

Seminar in Human Factors

PSYC 273

Fall 2026 Section 01 In Person 3 Unit(s) 08/19/2026 to 12/07/2026 Modified 08/23/2026



Contact Information

Instructor : Dr Shobana Subramanian Arora

Email: shobana.subramanianarora@sjsu.edu

Office: DMH 232

Office Hours

Monday, 2:00 PM to 3:00 PM, Via Zoom or In-person by Appointment



Course Information

Monday, 3:00 PM to 5:45 PM, DMH 226B



Course Description and Requisites

Data and theory of sensory and cognitive psychology and their application to the design of systems used by humans.

Prerequisite: PSYC 135 and PSYC 158 (or equivalent).

Letter Graded



Classroom Protocols

Class participation and Student responsibility

This is a seminar and therefore **class participation** is important. Attendance is essential for successful class performance. The student will receive a score of zero for any assessment item not submitted because of unexcused absences. As such, you should attend each class and be prepared to discuss the topic(s) for that day.

Each student is responsible for the syllabus, material discussed, distributed or assigned in class, and all communications sent through email or on Canvas. Students are responsible for reviewing documents and assignments posted online and submitting assignments with sufficient time before the due date to avoid technical issues. Excuses such as "Canvas did not allow me to upload" is not considered valid unless you can document that the system was down.

Please **be respectful**. There will be NO

- Cell phone use during class
- Chewing gum during class
- Late arrival to class
- Email submissions - please use Canvas for all submissions

Please read **policy on plagiarism** in the Student Conduct website.

Please use your computer **only for in-class assigned activities**.

Note that University Policy S16-9, policy states that "Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus."

NOTE that University policy F69-24 at <http://www.sjsu.edu/senate/docs/F69-24.pdf> states that "Students should attend all meetings of their classes, not only because they are responsible for material discussed therein, but because active participation is frequently essential to insure maximum benefit for all members of the class. Attendance per se shall not be used as a criterion for grading."

Regrading policy

Students have 1 week after grades are released for an assignment or exam to submit a re-grade request in writing. This request must not exceed 1 page (12-point font, single spacing), and must clearly indicate the relevant problem(s) and justification for why you think re-grading is warranted.

Note: that a requested re-grade may result in further point deductions if new errors are discovered.

Final Examination and Evaluation

A final exam will cover all of the lecture and reading material. You will be allowed to use a one 8.5" by 11" sheet "cheat sheet", which needs to be turned in at the end of the exam.

Exams will be proctored in this course through Respondus Monitor and LockDown Browser. Please note it is the instructor's discretion to determine the method of proctoring. If cheating is suspected the proctored videos and audio may be used for further inspection and may become part of the student's

disciplinary record. Note that the proctoring software does not determine whether academic misconduct occurred, but does determine whether something irregular occurred that may require further investigation.

Students are encouraged to contact the instructor if unexpected interruptions (from a parent or roommate, for example) occur during an exam. If you miss the exam, no make-up exam will be given unless the instructor has been apprised of the reason for absence at least 48 hours in advance. Exceptions can be made in case of sickness, military service, jury duty, presentation at a professional conference, or death in the family. In all cases, some form of verifiable documentation will be required. More details can be found in University policy S17-1 (<http://www.sjsu.edu/senate/docs/S17-1.pdf>) which states that "Faculty members are required to have a culminating activity for their courses, which can include a final examination, a final research paper or project, a final creative work or performance, a final portfolio of work, or other appropriate assignment."

Use of AI Technology

The focus on this class is learning optimal design of interfaces and technology to ensure they are usable and valuable for humans. This class presents a unique opportunity to understand your own learning/cognitive/perception needs and experiences and how technology can work for you. Use this self-reflection lens to use AI in a critical way. **Honor your effort.**

The classroom policy: Please don't use any of the AI tools (including ChatGPT) to complete any of your class assignments as you are being graded for the quality of **your (human) analysis**. You may use AI tools to create the following **supporting materials**:

- Generate transcripts of interviews. Summaries will also be generated dependent on the tool of use. You can review those but I highly recommend looking at the raw data and doing the analysis yourself.
- Create cheat sheets and notes for the final exam and prepare for the exam.

