ID 2320 HUMAN FACTORS IN DESIGN – Summer 2025

Credit Value: 3
Date(s): May 19 – June 18
Time(s): Tuesdays and Thursdays, 5:00pm ET

Instructor: Dr. Gordon Vos
Contact Information: Email - gordon.vos@design.gatech.edu
Scheduled Course Office Hours: Tuesdays and Thursdays, 5:00pm ET, via Zoom

Format: Online, Synchronous and Asynchronous. Each class will be a real-time Zoom call with the professor for discussions, questions, and answers. These real-time meetings are expected to only be 30-60 minutes. The technical lectures will be pre-recorded and watched asynchronously by the students at convenient with their schedules. The lectures will range between 1.5-2.5 hours in length.

The real-time Zoom calls will start at 5:00pm ET on Tuesdays and Thursdays. The Zoom call discussion periods will be started promptly at 5:00pm ET, and will go for as long as needed to discussion relevant topics and questions (expected to be 30-60 minutes). **The first Zoom call will be held on May 19thth. Zoom call attendance is mandatory**. Please see the Canvas page for this class and the 'Zoom' menu item for the class invitations.

Catalog Course Description

Human Factors in Design provides an introduction to the topics of Human Factors, Ergonomics, and Anthropometry including the fundamentals of:

- The physical senses
- Anthropometry and biomechanics
- Human information processing capabilities

Students learn to apply human factors to design of products, physical controls and computer interfaces.

Course Mode and Expectations

- Online, Synchronous: Students will attend class meetings online via **Zoom**, in real-time. Technical lectures will be pre-recorded and hosted on **Canvas**.
- All course materials, assignments and deliverables will be electronic through **Canvas**
- Participation expectations are outlined in detail in the Attendance and Accommodation sections later in this syllabus

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Course Objectives

Upon completion of the course students are expected to:

- Understand the basic capabilities of human sense and cognition
- Understand the basics of human physical capabilities
- Understand ergonomic design guidelines
- Apply ergonomic research to the design process
- Evaluate the ergonomic design of products and systems

Course Format
Instructional methods for teaching the course include:

- Lectures
- Real-Time In-Class Discussions (Held via Zoom)
- Homework
- Quizzes
- Final Exam

Weekly Learning Activities

- Lecture and Class Sessions (8 hours)
- Offline Reading (3.0 hours)
- Homework (2.0 hours)
- Quizzes (1.0 hour)
- Total Hours (14 hours)

Course Calendar

Week	Date	Lecture	Topic
1	5/19 and 5/21	1	Course Introduction and Introduction to Human Factors
		2	Human Factors of the Physical Senses: Vision
		3	Human Factors of the Physical Senses: Hearing
2	5/26 and 5/28	4	Human Factors of the Physical Senses: Tactile, Olfactory, and Thermal
		5	Cognition and Decision Making
		6	Stress and Workload
3	6/2 and 6/4	7	Human Computer Interaction and Automation
		8	Displays and Control Systems
		9	Anthropometry and Workspaces
4	6/9 and 6/11	10	Musculoskeletal Disorders and Biomechanics
		11	Seating Related Biomechanics
5	6/16 and 6/18	12	Office Ergonomics
		13	Design Evaluation Methods and Research
		All	Final Exam Week

Course Requirements and Course Grading
Communication is an essential part of any student-teacher interaction. However, as an online class, most class content is available asynchronously.

The grades for this course will be based on the following course requirements and percentages of allocation:

30% **Homework**: Will include relatively short homework assignments for each week
30% **Quizzes**: Short 1-5 question quizzes, multiple choice, on Canvas, covering the topics of the week
40% **Final Exam**: online, open book, given at the end of the semester

The quizzes and exam will be open book and online. However, they are to be completed on your own – no collaboration or sharing of work allowed.

Readings

Textbook *(Recommended not Required)*
Christopher D. Wickens, John D. Lee, Yili Liu, Sallie Gordon-Becker. Introduction to Human Factors Engineering. 2nd Edition. Prentice Hall, 2003. ISBN-10: 0131837362. ISBN-13: 978-0131837362.

