

INDE/ENVH 549A Research Methods in Human Factors
Autumn 2024

Class Meeting: TTh 9:00 am – 10:20 am (3 credits) MEB 103
Instructor: Ji-Eun Kim, Ph.D. Email: jikim@uw.edu
Office Hours: Tue 11:00 am – 11:30 am SIEG 215 (in-person) or
<https://washington.zoom.us/j/2062210285>

Course Description: The objective of this course is to provide students with the principles of human factors engineering, and the research tools that are used to examine these principles. The class will showcase (through weekly journal article readings) the value of qualitative and quantitative methods for human factors research. That is, how to capture abstract thoughts, people's opinions, and trends as well as design studies to capture the impact of design changes and interventions more formally. The focus of the class is centered on human factors design principles for safety, productivity, functionality, and usability. Upon course completion, students will be able to begin fundamental research in human factors. The journal articles will cover research methods and design issues related to operator performance given functional, psychological, physiological, and environmental constraints.

Grading Policy: Students will be expected to fully participate in class discussions and activities. Grades will be based on such class participation, as well as on performance in conducting weekly assignments, midterm, paper presentations, and a final project.

Weekly critiques	20 %
Midterm	25 %
Class discussions/participation	5 %
Paper presentation	5 %
Final project (group)	45 %
(Part I 10%, Part II 5 %, Part III 10%, Presentation 5%, Final Paper 15%)	

Required Text:

- Readings assembled by the instructor (on the course website)
- Recommended textbook: Designing for People: An Introduction to Human Factors Engineering, 3rd edition., Lee et al.

Prerequisites / Corequisites: There are no prerequisites or corequisites for this class. However, an introductory class in Human Factors would be useful. Some of the concepts from the introductory class will be presented at a high level in this graduate-level course.

Midterm: There is one take-home midterm exam in this class.

Weekly Readings and Critiques: Students are expected to read the material before class. There is a weekly assignment that includes a write-up of the journal article that was assigned for discussion that week. You will submit a one-page critique for the assigned papers. The critiques are worth 5 pts each. Do not merely copy the abstract, introduction, or conclusion of the papers, you need to add value and insight beyond what is in the paper. A good critique:

- Describes the research problem being addressed and existing approaches (in your own words) (1 pt)
- Explains the general approach the authors used to address the problem (1 pt)
- Critically analyzes and questions the data, results, and methods used (1 pt)
- Discusses supplemental or follow-up research that might be pursued in the future (1pt)

CANVAS: All information pertaining to this course can be found in Canvas. All lecture notes and assignments will be posted on the course's Canvas page. Students are responsible for visiting the course page frequently for any announcements and updates.

Course Policy on Academic Misconduct: Engineering is a profession demanding a high level of personal honesty, integrity, and responsibility. Therefore, it is essential that engineering students, in fulfillment of their academic requirements and in preparation to enter the engineering profession, shall adhere to the University of Washington’s Student Code of Conduct (<https://www.washington.edu/cssc/for-students/student-code-of-conduct/>). Any student in this course suspected of academic misconduct (e.g., cheating, plagiarism, or falsification) will be reported to the College of Engineering Dean’s Office and the University’s Office of Community Standards and Student conduct. (See CoE website for more detailed explanation of the academic misconduct adjudication process:

<https://www.engr.washington.edu/mycoe/academic/integrity>). Any student found to have committed academic misconduct may receive a grade of 0 on impacted academic work (e.g., assignments, project, or exams).

Access and Accommodations: Your experience in this class is important to me. It is the policy and practice of the University of Washington to create inclusive and accessible learning environments consistent with federal and state law. If you have already established accommodations with Disability Resources for Students (DRS), please activate your accommodations via myDRS so we can discuss how they will be implemented in this course. If you have not yet established services through DRS, but have a temporary health condition or permanent disability that requires accommodations (conditions include but not limited to; mental health, attention-related, learning, vision, hearing, physical or health impacts), contact DRS directly to set up an Access Plan. DRS facilitates the interactive process that establishes reasonable accommodations. Contact DRS at disability.uw.edu.

Religious Accommodation Policy: Washington state law requires that UW develop a policy for accommodation of student absences or significant hardship due to reasons of faith or conscience, or for organized religious activities. The UW’s policy, including more information about how to request an accommodation, is available at Religious Accommodations Policy (<https://registrar.washington.edu/staffandfaculty/religious-accommodations-policy/>). Accommodations must be requested within the first two weeks of this course using the Religious Accommodations Request form (<https://registrar.washington.edu/students/religious-accommodations-request/>).

Tentative Course Outline (Any necessary changes will be announced in class and posted on the website)
 Critiques are due at 8: 30 am on the listed dates before class. *Journal articles to be presented by students.

Week	Topic	Readings	Assignments
1 9/26	Intro to Human Factors Engineering	Chap 1, <i>Designing for People</i>	Paper Presentation Preferences (Due: 9/29)
2 10/1 10/3	Task Analysis	Militello & Hutton, <i>Ergonomics</i> , 1998	Critique #1 (Due: 10/3) Project Part 0 (Due: 10/6)
3 10/8 10/10	Design Methods	Jaspers, <i>IJ of Medical Informatics</i> , 2009 *Papautsky et al., <i>JCED</i> , 2015	Critique #2 (Due: 10/10)
4 10/15 10/17	Survey Design	Safdar et al., <i>ICHE</i> , 2016 *Jonsdottir et al, <i>IIE HSE</i> , 2021	Critique #3 (Due: 10/17)
5 10/22 10/24	Qualitative Method IRB	Hsieh & Shannon, <i>QualHealthRes</i> , 2005	Critique #4 (Due: 10/24)
6 10/29 10/31	Controlled Studies	*Kim et al., <i>IJHCI</i> , 2020	Critique #5 (Due: 10/31) Project Part I (Due: 11/3)
7 11/5 11/7	Objective vs. Subjective	*He et al., <i>IEEE HMS</i> , 2019	Critique #6 (Due: 11/7) IRB certificate (Due: 11/10)
8 11/12 11/14	Observation	Lu, <i>IJCP</i> , 2009 *Sun & Kim., <i>IJHCI</i> , 2023	Critique #7 (Due: 11/14) Project Part II (Due: 11/17)
9 11/19 11/21	Midterm (Take-home)		
10 11/26 11/28	Project Day (Thanksgiving-No Class)		Project Part III (Due: 12/1)
11 12/3 12/5	Project Presentation		Presentation slides (Due: 12/3) Final Paper (Due: 12/8)