I will provide opportunities to use AI tools so we can compare with our own analysis at particular junctures in the schedule- this draws on the principle of "generate first and then consult" instead of passively offloading.

Please note Wickens et al included a section on Human Factors and Agentic AI in the 5th edition which is why I have picked that edition as the textbook. Along with other readings, we will discuss prompting including prepping as a design/research activity, and how to validate, verify, probe against edge cases, train models and be adversarial etc. - all from a Human Factors lens.

If you don't want to use any AI tools, you have the liberty to do so.

Program Information

Program learning outcomes (PLOs) are skills and knowledge that students will have achieved upon completion of the MA in Research and Experimental Psychology degree. Each course in our curriculum contributes to one or more of these PLOs. The PLOs for the degree are:

1. Advanced Knowledge Base in Research and Experimental Psychology. Students completing the Research and Experimental Psychology MA program will be able to demonstrate advanced knowledge of the major theoretical perspectives and research methods across areas of experimental psychology (e.g., Developmental, Social, Cognitive, and Physiological).
2. Research Skills and Scholarship. Graduates of our program will possess an advanced level of competence in research methods, statistical techniques, and technical writing skills. Students completing the Research and Experimental Psychology MA program are required to complete a thesis. The thesis will demonstrate:
 - 2.1 creative problem-solving in the design and implementation of empirical research.
 - 2.2 project management skills in the implementation of empirical research.
 - 2.3 advanced competency in the statistical analysis and interpretation of empirical research findings.
 - 2.4 communication (oral and written) of research findings at a professional level.
3. Career Enhancement. Students completing the Research and Experimental Psychology MA program will achieve career enhancement through placement in a doctoral program or acceptance of a position requiring a master's in psychology in the public or private sector.

Course Goals

This course is designed to provide you with a survey of theory, research, and application in human factors, as applied to the design of consumer products, software applications and complex systems.

The textbook and lectures will be the primary sources of information in the course, but a good deal of understanding must also come from each student's thoughts and insights on the everyday systems and products with which they interact.

The course primarily reviews the “information processing” approach to Human Factors—referred to in the textbook as Engineering Psychology. We cover the human information processing system and how to apply our understanding of this system to the presentation of information and overall user experience design of various product and systems. In addition, we will discuss contemporary human factors issues such as automation, IoT, virtual reality and more.

Throughout the course students will be exposed to real-world examples of universal usability principles across a variety of products and domains.

Course Learning Outcomes (CLOs)

Upon successful completion of this course, students will be able to:

1. Students will have a clear understanding of the capabilities and limitations of human information processing and how to apply this understanding to user interface and user experience design.
2. Students will learn several universal usability principles and be able to apply these principles toward evaluating and designing products and systems for ease of use.

3. Students will learn how to analyze the usability of a product and how to write up this analysis as a usability heuristic evaluation report.

Course Materials

Engineering Psychology & Human Performance

Author: Christopher D. Wickens, Justin G. Hollands, Raja Parasuraman, Simon Banbury

Publisher: Routledge

Edition: 5th Edition

Year: 2022

ISBN: 978-1032011738

Please note you will need **the 5th edition**

Other readings and links

Additional materials will be provided in class, on canvas (<https://sjsu.instructure.com>), or the instructor will inform you of necessary materials.

Please plan to bring **headphones** to the class as some of the in-class materials will be audio/visual.

Course Requirements and Assignments

Heuristic Evaluation Final Report

Students will conduct one large-scale heuristic evaluation project. This is an individual report with a minimum-word requirement of 2000 words to be written without any assistance from any other people.

Students are required to complete 5 milestones before the Final milestone of the completed report, during the course of the quarter where they submit specific sections and/or drafts. Students will also provide written and verbal peer review in class as well as complete a 10 minute presentation to anchor the peer review activity and get meaningful feedback.

