Industrial and Systems Engineering  
Undergraduate Management Systems & Operations Research Track

The ISE track in Management Systems will be of interest to students who would like to apply their ISE and Operations Research knowledge and skills to careers paths in areas such as healthcare, energy systems, financial management, manufacturing and production systems, insurance, and transportation. This track includes a focus on logistics, supply chain management, optimization, simulation, lean sigma, logistics and supply chain management, as well as management systems engineering and the design of quality and productivity improvement programs.

Full completion of the Management Systems & Operations Research Track requires the following ISE & Non-ISE coursework:

As part of the Core Courses required of all ISE undergraduates, students must complete the following courses relevant to this track (as well as all other ISE Core Courses):

- MATH 1151
- MATH 1172 (or equivalent)
- CSE 2112 (Modeling and Problem Solving with Spreadsheets & Databases)
- STATS 3470 (Introduction to Probability and Statistics for Engineers)
- MECHENG 2850 (Numerical Methods Using MATLAB)
- ISE 2040 (Engineering Economics)
- ISE 3200 (Linear and Integer Programming)
- ISE 3210 (Non-Linear & Dynamic Optimization)
- ISE 3400 (Production Planning and Facility Design)
- ISE 3800 (Project Management)
- ISE 4120 (Quality & Reliability Engineering)
- ISE 4100 (Stochastic Modeling and Simulation)

Continue to next page for additional track requirements...
**Specific Management Systems & Operations Research Track Coursework:**

Students must complete any combination of 3 of the following ISE options for a minimum of 9 ISE technical elective credit hours:

- ISE 5110 (Design of Engineering Experiments) (3) *(offered SP)*
- ISE 5800 (Advanced Project Management) (3) *(offered AU & SP)*
- ISE 5810 (Integrated Lean Sigma Foundations) (4) *(offered AU & SP, by permission)*
- ISE 5820 (Systems Thinking in Engineering and Design) (3) *(offered AU)*
- ISE 5830 (Decision Analysis) (3) *(offered AU every even year)*
- ISE 5840 (Market Engineering and Applications) (4) *(offered AU every odd year)*

A total of 15 hours of technical electives are required for the ISE Degree. After completing the 9 hours from the above list, students may complete the remaining 6 hours a number of ways. These 6 hours can be fulfilled with ISE technical electives in the student’s current track of choice, or from any of the other ISE tracks (excluding Supply Chain & Logistics or Data Analytics). Additionally, these 6 hours can be fulfilled using the approved list of “outside” electives offered toward the back of this packet or the options below which are approved “outside” electives offered through Business that streamline with the Management Systems and Operations Track:

- M&L 3380 (Logistics Management) (1.5) *(7 wk course, AU & SP, sessions 1&2)*
- M&L 4380 (Advanced Logistics Management) (1.5) *(7 wk course, AU&SP session 1)*
- M&L 4382 (Logistics Analytics) (3) *(full-term, AU&SP)*
- M&L 4383 (Supply Chain Mgmt) (1.5) *(7 wk course, AU session 1&2, SP session 1 only)*
- M&L 4387 (Lean Logistics) (1.5) *(7wk course, AU&SP session 1)*
- M&L 4388 (Warehouse Operations) (1.5) *(7 wk course, AU&SP session 2 only)*
- M&L 4385 (Sustainable Supply Chains) (1.5) *(7wk course, AU session 1, SP session 2)*
- M&L 5389 (Logistics Decision Making) (3) *(full-term, AU&SP)*

Please note some of the courses listed above are only 7 week courses and are only 1.5 credit hours.