcomes in fewer spaces than indicated on page one, you can use those					
additional spaces to take a course(s) of your choice to ensure you reach at least 120 earned credits					

* **General Education Outcomes:** at least 40 credits must be completed. (A1-D1) must be met by at least three credits. A single course may satisfy one or two outcomes, and at least one course must be a "Grand Challenge". No more than twelve credits can be from the same course code except HPR. General education courses may also be used to meet requirements of your major(s) or minor(s) when appropriate.

** **Science Elective:** choose *one (1)* from CHM 112, CHM 124, KIN 122, NRS 100, or PHY 205/275

*** **Technical Electives:** choose *two (2)* from CVE 220, ELE 220, or MCE 263

**** **Professional Electives:** Must be satisfied by *twelve (12) credits* of professional electives, *at least six (6)* of which must be 400- or 500-level ISE courses not required by the ISE major. The *remaining courses* may be any 300-, 400-, or 500- level courses offered by the College of Engineering not required by the ISE major, CSC, MTH, or PHY (*except* CHE 428, 451, 452; CSC 320; MTH 381, 420, 451, 452; PHY 322, 381, 382; courses in professional practice; seminars); FIN 420, INE 449, MGT 341, 344, 443, 444, 448, 450; ECN 323, 324, 327, 328, 344, 363, 368, 376; any 500-level STA courses (except STA 532); MBA 530, 550 (requires ISE/MBA 4+1 Admission); PSY 335, 384, 385, 434. Note: Only ISE 513 or STA 513 will be allowed – not both (these are cross-listed courses).