

**INDUSTRIAL AND SYSTEMS ENGINEERING
DEGREE REQUIREMENTS
revised for Fall 2018**

| Freshman Year (31.5 semester credits) | | | |
|--|---|--|---|
| <u>Fall</u> | | | |
| ECON 1030 | Princ of Microeconomics | | 3 |
| ET 1100 | Eng Graphics Fundamentals | | 2 |
| ISE 1100 | Intro to ISE | | 3 |
| MATH 2301 | Calculus I | | 4 |
| COMS 1030 or THAR 1130 | Fund of Public Speaking or Acting Fundamentals I | | 3 |

| Sophomore Year (31/32 semester credits) | | | |
|--|------------------------|--|---|
| <u>Fall</u> | | | |
| ISE 3200 | Engineering Statistics | | 3 |
| MATH 3200 | Applied Linear Algebra | | 3 |
| PHYS 2051 | General Physics I | | 5 |
| PSY 1010 | General Psychology | | 3 |
| | Business Elective | | 3 |

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|----------------|---------------------------------|--|-----|
| <u>Spring</u> | | | |
| CHEM 1210/1510 | Chemistry I | | 4 |
| ENG 1510 | Writing and Rhetoric I | | 3 |
| ET 1500 | Career Orientation | | 0.5 |
| MATH 2302 | Calculus II | | 4 |
| PHIL 1300 | Intro to Ethics | | 3 |
| | Tier II Elect. – Cross-Cultural | | 2 |

| | | | |
|------------------------|---|--|-----------|
| <u>Spring</u> | | | |
| ET 3300 | Engineering Economy | | 2 |
| ISE 2100 | Data Mgmt & Display | | 3 |
| ISE 3210 | Engineering Probability | | 3 |
| MATH 3050 | Discrete Mathematics | | 3 |
| ETM 3030 or ET 2100 | Appl of Obj-Oriented Prog Programming in C | | 3 or 4 |

| Junior Year (32 semester credits) | | | |
|--|---------------------------------|--|----------|
| <u>Fall</u> | | | |
| ET 3132 | Basic Electrical Engr. I | | 2 |
| ISE 3340 | Work Design | | 3 |
| ISE 4120 | Inventory & Mfg. Control I | | 3 |
| ISE 4140 | Operations Research | | 3 |
| | ISE/PCA Elective | | 3 |
| | Math/Science Elective | | 3 |

| Senior Year (33 semester credits) | | | |
|--|------------------------------|--|---|
| <u>Fall</u> | | | |
| ISE 4130 | Computer Simulation | | 3 |
| ISE 4160 | Six Sigma | | 3 |
| ISE 4490 | Project Management | | 2 |
| | Engineering Science Elective | | 3 |
| | ISE/PCA Elective | | 2 |
| | ISE/PCA Elective | | 3 |

| | | | |
|---------------|------------------------------|--|---|
| <u>Spring</u> | | | |
| ISE 4150 | Information Systems Engr | | 3 |
| ISE 4170 | Lean Manuf. & Service Syst. | | 3 |
| | Business Elective | | 3 |
| | Engineering Science Elective | | 3 |
| | ISE/PCA Elective | | 3 |

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|-----------------|------------------------------------|--|----------|
| <u>Spring</u> | | | |
| ISE 4192 | Senior Capstone II | | 6 |
| ISE 4311 | Applied Systems Engineering | | 3 |
| | ISE/PCA Elective | | 3 |
| | Math/Science Elective | | 3 |
| | Tier II Elect. – Fine Arts | | 2 |

Notes:

- Highlighted rows indicate courses added from 2017-18 curriculum.
- Courses removed from 2017-18 curriculum were PHYS 2052 (5 credits) and 2 credits of Engineering Science electives. (Note that PHYS 2052 will still be counted as a Math/Science elective.)

