



SIE 410 Human Factors and Ergonomics in System Designs

MW 4:30-5:45 PM AME S212

Description of Course

Students (both onsite and distance learning) who take this course will get familiar with the basic concepts, methods, principles and skills in human factors and ergonomics and apply them 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, automation 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 take-home labs
- Consider ethical issues to protect human in study design and test

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>.

Instructor Team and Contact Information

- **Primary Instructor:** Changxu (Sean) Wu, Professor at Department of SIE
Office Hour: Monday 2-4 PM or by Appointment
Office: 318B ENGR
Email: changxuwu@email.arizona.edu; Phone: 621-2342
- **Volunteer Instructor:** Dave Wood, Ergonomics Specialist at Raytheon
Email: david.ergo.wood@raytheon.com
- **Teaching Assistant 1:** Yunes Elbishari <younes@email.arizona.edu>
 - Main Responsibility: Quiz preparations and arrangements and grading, attendance, project grading
- **Teaching Assistant 2:** Yijie Chen, yjiechen@email.arizona.edu
 - Main Responsibility: Lab arrangements and grading, lecture assistance, exam grading
- **Course Coordinator at Yuma Campus:** Samuel Peffers,

samuelpfeffers@email.arizona.edu

- **Proctor at Yuma Campus:** Alberto Urbieta, asu@email.arizona.edu
Other Teaching Assistants and Course Homepage Information will be announced in the classroom.

If you are not in Yuma or main campus, it is your responsibility to find your own proctor. This person needs to contact instructor and TA before the Quiz 1 and receive the quiz and exam, print them out, administrate the quiz and exam, scan them and send them to the first TA (Teaching Assistant 1 see Page 1).

University IT Support:

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

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

Course Format and Teaching Methods

Lectures, team projects, take-home lab, in-class discussion and practice.

For distance learning students: 1) If you are alone: you will find your team mates remotely and meet online for your projects (Instructor will provide you detail instruction about that in the recorded lecture). If you are not able to form team remotely, you are allowed to carry out the project individually based on recorded lectures accessible through D2L. 2) If you have classmates at your place, you can form a team with them.

Absence and Class Participation Policy

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required. Students who miss class due to illness or emergency are required to bring documentation from their health-care provider or other relevant, professional third parties. Failure to submit third-party documentation will result in unexcused absences. Attendance will be taken randomly throughout the whole semester. A student can only sign his or her own name on the attendance sheet. If you are late or missing during the class when the attendance is taken, you are not allowed to sign the sheet after the class only except medical reasons (Doctor's note is required).

Participation in class discussions will be particularly important if your final grade is borderline. If your participation is satisfactory the grade may be adjusted upward. If your participation is unsatisfactory, your grade may remain as is or adjusted downward. Participation is determined on the association of your name with class attendance, participation in discussions, offering insight to class topics, answering questions, etc.

Course Drop Policy: The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at:

<http://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>

Course Communications

If students have any questions or suggestions, please email to the teaching assistants or instructor, or inform the instructor directly in classroom or in his office hour.

Textbook

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

Quiz

About close-book 6 quiz will be distributed through the whole semester. There will be NO make-up quizzes. However, when computing the final grade, but your lowest 1 quiz grade (including 0 in case you did not show up) 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 own travel schedule.

Take-Home Lab

In order to let students get first-hand experience of data collection in human factors and ergonomics, funded by Raytheon Company and SIE department, we have prepared a set of equipment for you to borrow and use in this semester.

1) During lectures, the instructor (or TA) will introduce the purpose and procedure of take-home lab.

2) We will form students' lab teams at beginning of this semester and each lab team will fill in equipment usage sheet at TA's place

3) On the date of the usage of your team, your team (at least one student) will go to TA's place to pick up the equipment and your team needs to complete the take-home lab in 48 hours (sorry for the limited amount of time, since we have lots of students in class) and return them to TA (TA will check the equipment when you return). **If you damage or lost the equipment during usage, you will be responsible to purchase a new one.**

If your team returned the equipment later than 48 hours, your group performance in lab will be affected: Late for 1 day, -10% of your lab report score of your whole team (every member); Late for 2 days, -20%, etc.

