

Required for ISE degree

Elective for ISE degree

OU MINORS

<p><u>BUSINESS MINOR</u> <i>Complete the following 5 courses:</i> ACCT 1005 - Accounting for Business Activities (3 credits) FIN 3000 - Introduction to Corporate Finance (3 credits) MGT 2000 - Introduction to Management (3 credits) MIS 2021 - Business Information Systems (3 credits) MKT 2020 - Marketing Principles (3 credits)</p>	<p>ACCT 1005, MGT 2000, and MKT 2020 would all count as business electives for the ISE degree, so only 3 additional classes are needed to earn the minor.</p> <p><u>Note:</u> not all ISE options for the business electives count toward the business minor.</p>
<p><u>COMPUTER SCIENCE MINOR</u> <i>Complete the following 5 courses:</i> CS 2400 - Introduction to Computer Science I (4 credits) CS 2401 - Introduction to Computer Science II (4 credits) CS 3000 - Introduction to Discrete Structures (4 credits) CS 3610 - Data Structures (4 credits) EE 1024 - Introduction to Computer Engineering (4 credits)</p> <p><i>Complete one of the following courses:</i> CS 2650 - Professional and Ethical Aspects of Computing (2 credits) CS 3560 - Software Engineering Tools and Practices (3 credits)</p>	<ul style="list-style-type: none">• CS 2400 is an option for the Information Systems PCA
<p><u>MATH MINOR</u> <i>For a minor in mathematics, a student must complete</i></p> <ul style="list-style-type: none">• 21 semester credit hours in mathematics courses at the 2000-level or above,• The 21 credits must include at least 9 hours in mathematics courses at the 3050-level or above.• The following courses are excluded from fulfilling program requirements: 4100, 4100L, and 4150.	<p>The ISE degree requires 14 credits of math (MATH 2301, 2302, 3050, and 3200) and for the ISE degree's Math/Science electives, 7 more credits could be earned:</p> <ul style="list-style-type: none">• MATH 3300: 4 credits• MATH 3320, 3400, or 4630: 3 credits each <p>which would fill all of the requirements for a Math Minor without any additional courses.</p>

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ECONOMICS MINOR

Complete the following courses:

ECON 1030 - Principles of Microeconomics (3 credits)

ECON 1040 - Principles of Macroeconomics (3 credits)

ECON 3030 - Intermediate Microeconomics (3 credits)

ECON 3040 - Intermediate Macroeconomics (3 credits)

Complete 9 hours from the following courses:

ECON 2130 - Current Economic Problems (3 credits)

ECON 3000 - Mathematics for Economists (3 credits)

ECON 3010C - Economics of Altruism (3 credits)

ECON 3020 - Games and Economic Behavior (3 credits)

ECON 3050 - Managerial Economics (3 credits)

ECON 3080 - Behavioral Economics (3 credits)

ECON 3100J - Writing on Economic Issues (3 credits)

ECON 3120 - Economics of Poverty (3 credits)

ECON 3130 - Economics of the Environment (3 credits)

ECON 3140 - Natural Resource Economics (3 credits)

ECON 3150 - Economics of Health Care (3 credits)

ECON 3160 - Economics and the Law (3 credits)

ECON 3200 - Labor Economics (3 credits)

ECON 3220 - Economics of Human Resources (3 credits)

ECON 3320 - Industrial Organization (3 credits)

ECON 3340 - Economics of Antitrust (3 credits)

ECON 3350 - Economics of Energy (3 credits)

ECON 3370 - Economics of Regulation (3 credits)

ECON 3400 - International Trade (3 credits)

ECON 3410 - International Monetary Systems (3 credits)

ECON 3430 - Financial Economics (3 credits)

ECON 3500 - Development Economics (3 credits)

ECON 3510 - Agricultural Development (3 credits)

ECON 3520 - Economic History of the U.S. (3 credits)

ECON 3530 - European Economic History (3 credits)

ECON 3600 - Money and Banking (3 credits)

ECON 3710 - Cost Benefit Analysis (3 credits)

ECON 3810 - Economic Statistics (3 credits)

ECON 3820 - Economic Data Analysis (3 credits)

ECON 4060 - Monetary Theory and Policy (3 credits)

ECON 4150 - Regional Analysis (3 credits)

ECON 4250 - Government and Economic Policy (3 credits)

ECON 4300 - Public Finance (3 credits)

ECON 4440 - Futures Markets (3 credits)

