Research Methods for Human-centered Computing
CAP 5108
Class Periods: Tuesday Period 2-3, 8:35-10:25am/Thursday Period 3, 9:35-10:25am
Location: CSE E121
Academic Term: Spring 2023

Instructor:
Eakta Jain
ejain@ufl.edu
352-294-6653
Office Hours: Thursdays 2:30-3:30pm, Zoom or by appointment

Teaching Assistant/Peer Mentor/Supervised Teaching Student:
Please contact through the Canvas website
- TBD

Course Description
This class introduces the fundamental methods and techniques to collect data from humans for building and evaluating technologies, including experimental design, types of variables, types of errors, hypothesis testing, survey design, behavioral and psychophysical methods.

Course Pre-Requisites
STA 3032 Statistics, COP 3530 Data Structures and Algorithms or equivalent

Course Objectives
At the end of this course, students will be able to articulate research questions in the context of humans interacting with technology, design a testable hypothesis, design an experiment, collect data from human subjects, analyze the data for statistical significance.

Materials and Supply Fees
List if applicable

Relation to Program Outcomes (ABET):

Outcome	Coverage*
1. An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics	None
2. An ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors	None
3. An ability to communicate effectively with a range of audiences	Medium
4. An ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts	Medium
5. An ability to function effectively on a team whose members together provide leadership, create a	High

collaborative and inclusive environment, establish goals, plan tasks, and meet objectives	
6. An ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions	High
7. An ability to acquire and apply new knowledge as needed, using appropriate learning strategies	High

*Coverage is given as high, medium, or low. An empty box indicates that this outcome is not covered or assessed in the course.

Required Textbooks and Software

"Human-Computer Interaction: An Empirical Research Perspective" by I. Scott MacKenzie

Instructor-curated articles and book chapters will be made available through Canvas as appropriate. Course notes created by instructor as applicable.

Programming assignments will use MATLAB (available through UF IT) and R (free).

Recommended Materials

Course Schedule

Week 1:   Foundations
Week 2:   Design of experiments including ethics
Week 3:   Critique of experiments: common pitfalls
Week 4:   Surveys and questionnaires
Week 5:   Observational studies
Week 6:   Practical considerations for conducting experiments
Week 7:   Peer review
Week 8:   Analysis (Descriptive Statistics)
Week 9:   Analysis (Inferential Statistics)
Week 10:   [*Spring break*]
Week 11:   Running participants
Week 12:   Reporting your experiment
Week 13:   Reviewing a report
Week 14:   Qualitative methods
Week 15:   Presenting your results

The list of topics may change slightly depending on class interest, and interruptions due to inclement weather, school holidays, etc.

Attendance Policy, Class Expectations, and Make-Up Policy

Class attendance is expected. Excused absences are consistent with university policies in the undergraduate catalog (https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx)and require appropriate documentation.

Late policy: -5 points for every day past deadline, for example, if an assignment is due on Thursday at 4:05pm, then any submission timestamped in the range from Thursday 4:06pm to Friday 4:05pm will receive -5 points, and any submission from Friday 4:06pm to Saturday 4:05pm will receive -10 points, etc.

Excused absences will be taken into account when computing the late penalty. So, for example, if an assignment is due on Thursday at 4:05pm, and you have a doctor's note for Monday and Tuesday, then your assignment can be submitted on Saturday at 4:05pm without any late penalty.

Evaluation of Grades

Assignment	Deadline	Total Points	Percentage of Final Grade
Homework mini-projects (2)	TBD	2x10 = 20	20%
Midterm Exam	In class around Week 7-8-9	20	20%
Ethics training	Thursday of Week 2	5	5%
Peer grading	TBD, In class	5	5%
Group Project	Project pitch, demo, debrief, final movie, four page write-up	50	50%
			100%

Brief Description of assignment types:

1) There will be two homework mini-projects involving the small scale research study. For example, a homework could involve conducting observational work on the university campus and confirming/rejecting a hypothesis based on the logged data.

