

**INDUSTRIAL AND SYSTEMS ENGINEERING
DEGREE REQUIREMENTS
Class of 2016 (4 years on semesters)#**

Freshman Year (32 semester credits)		
<u>Fall</u>		
Math 2301	Calculus I	4
Chem 121/151	Chemistry I	4
ET 1100	Eng Graphics Fundamentals	2
Econ 103	Princ of Microeconomics	3
COMS 1030 or THAR 1130	Fund of Public Speaking or Acting Fundamentals I	3

<u>Spring</u>		
Math 2302	Calculus II	4
ISE 1100	Intro to ISE	3
PSY 1010	General Psychology	3
Phil 1030	Intro to Ethics	3
Eng 1510	Writing and Rhetoric I	3

Junior Year (32 semester credits)		
<u>Fall</u>		
ISE 4120	Inventory & Mfg. Control I	3
ISE 4130	Computer Simulation	3
ISE 4140	Operations Research	3
	Math/Science Elective	3
	Engineering Science Elective	3

<u>Spring</u>		
ISE 4150	Information Systems Engr	3
ISE 4160	Principles of Six Sigma	4
Eng 3XXXJ	Junior English	3
	Engineering Science Elective	2
	ISE Elective	3
	Tier II Elect – Fine Arts	2

Sophomore Year (31 semester credits)		
<u>Fall</u>		
Phys 2501	Physics I	5
Math 3200	Applied Linear Algebra	3
ISE 2100	Data Management & Display	2
ISE 3200	Engineering Statistics	3
ET 3300	Engineering Economy	2

<u>Spring</u>		
Phys 2052	Physics II	5
ISE 3210	Engineering Probability	3
ISE 3340	Work Design	2
ETM 3030	Appl of Object-Oriented Prog	3
	Business Elective	3

Senior Year (30 semester credits)		
<u>Fall</u>		
ISE 4190	Senior Capstone I	3
	ISE Elective	2
	PCA Elective	3
	PCA Elective	2
	Engineering Science Elective	3
	Tier II Elect – Cross-Cultural	2

<u>Spring</u>		
ISE 4191	Senior Capstone II	3
	PCA Elective	3
	PCA Elective	3
	Math/Science Elective	3
	Business Elective	3

ELECTIVE CATEGORIES

- **Math/Science:** 2 classes
- **Business:** 2 classes
- **ISE Electives:** 5 semester credits
- **Eng. Science:** 8 semester credits
- **Prof. Concentration:** 11 semester credits

ELECTIVE OPTIONS

Math/Science Electives	
Course	Title (Credits)
BioS 1030	Human Biology Basic Princ. (3)
N/A	
Chem 1220	Principles of Chemistry II (4)
Chem 1520	Fundamentals of Chem. II (4)
Math 3050	Discrete Mathematics (3)
Math 3300	Calculus III (4)
Math 3320	Vector Analysis (3)
Math 3400	Differential Equations (3)
Math 4630	Discrete Modeling & Opt. (3)

Business Electives	
Course	Title (Credits)
Acct 1010	Foundations of Accounting (3)
Acct 1020	Decision Making with Acctg (3)
BusL 2550	Corporate Responsibility (3)
Econ 1040	Macroeconomics (3)
Mgt 2000	Intro to Management (3)
Mkt 2020	Marketing Principles (3)

ISE Electives

Any non-required ISE 400-level or 4000-level course, or any course found in a Professional Concentration Area (other than the PCA that the student is pursuing) can be counted as an ISE elective. Because PCA courses can be used to satisfy this category, non-engineering courses may be counted toward ISE electives. However, students must accumulate a minimum of 10 semester credits of engineering courses across ISE and PCA electives.

Engineering Science Electives

Most courses* from Chemical, Civil, Electrical, or Mechanical Engineering at the 200-level or above can be counted as an Engineering Science Elective. Typical courses are listed below. In general, these courses have a prerequisite course that is required in the ISE curriculum (i.e., chemistry or physics) or they require only 1 other engineering course as a prerequisite.

Course	Title (Credits)
ET 2300	Principles of Engr Materials (3)
ET 2200	Statics (3)
ET 2220	Strength of Materials (3)
CE 3400	Fluid Mechanics (3)
CE 3530	Basics of Environ Engr (3)

Course	Title (Credits)
EE 3051	Basic Electrical Laboratory (1)
ET 3132	Basic Electrical Engr I (2)
EE 3143	Basic Electrical Engr II (3)
ME 3011	Kinematics and Dynamics (3)
ET 3200	Engr Thermodynamics (3)

Professional Concentration Area Electives

Suggested course groupings are shown below. Additional areas are possible and can be designed by the student in consultation with his/her advisor.

Because students are intended to take the majority of their professional concentration area courses in their final year, the semester versions of the PCA requirements will be enforced. In most PCAs, there are fewer courses required under semesters (4 courses vs. 5 courses), so this should provide sufficient flexibility for students. However, students must still complete a total of 82 quarter-credits (which is equivalent to 54 semester credits) when adding the credits earned in the following categories:

- ISE Required Courses
- ISE Electives
- PCA Electives

This may require 1-2 additional credits of ISE electives, if a student has taken a PCA with fewer courses, or has taken the combined version of ISE 412/435 during the 2011-12 academic year. Of the 54 semester credits, a minimum of 47 must be engineering topics (i.e., ISE, CE, ME, ET).

<u>General IE</u> (13 semester credits)	
Course	Title (Credits)
ISE 4300	Intro to Designed Expts. (2)
ISE 4320	Inventory and Mfg Ctrl II (2)
ISE 4360	Facility Planning & Design (3)
ETM 1100 or ETM 3070	Intro to Mfg Processes (3) or Mfg Design and Lab (3)
ISE 4380	Human Factors Engineering (3)

<u>Manufacturing</u> (12 semester credits)	
Course	Title (Credits)
ISE 4360	Facility Planning & Design (3)
ISE 4370	Manufacturing Systems (3)
ISE 4375	Computer Integrated Mfg (3)
ETM 1100 or ETM 3070	Intro to Mfg Processes (3) or Mfg Design and Lab (3)

<u>Supply Chain Mgmt.</u> (12 semester credits)	
Course	Title (Credits)
ISE 4360	Facility Planning & Design (3)
ISE 4365	Material Handling Systems (3)
ISE 4380	Human Factors Engineering (3)
MKT 4250	Business-to-Business Mktg (3)

<u>Information Systems</u> (13 semester credits)	
Course	Title (Credits)
ISE 4350	Database Info Systems (3)
ISE 4930	Special Investigations (3)
ET 2100	Programming in C (4)
ETM 3540	Auto ID and Data Capture (3)

<u>Health Care</u> (11 or 12 semester credits)	
Course	Title (Credits)
ISE 4360	Facility Planning & Design (3)
ISE 4320 or ISE 4365	Inventory and Mfg Ctrl II (2) or Material Handling Syst (3)
IH 2000 or EH 2000	Essentials of Ind Hygiene (3) or Intro Env Health & Safety (3)
HLTH 3350 or 3400	Mgmt of Hlth Care Org (3) or Problems in Hlth Care Org (3)

<u>Human Factors</u> (11 semester credits)	
Course	Title (Credits)
ISE 4300	Intro to Designed Expts. (2)
ISE 4380	Human Factors Engineering (3)
EH 4400	Occupational Safety & Hlth (3)
BIOS 2030 or EH 2000 or ME 4670	Human Biology II (3) or Intro Env Hlth & Safety (3) or Engr Biomechanics (3)