ELECTIVE CATEGORIES

- **Math/Science:** 2 classes
- **Business:** 2 classes
- **Eng. Science:** 6 semester credits
- **ISE Electives:** 5 semester credits
- **Prof. Concentration:** 11 semester credits

| Math/Science Electives | |
|-------------------------------|--------------------------------|
| Course | Title (Credits) |
| BIOS 1030 | Human Biology Basic Princ. (3) |
| CHEM 1220 | Principles of Chemistry II (4) |
| CHEM 1520 | Fundamentals of Chem. II (4) |
| MATH 3300 | Calculus III (4) |
| MATH 3320 | Vector Analysis (3) |
| MATH 3400 | Differential Equations (3) |
| MATH 4630 | Discrete Modeling & Opt. (3) |
| PHYS 2052 | General Physics II (5) |

| Business Electives | |
|---------------------------|--|
| Course | Title (Credits) |
| ACCT 1010 | Foundations of Accounting (3) |
| BUSL 2000 | Law and Society (3) |
| ECON 1040 | Macroeconomics (3) |
| MGT 2000 | Intro to Management (3) |
| MGT 3550 | Creativity and Innovation Management (3) |
| MKT 2020 | Marketing Principles (3) |

ISE Electives

Any non-required ISE 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

| Course | Title (Credits) |
|---------------|----------------------------------|
| ET 2200 | Statics (3) |
| ET 2220 | Strength of Materials (3) |
| ET 2300 | Principles of Engr Materials (3) |
| ET 2240 | Dynamics |

| Course | Title (Credits) |
|---------------|--------------------------------|
| ET 3200 | Engr Thermodynamics (3) |
| CE 3530 | Basics of Environ Engr (3) |
| EE 3143 | Basic Electrical Engr. II (3) |
| ME 3022 | Heat and Fluid Transport I (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.

| <u>General IE</u> (11 semester credits) | |
|---|--------------------------------|
| Course | Title (Credits) |
| ISE 4300 | Intro to Designed Expts. (2) |
| ISE 4360 | Facility Planning & Design (3) |
| ISE 4380 | Human Factors Engineering (3) |
| ETM 3070 | Mfg Design and Lab (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 3070 | 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 4040 or MKT 4250 | Logist & Supp Chain Mgt (3) or Business-to-Business Mkt (3) |

| <u>Information Syst</u> (12 or 13 semester credits) | |
|---|--|
| Course | Title (Credits) |
| ISE 4350 | Database Info Systems (3) |
| ISE 4930 | Special Investigations (3) |
| ET 2100 or ETM 3030 | Programming in C (4) or Appl of Obj-Oriented Prog (3) |
| 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) |
| HLTH 2170 | Health System Organization, Financing, and Delivery (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 2000 | Intro Env Hlth & Safety (3) |
| BIOS 2030 or EH 4400 or ME 4670 | Human Biology II (3) or Occup. Safety & Hlth (3) or Engr Biomechanics (3) |

| <u>Facility Planning & Design</u> (12 sem. credits) | |
|---|---------------------------------|
| Course | Title (Credits) |
| CE 4160 | Construction Estim. & Eqpt. (3) |
| CE 4170 | Proj.Planning and Sched. (3) |
| CE 4190 | Proj. Devel., Contr. & Law (3) |
| ISE 4360 | Facility Planning & Design (3) |

| <u>Sustainability</u> (12 semester credits) | |
|---|---------------------------------|
| Course | Title (Credits) |
| CE 3530 | Basics of Enviro. Engr. (3) |
| CE 4540 | Sustainable Construction (3) |
| 2 of the following | |
| BIOS 2750 | Ecology in the 21st Century (3) |
| CE 4530 | Solid & Haz. Waste Mgt. (3) |
| ECON 3130 | Economics of the Environ. (3) |
| ECON 3140 | Natural Resource Econ. (3) |
| EH 2000 | Intro Env Hlth & Safety (3) |
| ME 4350 | Energy Engineering & Mgt. (3) |