PSYC 4803/7102 Engineering Psychology II

Semester	Fall 2025
Time	Tuesday, Thursday, 12:30-1:45 PM
Location	J.S. Coon Room 250
Instructor	Dr. Mengyao Li
Instructor Email	mengyao.li@gatech.edu
Instructor Office	J.S. Coon Room 228
Office Hours	By Appointment
Canvas website	https://gatech.instructure.com/courses/468074

Course Description

This course is a continuation of PSYC 7101, Engineering Psychology I, which focuses heavily on cognitive components in human-automation interactions. In PSYC 7102, the emphasis shifts to human physical capabilities and limitations in interactions with technology. Human factors researchers and ergonomics engineers strive to maximize human performance, minimize physical stress, and optimize both cognitive and physical workloads. Topics covered include anthropometry, biomechanics, and work physiology, particularly in the context of industrial operations where human involvement is crucial.

This course is taught as a lecture on Tuesdays with laboratory activities on Thursdays. Building based on lectures and readings, each lab session consists of in-class reading discussions, small-group interactions by providing students with guided and hands-on learning experiences. This course is intended for advanced undergraduate and graduate students in psychology, engineering, and design.

Learning Objectives

By the end of this course, students will be able to:

- Understand the variability of human dimensions and anthropometry.
- Design and evaluate jobs, equipment, tools, products, and environments with a focus on identifying and mitigating health and safety hazards.
- Develop strategies to reduce or eliminate physical stress and the risk of injuries and illnesses in the workplace.
- Create designs for jobs, workspaces, and products that accommodate a diverse workforce, taking into account variability in human dimensions, strength, endurance, and physical capacity.
- Optimize designs to maximize human capabilities, minimize physical stress, and balance workload.
- Effectively communicate design considerations and defend them to human factors practitioners and professionals who may not be proficient in human factors.

Recommended Prerequisites:

- PSYC 7101 Engineering Psychology I
- Basic Statistics

Course Materials

No textbooks are required. Videos, slides, and written reference materials on the course topics are provided on the course web site.

Recommended Textbooks:

- Lee, J. D., Wickens, C. D., Liu, Y., & Boyle, L. N. (2017). Designing for People: An Introduction to Human Factors Engineering. 3rd edition. https://www.amazon.com/Designing-People-Introduction-Factors-Engineering/dp/1539808009
  Online PDF for the textbook: https://tinyurl.com/28rfrpad
- Bodyspace: Anthropometry, Ergonomics, and the Design of Work (2nd Ed.) by Stephen Pheasant
- The Occupational Ergonomics Handbook, Vols. 1 and 2 (Second Edition) edited by W. Karwowski and W. Marra

Evaluation

Assessments	Points
Two take-home exams	40
UVA design project	20
Weekly quizzes & reading	20
Lab participation & activities	20
	100

Descriptions

- **Take-home exams:** You will complete two take-home exams, each worth 20 points, consisting of multiple open-ended questions. You are allowed to review class slides and notes to support your answers.

- **UVA projects:** You will work in teams of 3-4 to develop a UAV workstation in a semester-long project with incremental progress. Each week, you will apply newly acquired knowledge towards your final design. By the end of the semester, as a team, you will submit a final report (10 points) and present your design to the class (10 points).

- **Weekly quizzes & readings:** Weekly quizzes serve two purposes:
  1. To assess your understanding of Tuesday's lecture.
  2. To give you the opportunity to critique the weekly readings and prepare for Thursday's in-class discussion.

  Thus, there will be two modules on Canvas:
  1. Module 1 Seminar: Contains multiple-choice and open-ended questions to evaluate your understanding. You have three attempts, and your highest score will count as your final score. Bring any questions about the quizzes for discussion on Thursday.
  2. Module 2 Reading: Includes an open-ended textbox for you to provide a short list (e.g., 3-5 bullet points) of reviews, critiques, or questions regarding each week's readings. Bring these points to class on Thursday to facilitate discussion. Good responses should encourage debate, so don't hesitate to be critical. This part is graded on a pass/fail basis.

  Starting from week 2, weekly quizzes and reading are always due every Wednesday by 11:59 PM. You will have 10 quizzes in total.

- **Lab activities:** Every Thursday, we will have lab activities, including paper discussions, hands-on tasks, and UAV design work. Usually, by the end of the class, you will submit your in-class works. Your participation and submitted documents will be evaluated on pass/fail grade for 20 points.

