



SIE 410A Human Factors and Ergonomics (HFE) in System Designs

Course Description:

Students who take this course will gain familiarity with the basic concepts, methods, principles and skills in the human factors and ergonomics (HFE) design process: Understand, Design, Evaluate. They will learn ways to apply HFE in system designs.

Learning Outcomes:

- Learn basic but core concepts in human factors and ergonomics including human perception, cognition, motor control etc.
- Gain knowledge in applying human factors and ergonomics in system design (e.g., display, user interface, anthropometry etc.)
- Develop skills in data collection and analysis with tools and techniques common to the practice of human factors and ergonomics
- Gain experience with the human factors and ergonomics design process
- Enhance oral and written communication skills through analysis and reporting in team projects and at home labs
- Consider ethical issues related to research study and business/organizational design

Team and Contact Information

- Instructor: Dave Wood, Ergonomics Manager at Raytheon Missiles and Defense
 - Office Hours: After class or by appointment on Fridays
 - Email: ErgoDave@email.arizona.edu
- Teaching Assistant: Aaron McCommon
 - Office Hours: After class or by appointment on Fridays
 - amccommon349@email.arizona.edu
- Course Coordinator at Yuma Campus: Samuel Peffers,
 - samuelpeffers@email.arizona.edu

Class Modality:

This class is scheduled to be taught in the FLEX IN-PERSON modality.

Meeting times for remote teaching:

We will be meeting remotely until the University notifies us that in-person meetings may commence. We will meet Mon & Wed 4:30 -5:45 PM by zoom. Lectures will be recorded and uploaded after the class on Panopto, so you can watch them asynchronously if needed. You are required to attend on the assigned date and time for all quizzes/exams.

Zoom URL lectures, quizzes, (MW 4:30-5:45 PM):

<https://arizona.zoom.us/j/81246361898>

Password sie410

Course Prerequisites or Co-requisites:

Advanced standing is required before taking this course. For Advanced Standing of undergraduate students, please visit the webpage for detail information to obtain the advanced standing: <http://sie.engr.arizona.edu/advanced-standing> .

Course Communications:

If students have any questions or suggestions, please post your questions to our online discussion forum (<https://piazza.com/class/kjohsa83lhm2j3?cid=7>).

Textbook:

John D Lee, Christopher D. Wickens, Yili Liu, Linda Ng Boyle: Designing for People: An Introduction to Human Factors Engineering 3rd Edition, 2017

Electronic version of this textbook is available here (for \$5.00):

https://www.amazon.com/Designing-People-Introduction-Factors-Engineering-ebook/dp/B07VLTNZTM/ref=sr_1_1?dchild=1&keywords=designing+for+people+an+introduction+to+human+factors&qid=1610132818&sr=8-1 (be sure to down load Kindle reader app).

Quizzes:

About 6 open-book quizzes will be administered throughout the whole semester. There will be NO make-up quizzes for any reason. However, when computing the final grade, your lowest single score (including 0 in case you did not take it) will be dropped. The quiz date and time are scheduled based on course's schedule and we cannot move the quiz time based on your individual reasons. All quizzes will be administered by students' own computers remotely through D2L during regular scheduled, announced class times (right after every 3 chapters are completed).

Projects:

Projects are designed to train students to apply knowledge from class in HFE process: understand, design and evaluation in practice. Each student team will need to submit three project section reports (3-5 pages recommended per each report excluding appendix and references) to address questions described in each section report descriptions. Check the hard deadlines for all reports in the schedule (by midnight). Late submission penalty for project reports: Late for 1 day, -10% of your report grade; Late for 2 days, -20%, etc.

Project Report Submission Format: All project reports (as a pdf format) need to be submitted to the D2L under assignments section by the due date with the following naming convention: *Project_reportZ_teamX_2021.pdf*

Project teams are encouraged to form study groups and work together thru out the semester.

Flashcards

Creating and reviewing flashcards is a well-documented learning method (we will cover in chapter 17 on training methods). Students will create at least 5 flashcards for each

chapter on topics/information of their choosing. Credit will be given for digital photos taken of card sets uploaded the day of each quiz (as pass/fail). Flashcards typically have a term on one side and the definition on the other side of a 3 by 5 inch card.

Midterm and Final Exam

Exams will be open-book and open lecture notes and administered by students' own computers remotely through an D2L and proctored via ZOOM while we are virtual. It is your responsibility to find a quiet place to take exams remotely (2 hours for each midterm and final exam).

Grading Scale and Policies Tasks	Weight, %	Format	Comments
6 Quizzes (drop the lowest quiz score)	25 (5 at 5% each)	open book, open lecture notes (D2L)	In class, See course schedule
4 Team Projects (drop lowest score)	21 (3 at 7% each)	Online submission (D2L)	See course schedule
6 sets of flash cards, (drop one)	4 (5 at 0.8% each)	Digital photos, upload to D2L	Day of each quiz
Class participation in daily activities	4 (16 at 0.25% each)	Digital photos upload to D2L	After each class activity
Midterm Exam	23	Open book, open lecture notes (D2L)	See course schedule
Final Exam	23	Open book, open lecture notes (D2L)	See course schedule
Total	100		

We will calculate your final grade based on the final score based on the table above (See table below). As a guideline in grading your final grade, the following table (upper bound) may be used:

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Total Score Grade

>=90 A

>=80 B

>=70 C

>=60 D

Less than 60 E

Requests for incomplete (I) or withdrawal (W) must be made in accordance with University policies, which are available at <http://catalog.arizona.edu/policy/grades-and-grading-system#incomplete> and <http://catalog.arizona.edu/policy/grades-and-grading-system#Withdrawal> respectively.