ECON 4550 - Economics of Africa (3 credits)

ECON 4730 - Economics of Southeast Asia (3 credits)

ECON 4740 - Economics of Latin America (3 credits)

ECON 4750 - Economics of China (3 credits)

ECON 4760 - Economics of Korea, Japan, & Southeast Asia (3 credits)

ECON 4850 - Economic Methodology (3 credits)

ECON 4870 - Introduction to Econometrics (3 credits)

ECON 4890 - Economics with SAS (3 credits)

- ECON 1030 is required for the ISE degree
- ECON 1040 is an option in the business electives for the ISE degree
- ECON 3130 and ECON 3140 are options for the Sustainability PCA
- Summary:
 - 3 to 6 additional courses are needed, depending on what options are taken for the business electives and ISE/PCA electives for the ISE degree

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OU CERTIFICATES

LEAN SIX SIGMA CERTIFICATE

Computer Methods – Complete one of the following:

ETM 1030 - Enterprise Computer Methods (3 credits)

ME 1010 - Mechanical Engineering - Gateway Course (3 credits)

ISE 1100 - Introduction to Computers and Industrial Engineering (3 credits)

MIS 2010 - Introduction to Information Analysis and Design (3 credits)

MIS 2011 - Introduction to Information Analysis and Design (Nonmajor) (3 credits)

Intro to Management – Complete one of the following:

CE 2160 - Construction Engineering and Management (3 credits)

MGT 2000 - Introduction to Management (3 credits)

MGT 2100 - Introduction to Management and Organization (3 credits)

MGT 3000 - Principles of Operations (3 credits)

MGT 3200 - Operations Management (3 credits)

MGT 3500 - Theories of Organizational Effectiveness (3 credits)

Six Sigma Methods – Complete one of the following:

ETM 3630 - Quality Management Systems (3 credits)

ISE 4160 - Principles of Six Sigma (3 credits)

Lean Systems – Complete one of the following:

ETM 4320 - Lean Enterprise Methods (3 credits)

ISE 4170 - Lean Manufacturing and Service Systems (3 credits)

Statistical Methods – Complete one of the following:

ISE 3040 - Fundamentals of Statistics (3 credits)

ISE 3200 - Engineering Statistics (3 credits)

MATH 2500 - Introduction to Statistics (4 credits)

QBA 2010 - Introduction to Business Statistics (4 credits)

Categories

- Computer Methods:
 - ISE 1100 is required
- Intro to Management:
 - MGT 2000 is an option in the Business Elective Category
- Six Sigma Methods:
 - ISE 4160 is required
- Lean Systems:
 - ISE 4170 is required
- Statistical Methods:
 - ISE 3200 is required
- Summary:
 - 0 to 1 additional courses are needed, depending on what options are taken for the business electives for the ISE degree

Required for ISE degree

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OU CERTIFICATES

PROJECT MANAGEMENT CERTIFICATE

Computer Methods – Complete one of the following:

CS 2400 - Introduction to Computer Science I (4 credits)

ETM 1030 - Enterprise Computer Methods (3 credits)

ISE 1100 - Intro to Computers & Industrial Engineering (3 credits)

MIS 2010 - Introduction to Information Analysis and Design (3 credits)

MIS 2011 - Introduction to Information Analysis and Design (Non-Major) (3 credits)

Accounting – Complete one of the following:

ACCT 1000 - Financial Acct for Entrepreneurs (3 credits)

ACCT 1005 - Accounting for Business Activities (3 credits)

ACCT 1010 - Foundations of Accounting (3 credits)

ET 3300 - Engineering Economy (2 credits)

Intro to Management – Complete one of the following:

CE 2160 - Construction Engineering and Mgmt (3 credits)

MGT 2000 - Introduction to Management (3 credits)

MGT 2100 - Intro to Mgmt and Organization (3 credits)

MGT 3000 - Principles of Operations (3 credits)

MGT 3200 - Operations Management (3 credits)

Project Management – Complete one of the following:

ETM 3830 - Enterprise Project Management (3 credits)

ISE 4190 - Senior Capstone Design I (3 credits)

ISE 4490 - Project Management (2 credits)

General Management – Complete **two** of the following:

ETM 3620 - Supervision and Leadership (3 credits)

HLTH 3350 - Leadership and Management of Health Care Organizations (3 credits)

MGT 3400 - Organizational Behavior (3 credits)