4) Your team needs to submit your take-home lab report in 3 days right after your team picks up the equipment (Day 1: Pick up your equipment, end of Day 2 complete the take-home lab, Day 3 submit your report).

All lab reports of the whole semester, whenever your team pick up the equipment, are due 2 days before the final exam.

Exam

Students should read the test/exam instruction carefully before it starts, whether it is open-book or a close-book test/exam. If it is an open-book test/exam, students who forget to bring a textbook or other materials, are not allowed to borrow book or other materials from other students in the exam room.

Students with disability, please contact the TA to arrange your tests/exams or schedule with the Disability Resource Center (DRC).

The date and time of the final exam or project, along with links to the Final Exam Regulations, <https://www.registrar.arizona.edu/courses/final-examination-regulations-and-information>, and Final Exam Schedule, <http://www.registrar.arizona.edu/schedules/finals.htm>.

Grading Scale and Policies

1) Grading Distributions

	Weight	Format		Due Date
		On-site	Distance	
Quiz	15% (3% each)	Close-book	Close-Book	In Class
Take-Home Lab Report (By Team)	15%	Paper Submission	Online Submission	Due in 3 days after your team get the equipment
Team Project Report	20%	Paper Submission	Online Submission	See Weekly Schedule
Final Exam (Comprehensive)	45%	Open Book	Open Book	See Weekly Schedule
Attendance, participation including in class exercises, and classroom policy	5%	Your signature on attendance sheet	N/A	In Class

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:

Total Score	Grade
>=90	A
>=80	B
>=70	C
>=60	D
Less than 60	E

*Note: Round up policy in both tables: Say, if you get a total score 89.5, we will round it up to 90. Unfortunately, if you get 89.4, we are not able to round it up to

90. We keep this rule same across all students.

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.

Teaching Assistant Responsibility

TA(s) in this class will be responsible for grading your work together with the instructor to grade your projects. TA(s) are also responsible answering students' questions if needed, and collecting students' scores and other work assigned by the instructor. If you have any questions for your grading, please go to TA's office hour or make an appointment with TA via email.

- **Teaching Assistant 1:** Vida Pashaei, vidapashaei1993@email.arizona.edu
 - Main Responsibility: Quiz preparations and arrangements and grading, attendance, project grading
- **Teaching Assistant 2:** Yijie Chen, yjiechen@email.arizona.edu
 - Main Responsibility: Lab arrangements and grading, lecture assistance, exam grading

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming, and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (e.g., texting, chatting, reading a newspaper, making phone calls, web surfing, etc.). In addition, students should follow the following Classroom Behavior Policy:

- Not leaving early. Early leaving will distract both the instructor and students
- Not talking with other classmates while the instructor or another student is speaking. If a student has a question or comment, he or she should raise a hand, rather than starting a conversation about it with a neighbor
- Not packing backpacks to leave until the instructor has dismissed class
- Showing respect and concern for others by not monopolizing class discussion. Students must allow others time to give their input and ask questions. Students should not stray from the topic of class discussion
- Not eating and drinking during class time

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, sexual situations, 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 welcome 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 this room 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 all 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 in the exam.

*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.

Additional Resources for Students

UA Academic policies and procedures are available at
<http://catalog.arizona.edu/policies>

Student Assistance and Advocacy information is available at
<http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

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.

Late Submission Penalty

For material that is submitted late (e.g., take-home lab report, project report (including its stage report), etc), if you submit on the second day: -15%; Report submitted on the third day: -30%; on the fourth day: -45% (-n*15% rule will apply here) (n is number of late days); ... till -100%.

UA Nondiscrimination and Anti-harassment Policy:

The University is committed to creating and maintaining an environment free of discrimination, see: <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Inclusive Excellence is a fundamental part of the University of Arizona's strategic plan and culture. As part of this initiative, the institution embraces and practices diversity and inclusiveness. These values are expected, respected and welcomed in this course.

This course supports elective gender pronoun use and self-identification; rosters indicating such choices will be updated throughout the semester, upon student request. As the course includes team work and in-class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect. Additional Resources for Students Statement: Office of Diversity (<http://diversity.arizona.edu/>)

<http://www.health.arizona.edu/counseling-and-psych-services>

http://oasis.health.arizona.edu/hpps_oasis_program.htm