Team Grading Evaluation Policy:
At the middle and end of the project, students will engage in a comprehensive evaluation process at the conclusion of the project. This assessment involves self-evaluation and the evaluation of teammates' performances. The outcomes of these team-member evaluations can influence an individual student's course grade by up to 10%.

Grading Scale

Letter grade	Grade range
A	89.5–100
B	79.5–89.4
C	73.5–79.4
D	73.4–63.5
F	63.5

Course Policy

Attendance: Students are expected to attend all classes, arrive on time, participate in hands-on activities, and contribute comments on readings. It is understood that occasionally a student may need to miss a scheduled class due to illness, religious observances, or other personal reasons. If a student needs to miss more than **two** classes due to illness or other anticipated emergencies, these circumstances will be considered on a case-by-case basis.

Late Policy: Assignments and project deliverables must be submitted by the due date. Submissions that are late will incur a penalty of 20% of the total grade for that deliverable for each day it is late.

Accommodations: This course follows the accommodations procedure of Georgia Tech policy. The request can be made through the student service services. To facilitate all necessary aids and services in a timely manner, it is recommended that students send an early notification to the instructor—within the first two weeks of classes, or at least two weeks before accommodations are expected to begin.

Diversity and Inclusion Statement: Georgia Tech and the course instructor are committed to full inclusion in education for all persons. Services and reasonable accommodations are available to students with temporary and permanent disabilities, to students facing mental health or other personal challenges, and to students with other kinds of learning challenges. Please feel free to let the instructor know if there are circumstances affecting your ability to participate in class.

Academic Integrity:
In this course, which focuses on the interactions of human with emerging technologies, the ethical use of large language models (LLMs) such as ChatGPT is important to consider. These models offer

significant advantages in enhancing academic writing, problem-solving, facilitating critical thinking, and supporting programming tasks. However, it is essential to acknowledge that LLMs may introduce bias and generate inaccurate information.

Your responsibility in this context is to rigorously verify and, when necessary, revise the output information to ensure its accuracy, freedom from bias, and alignment with academic integrity standards. While these tools can be powerful aids, it is crucial to exercise vigilance in distinguishing and rectifying any biased or inaccurate content.

As the instructor, I will serve as the final judge in evaluating your assignments and projects. Points may be deducted if your submissions demonstrate a lack of effort, critical thinking, or adherence to academic integrity principles. It is important that you maintain transparency throughout the process by saving a copy of your interactions with ChatGPT, including the original input messages, prompts, and any revised versions you have implemented. These documents will be requested and discussed if disagreements on assignment evaluations emerge.

Course Schedule

Week	Date	Lecture (Tuesdays)	Date	Lab (Thursdays)	Readings
W01	08/19	HF/Ergonomics Intro	08/21	UAV Concepts	Peschel & Murphy (2013)
W02	08/26	Automation	08/28	Design human-centered automation	Design for people Chapter 11; Vagia et al. (2016)
W03	09/02	Displays	09/04	Design UAV displays	Sanders & McCormick Chapter 5; Walker & Nees (2011)
W04	09/09	Controls	09/11	Design UAV controls	Design for people chapter 9; Mouloua et al. (2001)
W05	09/16	Human-Computer Interaction	09/18	No Class (Conference)	Design for people chapter 10
W06	09/23	No Class (Exam week)	09/25	No Class (Exam week)	**Exam 1 (9/26)**
W07	09/30	Anthropometry & Workspace	10/02	Design UAV workspace	Design for people Chapter 12;
W08	10/07	Fall break	10/09	Biomechanics for Design	Design for people Chapter 13; Greene et al. (2022)
W09	10/14	No Class (Conference)	10/16	No Class (Conference)	N/A
W10	10/21	Principles and Standards	10/23	Apply principles and standards	Carswell & Seidelman (2015);
W11	10/28	Stress and Workload	10/30	Apply to UAV workspace	Design for people Chapter 15 & Sam & Gombolay (2024)
W12	11/04	Design for Situational Awareness	11/06	Apply to UAV workspace	Endsley Chapter 6
W13	11/11	Safety and Accident Prevention	11/13	Apply to UAV workspace	Design for people Chapter 16
W14	11/18	Job Design, Selection and Training	11/20	Develop Job/Training Aids	Design for people Chapter 17
W15	11/25	**Final Presentation**	11/27	**Thanksgiving**	**Exam 2 (12/11)**