MGT 3500 - Theories of Organizational Effectiveness (3 credits)

MGT 4560 - Strategic Leadership Consulting (3 credits)

MGT 4580 - Managing Transformations and Organizational Change (3 credits)

SASM 3220 - Leadership & Sport Management (3 credits)

Categories

- Computer Methods:
 - ISE 1100 is required
- Accounting:
 - ET 3300 is required
- Intro to Management:
 - MGT 2000 is an option in the Business Elective Category
- Project Management:
 - ISE 4490 is required
- General Management:
 - HLTH 3350 is an option in the Health Care PCA

- Summary:
 - 1 to 3 additional courses are needed, depending on what options are taken for the business electives and ISE/PCA electives for the ISE degree

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OU CERTIFICATES

SALES CERTIFICATE

Complete the following courses:

MKT 3580 - Foundations of Professional Sales (3 credits)

MKT 4680 - Consultative Sales (3 credits)

MKT 4780 - Sales Strategy & Technology (3 credits)

MKT 4910 - Sales Internship Credit Hours (3 credits)

Complete one of the following courses:

MKT 4250 - Business to Business Marketing (3 credits)

MKT 4580 - Sales Management (3 credits)

Cross-Disciplinary Electives

Complete one of the following courses:

COMS 1030 - Fundamentals of Public Speaking (3 credits)

COMS 2060 - Communication in Interpersonal Relationships (3 credits)

COMS 2150 - Argumentative Analysis and Advocacy (3 credits)

COMS 2020 - Communication and Persuasion (3 credits)

ET 2800 - Engineering and Technology - Overview (3 credits)

FIN 3000 - Introduction to Corporate Finance (3 credits)

JOUR 2500 - Introduction to Advertising and Public Relations (3 credits)

PHIL 1300 - Introduction to Ethics (3 credits)

SASM 4350 - Sport Promotion and Sales Management (3 credits)

- MKT 4250 (required) is part of the Supply Chain Management PCA
- In the cross-disciplinary electives, COMS 1030 and PHIL 1300 are required for the ISE degree

- Summary:
 - 4-5 additional courses are needed, depending on what options are taken for the ISE/PCA electives for the ISE degree

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OU CERTIFICATES

SUPPLY CHAIN MANAGEMENT CERTIFICATE

Complete the following courses:

MGT 3000 - Principles of Operations (3 credits)

OR

MGT 3200 - Operations Management (3 credits)

MIS 2200 - Systems Analysis and Design (3 credits)

MKT 4040 - Logistics and Supply Chain Management (3 credits)

Complete a minimum of six credits from the following:

ETM 1100 - Intro to Manufacturing Processes (3 credits)

ISE 4170 - Lean Manuf. and Service Systems (3 credits)

ISE 4325 - Supply Chain Engineering (3 credits)

ISE 4360 - Facility Planning and Design (3 credits)

ISE 4370 - Manufacturing Systems (3 credits)

ISE 4490 - Project Management (2 credits)

MGT 3250 - Project Management (3 credits)

MIS 3800 - Enterprise Systems Implementation (3 credits)

MKT 4100 - Sustainability Marketing (3 credits)

- MKT 4040 (required) is part of the Supply Chain Management PCA
- In the elective courses, ISE 4170 and ISE 4490 (5 credits total) are required for the ISE degree
- Several other elective courses are part of ISE PCAs:
 - ETM 1100 (General IE and Manufacturing)
 - ISE 4325 (Supply Chain Management)
 - ISE 4360 (General IE, Supply Chain Management, and Health Care)
 - ISE 4370 (Manufacturing)
- Summary:
 - 2 to 4 additional courses are needed, depending on what options are taken for the business electives and ISE/PCA electives for the ISE degree

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TECHNOLOGY AND SOCIETY CERTIFICATE

Complete **one** the following courses:

CAS 2600 - Tech Matters (3 credits)

HIST 2905 - Technology in World History (3 credits)

HIST 3500 - Science & Society in the Modern World (3 cr.)

