Twin Cities Campus

Human Factors and Ergonomics Ph.D.

Human Factors & Ergonomics

College of Design

Link to a list of faculty for this program.

Contact Information:
Human Factors and Ergonomics Graduate Program, c/o DHA, 240 McNeal Hall, 1985 Buford Avenue, St. Paul, MN 55108.
Email: HFEgrad@umn.edu
Website: http://humanfactors.design.umn.edu/

- Program Type: Doctorate
- Requirements for this program are current for Spring 2019
- Length of program in credits: 66
- This program does not require summer semesters for timely completion.
- Degree: Doctor of Philosophy

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

Human factors and ergonomics (HFE) is the study of how to make technological systems safe, effective, and easy and enjoyable to use. The graduate program offers interdisciplinary coursework that addresses human performance and how it can be enhanced through design of tools, systems, working environments, processes, and organizations. HFE has applications ranging from clothing and living spaces to business processes, the design of healthcare processes and technology, computer interfaces, and aircraft cockpits.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.00.

Applicants must submit their test score(s) from the following:

- GRE

International applicants must submit score(s) from one of the following tests:

- TOEFL
  - Internet Based - Total Score: 96
  - Internet Based - Listening Score: 24
  - Internet Based - Writing Score: 24
  - Internet Based - Reading Score: 24
  - Internet Based - Speaking Score: 24

The preferred English language test is Test of English as Foreign Language

Key to test abbreviations(GRE, TOEFL).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

42 credits are required in the major.
24 thesis credits are required.

This program may be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

A minimum GPA of 3.0 is required for students to remain in good standing.

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At least 2 semesters must be completed before filing a Degree Program Form.

Program Requirements

Research Methods Core (8 credits)

Take the following courses for a total of 8 credits:

PSY 8814 - Analysis of Psychological Data (4.0 cr)
PSY 8815 - Analysis of Psychological Data (4.0 cr)

Research Ethics (0-1 credits)

In addition to the course listed below, online options are available to complete the research ethics requirement. See the program Research Ethics page for more information: http://humanfactors.design.umn.edu/research_ethics.html

Take 0 or more credit(s) from the following:

•DES 8181 - Research Ethics (1.0 cr)

Additional Research Methods Course (3-4 credits)

Take one additional course in research methods from the following:

Statistics

If PSY 8960 is selected, 3 credits of Multivariate Statistics for Social Scientists is required.

Take 0 or more credit(s) from the following:

•PSY 8960 - Graduate Seminar in Psychology (1.0 - 4.0 cr)
•PUBH 7406 - Biostatistical Inference II (3.0 cr)
•STAT 5021 - Statistical Analysis (4.0 cr)

or **Designing Experiments**

Take 0 or more credit(s) from the following:

•STAT 5303 - Designing Experiments (4.0 cr)

or **Research Methods**

Take 0 or more credit(s) from the following:

•ANTH 4035 - Ethnographic Research Methods (3.0 cr)
•KIN 5981 - Research Methodology in Kinesiology and Sport Management (3.0 cr)
•PUBH 6341 - Epidemiologic Methods I (3.0 cr)
•PUBH 6342 - Epidemiologic Methods II (3.0 cr)
•PUBH 6343 - Epidemiologic Methods III (4.0 cr)

Component Courses (9 Credits)

Take at least one 3-credit course from each of the following components for a total of 9 credits.

Human Factors Fundamentals

Take at least 3 credits from the following:

DES 5185 - Human Factors in Design (3.0 cr)
HUMF 5001 - Foundations of Human Factors/Ergonomics (3.0 cr)
HUMF 5211 - Human Factors and Work Analysis (4.0 cr)
HUMF 5874 - Human Centered Design to Improve Complex Systems (4.0 cr)

Cognitive Human Factors

Take at least 3 credits from the following:

CGSC 8000 - Seminar: Philosophy of the Cognitive Sciences (3.0 cr)
EPSY 8114 - Seminar: Cognition and Learning (3.0 cr)
IDSC 8721 - Behavioral Decision Theory (3.0 cr)
PSY 5014 - Psychology of Human Learning and Memory (3.0 cr)
PSY 5015 - Cognition, Computation, and Brain (3.0 cr)
PSY 5031W - Perception [WI] (3.0 cr)
PSY 5062 - Cognitive Neuropsychology (3.0 cr)
PSY 5064 - Brain and Emotion (3.0 cr)
PSY 8041 - Proseminar in Perception (3.0 cr)
PSY 8042 - Proseminar in Cognition, Brain, and Behavior (3.0 cr)
PSY 8201 - Social Cognition (3.0 cr)

Physical Human Factors

Take at least 3 credits from the following:

DES 5188 - Anthropometrics, Sizing & Fit (4.0 cr)
KIN 4133 - Perceptual-Motor Control and Learning (3.0 cr)
KIN 4136 - Embodied Cognition (3.0 cr)
KIN 5235 - Advanced Biomechanics II: Kinetics (3.0 cr)
KIN 5505 - Human-Centered Design - Principles and Applications (3.0 cr)
KIN 5643 - Applied Motion Capture and Movement Analysis Technology (3.0 cr)
KIN 8211 - Seminar: Perception and Action (3.0 cr)
RSC 5135 - Advanced Biomechanics I: Kinematics (3.0 cr)
RSC 8135 - Human Kinematics (3.0 cr)

Electives

Take remaining credits from the following, in consultation with the advisor, to complete the 42 course credits required.

User Interface Design

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CSCI 5115 - User Interface Design, Implementation and Evaluation (3.0 cr)
CSCI 8115 - Human-Computer Interaction and User Interface Technology (3.0 cr)
NURS 7118 - Human Factors and Human-Computer Interaction in Health Informatics (3.0 cr)
WRIT 4501 - Usability and Human Factors in Technical Communication (3.0 cr)
WRIT 8520 - Seminar in Scientific and Technical Communication (3.0 cr)

Human Factors

CSCI 5125 - Collaborative and Social Computing (3.0 cr)
CSCI 5609 - Visualization (3.0 cr)
CSCI 5619 - Virtual Reality and 3D Interaction (3.0 cr)
CSCI 8117 - Understanding the Social Web (3.0 cr)
DES 5165 - Design and Globalization (3.0 cr)
DES 8151 - Product Development: Theory and Practice (3.0 cr)
GDES 8361 - Color, Design, and Human Perception (3.0 cr)
HUMF 8001 *{Inactive}*(2.0 - 3.0 cr)
HUMF 8002 *{Inactive}*(1.0 cr)
MKTG 8813 - Consumer Judgment and Decision Making I (2.0 cr)
PSY 5501 - Self, Society and Health - What's Work Got To Do With It? (3.0 cr)
PSY 5708 - Organizational Psychology (3.0 cr)
PSY 5862 - Psychological Measurement: Theory and Methods (3.0 cr)
PUBH 6120 - Injury Prevention in the Workplace, Community, and Home (2.0 cr)
PUBH 6140 - Occupational and Environmental Epidemiology (2.0 cr)
PUBH 6470 *{Inactive}*(3.0 cr)
SOC 8412 - Social Network Analysis: Theory and Methods (3.0 cr)
CGSC 8410 - Perspectives in Learning, Perception, and Cognition (2.0 cr)
IDSC 8722 - Heuristic Decision Making (2.0 cr)
PUBH 6806 - Principles of Public Health Research (2.0 cr)

Thesis Credits

Take at least 24 doctoral thesis credits.
HUMF 8888 - Thesis Credit: Doctoral (1.0 - 24.0 cr)

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