Industrial and Systems Engineering – Professional Electives

Purpose of Professional Electives
Professional electives are used to customize and tailor your degree program towards your career interests. In order to deepen your expertise in industrial and systems engineering, you should select at least two advanced level industrial engineering courses as professional electives from the A List.

As a secondary objective, professional electives can be used to broaden your exposure to other engineering-related topics or to fulfill a minor. With the remaining professional electives, you can either:

1. choose other courses from the A List
2. choose other engineering-related courses from the B List
3. choose minor courses to fulfill minor requirements (review minor authorization form with advisor)

The ISE faculty will entertain other courses that you might wish to consider as professional electives that are not reflected on the lists below, on a case-by-case basis. These courses will only be accepted if you have discussed the choice with your advisor and received approval from your advisor. Students should not assume that a professional elective deemed appropriate for one will be appropriate for all.

A LIST
ISEE 626  Contemporary Production Systems
ISEE-640  Computer-Aided Design and Manufacturing
ISEE-682  Lean Six Sigma Fundamentals
ISEE-684  Engineering and the Developing World
ISEE 701  Linear Programming
ISEE 702  Integer and Nonlinear Programming
ISEE 704  Logistics Management
ISEE 711  Advanced Simulation
ISEE 720  Production Control
ISEE 728  Production Systems Management
ISEE 730  Biomechanics
ISEE 731  Advanced Topics in Human Factors and Ergonomics
ISEE 732  Systems Safety Engineering
ISEE 740  Design for Manufacture and Assembly
ISEE 741  3D Printing
ISEE 750  Systems and Project Management
ISEE 752  Decision Analysis
ISEE 760  Design of Experiments
ISEE 770  Design Project Leadership
ISEE 775  Advanced Systems Integration
ISEE 785  Fundamentals of Sustainable Engineering
ISEE 786  Lifecycle Assessment
ISEE 787  Design for the Environment
ISEE 789  Special Topics

B LIST
## Computer Engineering
- CMPE 160 Digital Systems Design I
- CMPE 240 Engineering Fundamentals of Computer Systems (4 credits)
- CMPE 480 Digital Signal Processing
- CMPE 540 Control Systems
- CMPE 570/670 Data and Communication Networks
- CMPE 685 Computer Vision

## Electrical Engineering
- EEEE 120 Digital Systems I
- EEEE 220 Digital Systems II
- EEEE 221 Clean and Renewable Energy Systems and Sources
- EEEE 281 Circuits I
- EEEE 282 Circuits II
- EEEE 346 Advanced Programming
- EEEE 353 Linear Systems
- EEEE 485 Robotic Systems
- EEEE 585/685 Principles of Robotics
- EEEE 647 Artificial Intelligence Explorations
- EEEE 689 Fundamentals of MEMS
- EEEE 765 Optimal Control
- EEEE 784 Advanced Robotics

## Mechanical Engineering
- MECE 110 Thermodynamics I
- MECE 210 Fluid Mechanics I
- MECE 404 Robotics
- MECE 529/629 Renewable Energy Systems
- MECE 746 Engineering Properties of Materials
- MECE 752 Tribology Fundamentals

## Microelectronic Engineering
- MCEE 201 IC Technology
- MCEE 503 Thin Films
- MCEE 520/620 Photovoltaic Science and Engineering
- MCEE 601 Microelectronic Fabrication
- MCEE 602 VLSI Process Modeling

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**B LIST - Professional Electives offered outside KGCOE**
<table>
<thead>
<tr>
<th><strong>Mathematics (College of Science)</strong></th>
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<tbody>
<tr>
<td>MATH 200  Discrete Mathematics and Introduction to Proofs</td>
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<tr>
<td>MATH 312  Nonlinear Optimization</td>
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<tr>
<td>MATH 321  Game Theory</td>
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<tr>
<td>MATH 341  Advanced Linear Algebra</td>
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<tr>
<td>MATH 351  Graph Theory</td>
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<td>MATH 361  Combinatorics</td>
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<td>MATH 401  Stochastic Processes</td>
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<td>MATH 431  Real Variables I</td>
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<tr>
<td><strong>Computer Science (GCCIS)</strong></td>
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<tr>
<td>CSCI 630  Foundations of Intelligent Systems</td>
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<td>CSCI 631  Foundations of Computer Vision</td>
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<td>CSCI 736  Neural Networks and Machine Learning</td>
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<td>CSCI 739  Topics in Intelligent Systems</td>
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<td><strong>Information Sciences and Technology (GCCIS)</strong></td>
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<tr>
<td>ISTE-608  Database Design and Implementation</td>
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<td><strong>Accounting (College of Business)</strong></td>
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<td>ACCT 500  Cost Management in Technical Organizations</td>
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<td><strong>Management Information Systems (College of Business)</strong></td>
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<tr>
<td>MGIS-755  Information Technology Strategy and Management</td>
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<tr>
<td><strong>Psychology (College of Liberal Arts)</strong></td>
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<td>PSYC 642  Graduate Research Methods</td>
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<td>PSYC 712  Graduate Cognition</td>
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<td>PSYC 714  Graduate Engineering Psychology</td>
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<td>PSYC 715  Graduate Perception</td>
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