Optional Readings

Readings
- Casey (1993). **Set Phasers on Stun: And Other True Tales of Design, Technology, and Human Error**. Santa Barbara, Aegean Publishing Company.
- Salvendy (2006). **Handbook of Human Factors and Ergonomics**. Hoboken, John Wiley and Sons.
- Burgess (1989). **Human Factors in Industrial Design**. Blue Ridge Summit, Tab Books, Inc.
- Norman (1988). **The Design of Everyday Things**. New York, Basic Books.
- Vicente (2006). **The Human Factor**. New York, Routledge.
- Nielsen (1993). **Usability Engineering**. San Francisco, Morgan Kaufmann.
- Stanton (1998). **Human Factors in Consumer Products**. London, Taylor and Francis.
- Green and Jordan (1999). **Human Factors in Product Design: Current Practice and Future Trends**. London, Taylor and Francis.
- Roebuck (1995). **Anthropometric Methods: Designing to Fit the Human Body**. Santa Monica, Human Factors and Ergonomics Society.
- Pheasant and Haslegrave (2006). **Body Space: Anthropometry, Ergonomics and the Design of Work**. Boca Raton, Taylor and Francis.
- Woodson, Tillman B., and Tilman P. (1992). **Human Factors Design Handbook**. New York, McGraw-Hill.
- Tilley (2002). **The Measure of Man and Woman**. New York, Wiley and Sons.
- Kirwan and Ainsworth (1992). **A Guide to Task Analysis**. Boca Raton, CRC Press.
- Panero and Zelnik (1979). **Human Dimension & Interior Space**. New York, Crown Publishing Group.

Research Methods and Evaluation
- http://www.socialresearchmethods.net/kb/strucres.php
- http://www.socialresearchmethods.net/kb/desintro.php
- http://www.socialresearchmethods.net/kb/resques.php
- http://www.socialresearchmethods.net/kb/destypes.php
- http://www.socialresearchmethods.net/kb/hypothes.php
- http://www.socialresearchmethods.net/kb/dedind.php
- http://www.socialresearchmethods.net/kb/statdesc.php
- http://www.socialresearchmethods.net/kb/statinf.php
- http://www.socialresearchmethods.net/kb/measlevl.php

Canvas
The course will utilize Canvas (canvas.gatech.edu) for the distribution of class materials (such as lecture slides or supplemental readings), announcements, and for turning in class assignments. All official class communication will be made available through Canvas, and it is each student's individual responsibility to keep up to date and/or ensure that you receive notifications.

Attendance *(virtually online)*
Students are required to attend the real-time instances of online class at the designated time.

Participation
Students are expected to actively engage in any in-class discussions and activities as needed.

Academic and Research Honesty/Integrity Statement
Georgia Tech aims to cultivate a community based on trust, academic integrity, and honor. Students are expected to act according to the highest ethical standards. Review the Student Code of Conduct and the Academic Honor Code, especially Appendix A: Graduate Addendum to the Academic Honor Code.

Students are expected to perform research in an ethical and responsible manner. All Doctoral and Master's Thesis students are required to take the Responsible Conduct of Research training, and it is expected that students abide by the principles taught in that training while performing research.

Any student suspected of cheating or plagiarizing on a quiz, exam, or assignment will be reported to the Office of Student Integrity, who will investigate the incident and identify the appropriate penalty for violations.

Allegations of scientific or scholarly misconduct are handled in accordance with the procedures outlined by the Policy for Responding to Allegations of Scientific or Other Scholarly Misconduct.

Student-Faculty Expectations
At Georgia Tech, we believe that it is important to strive for an atmosphere of mutual respect, acknowledgement, and responsibility between faculty members and the student body. The Student-Faculty Expectations articulates some basic expectations that you can have of me and that I have of you. Additional information for research-related work is given in The Expectations of Advisors and Advisees. In the end, simple respect for knowledge, hard work, and cordial interactions will help build the environment we seek. Therefore, I encourage you to remain committed to the ideals of Georgia Tech while in this class.

Accommodations for Students with Disabilities
If you are a student with learning needs that require special accommodation, contact the Office of Disability Services as soon as possible to make an appointment to discuss your special needs and to obtain an accommodations letter. Please also e-mail me as soon as possible in order to set up a time to discuss your learning needs.