2) The student will work on a group project based on their interest. This project activity will involve design, literature review, implementation and evaluation.

While students will get individual grades in the mini-projects and exam, they will get a group grade for the group project. This grading scheme reflects real-life work where you are essentially graded with respect to how your team performs. For example, if a product has to be shipped, ultimately your "grade", e.g., end of year bonus, is almost entirely dependent how well your team comes together to ship it. The group project provides an opportunity to learn and practice these life skills.

Grading Policy
The following is given as an example only.

Percent	Grade	Grade Points
93.4 - 100	A	4.00
90.0 - 93.3	A-	3.67
86.7 - 89.9	B+	3.33
83.4 - 86.6	B	3.00
80.0 - 83.3	B-	2.67
76.7 - 79.9	C+	2.33
73.4 - 76.6	C	2.00
70.0 - 73.3	C-	1.67
66.7 - 69.9	D+	1.33
63.4 - 66.6	D	1.00
60.0 - 63.3	D-	0.67
0 - 59.9	E	0.00

More information on UF grading policy may be found at:
https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via https://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at https://gatorevals.aa.ufl.edu/public-results/.

In-Class Recording

Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

University Honesty Policy

UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Commitment to a Safe and Inclusive Learning Environment

The Herbert Wertheim College of Engineering values broad diversity within our community and is committed to individual and group empowerment, inclusion, and the elimination of discrimination. It is expected that every

person in this class will treat one another with dignity and respect regardless of gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture.

If you feel like your performance in class is being impacted by discrimination or harassment of any kind, please contact your instructor or any of the following:
• Your academic advisor or Graduate Program Coordinator
• Robin Bielling, Director of Human Resources, 352-392-0903, rbielling@eng.ufl.edu
• Curtis Taylor, Associate Dean of Student Affairs, 352-392-2177, taylor@eng.ufl.edu
• Toshikazu Nishida, Associate Dean of Academic Affairs, 352-392-0943, nishida@eng.ufl.edu

Software Use
All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy
There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see: https://registrar.ufl.edu/ferpa.html

Campus Resources:

Health and Wellness

U Matter, We Care:
Your well-being is important to the University of Florida. The U Matter, We Care initiative is committed to creating a culture of care on our campus by encouraging members of our community to look out for one another and to reach out for help if a member of our community is in need. If you or a friend is in distress, please contact umatter@ufl.edu so that the U Matter, We Care Team can reach out to the student in distress. A nighttime and weekend crisis counselor is available by phone at 352-392-1575. The U Matter, We Care Team can help connect students to the many other helping resources available including, but not limited to, Victim Advocates, Housing staff, and the Counseling and Wellness Center. Please remember that asking for help is a sign of strength. In case of emergency, call 9-1-1.

Counseling and Wellness Center: http://www.counseling.ufl.edu/cwc, and 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Discrimination, Harassment, Assault, or Violence
If you or a friend has been subjected to sexual discrimination, sexual harassment, sexual assault, or violence contact the **Office of Title IX Compliance**, located at Yon Hall Room 427, 1908 Stadium Road, (352) 273-1094, title-ix@ufl.edu

Sexual Assault Recovery Services (SARS)
Student Health Care Center, 392-1161.

University Police Department at 392-1111 (or 9-1-1 for emergencies), or http://www.police.ufl.edu/.

Academic Resources

E-learning technical suppor*t*, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. https://lss.at.ufl.edu/help.shtml.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling. https://www.crc.ufl.edu/.

Library Support, http://cms.uflib.ufl.edu/ask. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring. https://teachingcenter.ufl.edu/.

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers. https://writing.ufl.edu/writing-studio/.

Student Complaints Campus*: https://care.dso.ufl.edu.

On-Line Students Complaints*: http://www.distance.ufl.edu/student-complaint-process.