University IT Support:

For course videos and online support: support@engr.arizona.edu

Yuma Campus IT support: Alberto Urbietta, asu@email.arizona.edu

Absence and Class Participation Policy

Participating in the course by attending lectures, reading our text book and participating in other course events are vital to the learning process. Students who miss class are highly recommended to watch recorded lectures before the next class. There will be numerous class activities to turn in and will be tracked and counted formally in your grade (4%).

Course Drop Policy: The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <https://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>

Religious Reasons: The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy> .

Pre-Approved Absences: Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

- **Face coverings are required in our classroom:** Per UArizona's Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space, and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the learning space until the matter is resolved.
- **Physical distancing is required in our classroom:** During our in-person class meetings, we will respect CDC guidelines, including restricted seating to increase physical distancing and appropriately-worn face coverings. Per UArizona's Administrative Directive, face coverings that cover the nose, mouth, and chin are required to be worn in all learning spaces at the University of Arizona (e.g., in classrooms, laboratories and studios). Any student who violates this directive will be asked to immediately leave the learning space, and will be allowed to return only when they are wearing a face covering. Subsequent episodes of noncompliance will result in a Student Code of Conduct complaint being filed with the Dean of Students Office, which may result in sanctions being applied. The student will not be able to return to the learning space until the matter is resolved.

- The Disability Resource Center is available to explore face coverings and accessibility considerations if you believe that your disability or medical condition precludes you from utilizing any face covering or mask option. DRC will explore the range of potential options as well as remote course offerings. Should DRC determine an accommodation to this directive is reasonable, DRC will communicate this accommodation with your instructor.
- **Classroom attendance:**
 - If you feel sick, or may have been in contact with someone who is infectious, stay home. Except for seeking medical care, avoid contact with others and do not travel.
 - Notify your instructors if you will be missing an in person or online course meeting, or you will miss an assignment deadline.
 - Non-attendance for any reason does not guarantee an automatic extension of due date or rescheduling of examinations.
 - Please communicate and coordinate any request directly with your instructor.
 - Campus Health is testing for COVID-19. Please call (520) 621-9202 before you visit in person.
 - Visit the UArizona COVID-19 page for regular updates.
- **Academic advising:** If you have questions about your academic progress this semester, or your chosen degree program, please note that advisors at the Advising Resource Center can guide you toward university resources to help you succeed.
- **Life challenges:** If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office can be reached at 520-621-2057 or DOS-deanofstudents@email.arizona.edu.
- **Physical and mental-health challenges:** If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call (520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, call (520) 621-3334.

Equipment and software requirements: For this class you will need daily access to the following hardware: computer, laptop, or web-enabled device with webcam and microphone; regular access to reliable internet signal.

- **Staying current:** follow course schedule for lecture topics (which chapter of the book we are on), dates of quizzes, reports, exams, and special activities.

Remain flexible: If pandemic conditions warrant, the University may require that we return to remote operations. If that is the case, we will notify you by D2L Announcement and email that we are moving to remote operations.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to oneself. See <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students> .

Notification of Objectionable Materials

This course will contain material of a mature nature, which may include explicit language, depictions of nudity, and/or violence. The instructor will provide advance notice when such materials will be used. Students are not automatically excused from interacting with such materials, but they are encouraged to speak with the instructor to voice concerns and to provide feedback.

Accessibility and Accommodations

Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcomed to contact the Disability Resource Center (520-621-3268) to establish reasonable accommodations. For additional information on the Disability Resource Center and reasonable accommodations, please visit <http://drc.arizona.edu> .

If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate. Please be aware that the accessible table and chairs in our classroom should remain available for students who find that standard classroom seating is not usable.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity> . The University Libraries have some excellent tips for avoiding plagiarism, available at <http://new.library.arizona.edu/research/citing/plagiarism>.

For example, you should follow the following integrity codes in our class:

- No copy of other people's homework. In grading your homework, TA will exam all of your homework carefully and catch anyone who is copying other people's homework. Even if they are from the same software's output, TA can still judge whether it is a copy of others or not based on your writing and formatting.
- No copy or discussion in the tests/exams. TA and other students will report these behaviors in exams and your exam papers will also be checked by TA carefully for any cheating behavior. Do not seat too close to each other during quizzes or exams.

*Selling notes and/or other course materials to other students or to a third party for resale is **not** permitted without the instructor's express written consent.* Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA e-mail to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student e-mail addresses. This conduct may also constitute copyright infringement.

Confidentiality of Student Records

<http://www.registrar.arizona.edu/personal-information/family-educational-rights-and-privacy-act-1974-ferpa?topic=ferpa>

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.