The Human Factors and Ergonomics Program provides students content from physical ergonomics, cognitive ergonomics, and macroergonomics. Students who apply for both the MS and PhD degrees will be processed for each degree separately. Acceptance for the MS does not automatically ensure acceptance for the PhD.

**MS DEGREE REQUIREMENTS**

**TOTAL 30 CREDITS**

- ISyE 349 Introduction to Human Factors or equivalent is required. It is a prerequisite for all other curriculum courses (required, but does not count toward the 30 credits).

- 9 credits of foundation courses. Take one course in cognitive ergonomics (C), physical ergonomics (P), and macroergonomics (M). Courses in multiple areas can be counted toward only one area.

- 9-12 credits of human factors and ergonomic electives beyond those taken as foundation courses.

- 6 credits of Tools and Methods

- You may count multiple ISyE 816, 854, 859, and 961 graduate seminars toward satisfying the MS degree requirements. Your advisor will determine if seminar counts toward human factors/ergonomic elective or toward Tools and Methods.

- **Please note if you earn a grade of C or below in a course you CANNOT count that course toward the 30-credit requirement.**

**PREREQUISITES FOR MS & PHD**

- BS degree or equivalent
- Mathematical statistics (ex: Stat 321)
- Computer programming (ex: CS 302)
- 3 courses in ISyE: 313, 315, 320, 323, 349, 415, 417

**PROGRAM DESCRIPTION**

- ISyE 552: Human Factors Design (C,P,M)
- ISyE 555: Human Performance & Accident Causation (C,P,M)
- ISyE 556: Occupational Safety & Health Engineering (C,M)
- ISyE 559: Patient Safety & Error Reduction (C,M)
- ISyE 564: Occupational Ergonomics (P)
- ISyE 565: Ergonomics in Service (P)
- ISyE 610: Program Evaluation (M)
- ISyE 652: Sociotechnical Systems (M)
- ISyE 653: Job and Organization Design (M)
- ISyE 662: Design for Human Disability & Aging (P)
- ISyE 691: Human Computer Interaction (C)

**TOOLS AND METHODS (6 cr.)**

Various courses count as “Tools and Methods.” The HFE faculty group updates the list of “Tools and Methods” courses and advisors decide which set of “Tools and Methods” courses are appropriate for each student. The following are categories of “Tools and Methods.”

**Course:**
- Research Methods
- Statistics
- Qualitative Research
- Biomechanics Methods

Refer to the Tools and Methods list for details.

**MS PROJECT OR THESIS (3-6 cr)**

- ISyE 699: Advanced Independent Study
- ISyE 790: Research & Thesis for MS degree

All human factors graduate students are required to satisfactorily complete at least 3 credit hours devoted to directed research, design, development, or application, and prepare a written report covering this work. Students expecting to continue for the PhD degree are encouraged to write a Master’s Thesis. The choice of writing a formal thesis or a research report is made between each student and their advisor.
EXIT REQUIREMENTS
In order to be eligible for graduation, an MS student must:

- Have a GPA of 3.0 or higher
- Meet all MS degree requirements
- Have all grades entered, except for the current semester. No I’s or NR’s can show on the student’s transcript.
- Be enrolled in at least 2 credits the semester in which they graduate.
- Have their MS degree warrant signed and dated by the degree deadline.

DOCTORAL REQUIREMENTS

- 32 graduate credits taken as a graduate student; a least 1 year of academic residence
- Three types of course requirements:
  1. ISyE PhD student Breadth Requirement
  2. Prior to the Qualifying Exam, take one cognitive ergonomics, physical ergonomics, and macroergonomics course from the list on page 1.
  3. Prior to defending your dissertation complete at least 6 seminar/special topics courses at the 700 level or above totaling a minimum of 12 credits; at least 3 totaling at least 6 credits of these must be in the Human Factors and Ergonomics area.
- Successful completion of Qualifying Exam requirements. The ISyE policies for Qualifying Exams are located at https://www.engr.wisc.edu/app/uploads/2016/02/IEP_08_1_Qualifying_Exams.pdf

HFE qualifying exam procedures are explained in the document “Human Factors and Ergonomics Qualifying Exam Process” located on the ISyE website.
- Minor concentration of at least 10 credits.
  https://grad.wisc.edu/catalog/degrees_industrialengr.htm
- Successful completion of Preliminary Exam and Final Defense.

LABORATORIES & CENTERS

- Center for Quality & Productivity Improvement (CQPI) – Pascale Carayon (Director), Bier, Lee, Li, Wiegmann
- Comprehensive Human Enhancement Support Systems (CHESS) – Gustafason
- Cognitive Systems Laboratory – Lee (PI), Noyce
- Naturalistic Decision Making and Simulation Lab – Wiegmann
- Human-Computer Interaction Lab – Mutlu
- Occupational Ergonomics & Biomechanics Lab – Radwin (PI), Sesto
- Wisconsin Traffic Operations and Safety Laboratory (TOPS) – Noyce (PI), Lee

RESEARCH & TEACHING OPPORTUNITIES

Graduate students may have the opportunity to serve as teaching assistants for human factors courses. Students interested in research assistantships are encouraged to contact the professor, laboratory director, or center director in their area of interest.

RECENT PhD DISSERTATIONS

- Calvin Or – Development of a model of health information technology acceptance (2008)
- Richard Holden – An investigation of hospital physician beliefs about and experiences with electronic medical records (2009)
- Samuel Alper – Exploring the causes of violations in the medication administration process (2009)
- Kerry McGuire – Trust in the relationship between tele-ICU nurses and ICU nurses (2011)
- Renaldo Blocker – A Human Factors investigation of intraoperative handoffs during cardiac surgery (2012)
- Onur Asan – Technology-mediated information sharing (monitor sharing) in primary care encounters (2013)

JOB PLACEMENT

Engineering Career Services Office
1550 Engineering Drive, Room M1002
Madison, WI 53706
Tel: (608) 262-3471
FAX: (608) 262-7262
http://www.engr.wisc.edu/services

FURTHER INFORMATION

University of Wisconsin-Madison
ISyE Graduate Student Services
3182 Mechanical Engineering
1513 University Avenue
Madison, WI 53706
Tel: (608) 263-4025
Fax: (608) 890-2204
Email: coegradadmission@wisc.edu
http://www.engr.wisc.edu/ie