- Milestone #1 - First impressions report
- Milestone #2 - Transcripts of interviews, 1-page summary report
- Milestone #3 - Draft Final report with key sections (recommended to keep number of pages to under 30)
- Milestone #4 - 10 page final report draft and 10 minute presentation with 5 slides to support the presentation (for peer review)
- Milestone #5 - Peer review notes (in class activity)
- Final Milestone - Completed report (10 page report and appendix)

In-class short heuristic analysis assignments and online discussions

Students will complete 5 short heuristic analysis assignments in-class, focused on the topic for each class. The instructor will provide example products/UIs/interfaces with prompts.

It is critical to attend every class or you will miss completing these assignments. If you miss a class for excused compelling reasons (grave crisis) that are exceptional, unforeseen, and/or unavoidable, please contact the instructor for how to make up. Written documentation is required.

Some of these assignments may be done in groups and instructor will provide details on deliverables from each student.

In addition, students will make meaningful contributions (examples will be discussed in class) to 2 online discussions based on additional readings. Each discussion will be completed within 1 week - as noted in the class schedule.

Final exam

A final exam will cover all of the lecture and reading material. The final exam will be given on the scheduled date and scheduled time.

The final exam can be taken during make-up day only for excused and compelling reasons (grave crisis) that are exceptional, unforeseen, and/or unavoidable. Written documentation is required.

Reading assignments

Students are responsible for all reading assignments for each class, whether or not those readings are discussed in class. The text and readings provide a springboard and a resource for the course.

✓ Grading Information

Criteria

Type	Weight	Topic	Notes
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Type	Weight	Topic	Notes
Heuristic Evaluation Report	50%	Decided with instructor by week 2	A Single Grade assigned for but there will be a 5% grade reduction for each of the 5 milestones not submitted on time. Please note instructor will track submission of peer review notes and evaluate them in the following way: • Providing feedback: meaningful feedback of at least 100 words for each peer. If some groups have lower numbers of students, instructor may revise requirements. • Utilizing feedback: meaningful revisions in the final report compared to the draft. The student is not expected to act on all feedback and not responsible if peer feedback is poor or not submitted on time. But an iteration of the draft that was reviewed by peers is expected. Grade will be assigned based on content and quality of the report. Class discussions will cover what makes for a good report.
5 in class- assignments and 2 online discussions	35%	Provided by instructor	
Final exam	15%	Provided by instructor	

Breakdown

Grade	Range	Notes
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Grade	Range	Notes																												
		Grading Scale <table><tr><th>Grade</th><th>Percentage</th></tr><tr><td>A plus</td><td>97 to 100%</td></tr><tr><td>A</td><td>94 to 96%</td></tr><tr><td>A minus</td><td>90 to 93%</td></tr><tr><td>B plus</td><td>87 to 89 %</td></tr><tr><td>B</td><td>84 to 86%</td></tr><tr><td>B minus</td><td>80 to 83%</td></tr><tr><td>C plus</td><td>77 to 79%</td></tr><tr><td>C</td><td>74 to 76%</td></tr><tr><td>C minus</td><td>70 to 73%</td></tr><tr><td>D plus</td><td>67 to 69%</td></tr><tr><td>D</td><td>64 to 66%</td></tr><tr><td>D minus</td><td>60 to 63%</td></tr><tr><td>F</td><td>Less than 60</td></tr></table>	Grade	Percentage	A plus	97 to 100%	A	94 to 96%	A minus	90 to 93%	B plus	87 to 89 %	B	84 to 86%	B minus	80 to 83%	C plus	77 to 79%	C	74 to 76%	C minus	70 to 73%	D plus	67 to 69%	D	64 to 66%	D minus	60 to 63%	F	Less than 60
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University Policies

Per [University Policy S16-9 \(PDF\)](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on the [Syllabus Information](https://www.sjsu.edu/curriculum/courses/syllabus-info.php) (<https://www.sjsu.edu/curriculum/courses/syllabus-info.php>) web page. Make sure to visit this page to review and be aware of these university policies and resources.

