Industrial and Systems Engineering
Undergraduate Human Systems Integration & Design Track

The ISE track in Human Systems Integration & Design will be of interest to students who are “people-oriented” and are interested in designing work and work systems that rely on and/or support human performance. Students interested in product design will also find this track valuable. All types of operations can benefit from improvements in Human Systems Integration & Design, including companies involved in:

- healthcare
- transportation
- energy management
- information management
- retail and financial systems
- manufacturing and production systems.

This track in Human Systems Integration & Design focuses on strategies for improving productivity, quality, resilience and safety. In addition to general courses on human factors engineering and design, it includes courses concerned with occupational safety and health, as well as courses concerned with cognitive systems engineering.

Full completion of the Human Systems Integration & Design 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):

ISE 2040 (Engineering Economics)
ISE 2400 (Design of Work)
ISE 3600 (Workplace Ergonomics)
ISE 3700 (Cognitive Systems Engineering)
ISE 3800 (Project Management)

Continue to next page for additional track requirements...
**Specific Human Systems Integration & Design 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 5610 (Ergonomics in the Product Design Process) (3) *(offered AU)*
- ISE 5620 (Risk Assessment Tools for Occupational Musculoskeletal Disorders) (3) *(offered SP)*
- ISE 5640 (Occupational Safety: Analysis & Design of Work Environments) (3) *(offered AU)*
- ISE 5710 (Safety & Complex Systems) (3) *(ask ISE Advisor)*
- ISE 5740 (Cognitive Engineering Systems: Human-Centered Automation) *(offered AU even years)*
- ISE 5682 (Fundamentals of Product Design Engineering) (3) *(offered AU&SP)*
- ISE 5705 (Cognitive Systems Engineering: Distributed & Cooperative Work) *(ask ISE Advisor)*
- ISE 5760 (Cognitive Engineering Systems: Visualization and Human-Computer Interfaces) (3) *(SP)*
- ISE 5820 (Systems Thinking in Engineering & Design) (3) *(offered AU)*
- ISE 5870 (Resilience Engineering) (3) *(offered SP odd year)*

A total of 15 hours of technical electives are required for the ISE Degree. After completing 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. The options below are approved “outside” electives that streamline with the Human Systems Integration and Design Track:

- DESIGN 3105 (Design Concepts for Non-Majors) (3) *(offered AU&SP)*
- PUBH-EHS 3320 (Fundamentals of Environmental Health Risk Assessment) (3) *(offered AU&SP)*
- PUBH-EHS 3310 (Current Issues in Global Environmental Health) (3) *(offered AU&SP)*
- PUBH-EHS 5325 (Principles of Occupational Health Science) (3) *(offered AU&SP)*