INDUSTRIAL AND SYSTEMS ENGINEERING - Catalog Year 2017

Total Credits = | 121-124

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 (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* ISE 220 and MCE 201	Mfg Processes and Systems (3), Mfg Processes and Systems Lab (1) / Introduction to Systems Engineering (1) Engineering Graphics (3)	4	
MCE 262	Statics	3	
MTH 243 +	Calculus for Functions of Several Vars (A1, B3)	3	
PHL 212	Ethics (A3, C3)	3	
PHY 204	Elementary Physics II Lab (A1)	3	
PHY 274	Elementary Physics II (A1)	1	
		17	

Sophomore Year *Spring* Semester

Course Code	Description	Cr	
CVE 220	Mechanics of Materials	3	
ISE 240 and 241 *or* ISE 220 and MCE 201	Mfg Processes and Systems (3), Mfg Processes and Systems Lab (1) / Introduction to Systems Engineering(1) Engineering Graphics (3)	4	
MCE 263	Dynamics	3	
MTH 362 *or* MTH 244	Advanced Engineering Mathematics I *or* Differential Equations	3	
	Science Elective**	3	
		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	
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	
ELE 220	Passive and Active Circuits	3	
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	
		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	
	Professional Elective***	3	
	General Education Outcome(s)*	3	
		15	

* **General Education Outcomes:** If all Outcomes are satisfied in fewer spaces than provided, you must take a course of your choice (Free Elective) to fill each remaining space. See the "General Education Outcomes" section at the bottom of page two for details on satisfying these requirements.

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

*** **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); BUS 320, 341, 344, 355, 365, 420, 443, 444, 448, 449 450; 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 2017   Total Credits = 121-124

SPECIFIED MATHEMATICS, SCIENCE, AND ENGINEERING COURSES

INTRODUCTORY ENGINEERING						ENGINEERING SCIENCE AND DESIGN					
Sem	Course	Cr	Grade	QP	Note	Sem	Course	Cr	Grade	QP	Note
	EGR 105 (A4)	1					CHE 333	3			
	EGR 106 (A4)	2					CVE 220	3			
		3					ELE 220	3			
MATHEMATICS							ISE 220****	1			
	MTH 141 (A1 & B3)	4					ISE 240	3			
	MTH 142 (B3)	4					ISE 241	1			
	MTH 243 (A1 & B3)	3					ISE 304	3			
	MTH 362 *or* 244	3					ISE 311	3			
							ISE 312	3			
		14					ISE 325	3			
NATURAL SCIENCES							ISE 332	3			
	CHM 101 (A1)	3					ISE 333	3			
	CHM 102	1					ISE 334	3			
	PHY 203 (A1)	3					ISE 401 [capstone]	3			
	PHY 273 (A1)	1					ISE 402 [capstone] (D1)	3			
	PHY 204 (A1)	3					ISE 420	3			
	PHY 274 (A1)	1					ISE 451	3			
							MCE 201	3			
							MCE 262	3			
		12					MCE 263	3			
SCIENCE ELECTIVE								**56**			
						PROFESSIONAL ELECTIVES					
		3						3			
								3			
BUSINESS								3			
	BUS 201	**3**						3			
								12			

*GENERAL EDUCATION OUTCOMES

Sem	Course	Cr	Grade	QP	Note	Sem	Course	Cr	Grade	QP	Note
Science, Technology, Engineering, and Math (STEM) (A1)						**Civic Knowledge & Responsibilities (C1)**					
---	CHM & PHY (see above)	11	---	---	---						
Social and Behaviorial Sciences (A2)						**Global Responsibilities (C2)**					
Humanities (A3)						**Diversity & Inclusion (C3)**					
	PHL 212	3				---	PHL 212	---	---	---	
Arts & Design (A4)						**Ability to Synthesize (D1)**					
---	EGR 105 & 106 (see above)	3	---	---	---	---	ISE 402 (see above)	3	---	---	---
Write Effectively (B1)						**Grand Challenge (at least one course must be coded with a "G")**					
Communicate Effectively (B2)						**Free Elective**					
						If you fulfill all Outcomes in fewer spaces than indicated on page one, you must use those					
Mathematical, Statistical, or Computational Strategies (B3)						*additional spaces to take course(s) of your choice to reach your degree credit total (121-124)*					
---	MTH (see above)	11	---	---	---						
Information Literacy (B4)											

 * **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 from CHM 112, CHM 124, KIN 122, NRS 100, or PHY 205/275

 *** **Professional Electives:** Must be satisfied by *twelve (12) credits* of professional electives, *at least six (6)* of which must be 400- or 500-level 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); BUS 320, 341, 344, 355, 365, 420, 443, 444, 448, 449, 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).

**** **ISE 220** can be taken in either the freshman, sophomore, or junior year.