Course Schedule

When	Topic	Notes
In Class Week 1 08/24/2026 3:00 PM - 5:45 PM	Syllabus review and Introduction to Engineering Psychology	(optional) Wickens Reading: Chapter 1 (Introduction to Engineering Psychology) Practice In-class activities - not graded

When	Topic	Notes
In Class 08/31/2026 3:00 PM - 5:45 PM	Signal Detection and Absolute Judgment	Wickens Reading: - Chapter 1 (Introduction to Engineering Psychology) - Chapter 3 (Signal Detection and Absolute Judgment) Due: In-class assignment #1
Holiday 09/07/2026 3:00 PM - 5:45 PM		
In Class 09/14/2026 3:00 PM - 5:45 PM	Attention in Perception and Display Space	Wickens Reading: Chapter 4 (Attention in Perception and Display Space) Due: In-class assignment #2
In Class and Online 09/21/2026 3:00 PM - 5:45 PM	Recap of 09/14 and Spatial Displays	Wickens Reading: Chapter 5 (Spatial Displays) Due: Project Milestone #1 - First impressions Starts: Online group discussion #1
In Class and Online 09/28/2026 3:00 PM - 5:45 PM	Heuristics analysis report frameworks and Introduction to Spatial Cognition, Navigation and Manual Control	Wickens Reading: Chapter 6 (Spatial Cognition, Navigation and Manual Control) - 6.1-6.6 Additional Readings assigned and discussed during class Due: Online group discussion #1 completed Draft Scripts for user interviews completed in class

When	Topic	Notes
In Class 10/05/2026 3:00 PM - 5:45 PM	Spatial Cognition, Navigation and Manual Control (continued)	Wickens Reading: Chapter 6 (Spatial Cognition, Navigation and Manual Control) - 6.7-6.14 Due: In class assignment #3
In Class 10/12/2026 3:00 PM - 5:45 PM	Language and Communication	Wickens Reading: Chapter 7 (Language and Communication) Due: In-class assignment #4
In Class 10/19/2026 3:00 PM - 5:45 PM	Memory and Training	Wickens reading Chapter 8 (Memory and Training)
In Class 10/26/2026 3:00 PM - 5:45 PM	Decision and Training	Wickens Reading: Chapter 9 (Decision and Training) Due: Project milestone #2 - Transcripts of interviews, 1-page summary
In Class and Online 11/02/2026 3:00 PM - 5:45 PM	Selection of Action	Wickens Reading: Chapter 10 (Selection of Action) Starts: Online group discussion #2
In Class and Online 11/09/2026 3:00 PM - 5:45 PM	Multitasking	Wickens Reading: Chapter 11 (Multitasking) Due: Online group discussion #2 completed Due: In class exercise #5 Report writing deep dive in class - materials provided by instructor
In Class 11/16/2026 3:00 PM - 5:45 PM	Mental Workload and Stress	Wickens Reading: Chapter 12 (Mental Workload and Stress) Due: Project milestone #3 - Draft completed with all key sections (page limit of 30 pages recommended)

When	Topic	Notes
In Class 11/23/2026 3:00 PM - 5:45 PM	Human-Automation Interaction	Wickens Reading: Chapter 13 (Human-Automation Interaction)
In Class 11/30/2026 3:00 PM - 5:45 PM	In class peer review and presentations	Due: Project milestone #4 -10 page final report draft and 10 minute presentation (with 5 slides) Project Milestone #5 - Peer review notes completed in class
In Class 12/07/2026 3:00 PM - 5:45 PM	Human-Automation Interaction (continued) and Recap of materials and Final exam review	Due: Final Heuristic Evaluation report - Completed 10 page report.
In Class 12/14/2026 3:00 PM - 5:45 PM DMH 226B	Final Exam	Due: Final exam