Humanities, Social Science and Management

Complete **two courses** from the following:

CAS 2405 - Knowing What We Know (4 credits)

ECON 3080 - Behavioral Economics (3 credits)

ECON 3130 - Economics of the Environment (3 credits)

ECON 3350 - Economics of Energy (3 credits)

ECON 3510 - Agricultural Development (3 credits)

ENG 3490 - History of Books and Printing (3 credits)

ENG 3860 - Composing in New Media (3 credits)

MDIA 2012 - Media, Comm, and Social Change (3 credits)

MGT 3700 - Introduction to Entrepreneurship (3 credits)

MGT 3720 - Technology Commercialization (3 credits)

PHIL 2350 - Business Ethics (3 credits)

PHIL 3200 - Symbolic Logic I (3 credits)

POLS 4730 - Animal/Human/Machine (3 credits)

PSY 2110 - Statistics for Behavioral Sciences (4 credits)

Technical Literacy

Complete a minimum of **six credits** from the following:

CE 2000 - Civil Engineering Fundamentals (1 credit)

CHE 1000 - Intro to Chemical Engineering (1 credit)

CS 1400 - Fundamentals of Computing (3 credits)

CS 2300 - Computer Programming in JAVA (4 credits)

CS 2400 - Introduction to Computer Science I (4 credits)

ECON 3820 - Economic Data Analysis (3 credits)

EE 1024 - Intro to Computer Engineering (4 credits)

ET 2800 – Engr. and Technology - Overview (3 credits)

ETM 1030 - Enterprise Computer Methods (3 credits)

ETM 1100 - Intro to Manufacturing Processes (3 credits)

GEOG 2680 - Intro to GIS & Mapping Sciences (4 credits)

ISE 1100 - Intro to Computers and IE (3 credits)

ME 1010 - Mechanical Engr - Gateway Course (3 credits)

MIS 2011 - Intro to Info Analysis and Design (3 credits)

MIS 2021 - Business Information Systems (3 credits)

PBIO 2050 - Biotech: From Lab to Daily Life (3 credits)

VICO 1400X - Comm with Data Visualization (3 credits)

VICO 2561 - Introduction to Basic Web Design (3 credits)

- ISE 1100 (required) is listed in the Technical Literacy category
- For students who started in a different engineering major before ISE, other introductory engineering courses are already listed in the Technical Literacy category:
 - CE 2000
 - CHE 1000
 - CS 1400
 - EE 1024
 - ET 2800
 - ME 1010
- CS 2400 (listed in the Technical Literacy category) is an option for the Information Systems PCA.
- PHIL 2350 (Business Ethics, in the Humanities, Social Science and Management category) can be substituted for PHIL 1300 (required)
- Note: ISE students shouldn't take PSY 2110 (Statistics for Behavioral Sciences, in the Humanities, Social Science and Management category) because you can't get credit for both PSY 2110 and ISE 3200.

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WORKPLACE HEALTH AND SAFETY CERTIFICATE

Complete the following 2 courses:

EH 4400 - Occupational Safety and Health (3 credits)

OHS 2000 - Essentials of Occupational Hygiene and Professions (3 credits)

Complete a minimum of 9 hours from the following:

COMS 3300 - Environmental Communication (3 credits)

EXPH 2280 - Community First Aid, and CPR/AED for the Professional Rescuer (2 credits)

FIN 3310 - Risk and Insurance (3 credits)

GEOG 3460 - Environmental Law (3 credits)

GEOG 3580 - Environmental Hazards (3 credits)

ISE 3340 - Work Design (3 credits)

ISE 4380 - Human Factors Engineering (3 credits)

MGT 3300 - Human Resource Management (3 credits)

OHS 4000 - Occupational Hygiene and Professions Sampling and Analysis (4 credits)

OHS 4300 - Laboratory Safety and Hygiene (3 credits)

OHS 4400 - Physical Hazards Evaluation and Control (3 credits)

PHYS 4511 - Introduction to Radiation Physics (1 credit)

REC 3230 - Swift Water Rescue (1 credit)

RHT 1330 - Food Sanitation and Safety (1 credit)

SASM 3760 - Sport Facility and Event Management (3 credits)

- ISE 3340 is required
- ISE 4380 is a required course in the General IE PCA and the Human Factors PCA
- EH 4400 is an option in the Human Factors PCA

For students pursuing the Human Factors PCA, 2 additional courses are needed to get this Certificate (assuming that EH 4400 is taken for the PCA):

- OHS 2000
- A 3-credit or 4-credit course from the list of electives

For other students, 4 additional courses are needed to get this Certificate:

- OHS 2000
- EH 4400
- 2 3-credit or 4-credit courses from the list of electives

If ISE 4380 is one of the electives taken, it would also count toward ISE Electives (and is also part of the General IE PCA).