COMPUTATIONAL MODELING OF BEHAVIOR
PSYCH 119

Instructor:
Mark Steyvers

Teaching Assistant:
Priyam Das, office hours: Wednesday 1:30-2:30pm (except for 4/6)

Hours:
Class: Tuesday, Thursday 11-12:20pm (ALP3600)
Online discussion: Friday, 3-5pm
Questions: Ed Discussion

Course Book:
The instructor is writing a coursebook that is available on Canvas

Course Summary:
Psychology is increasingly relying on computational modeling to develop and test theories of human behavior. Computational models allow vague verbal statements in theory to be replaced by precise specifications of some underlying psychological process. The goal in this course understand how computational models can be used as theoretical tools to predict, evaluate and interpret psychological data. We will cover computational modeling in a number of domains in psychology such as perception, learning, decision-making, and problem-solving. The course will focus on skill development through coding. For each type of computational model, we will discuss the underlying theoretical ideas and simulate the model to approximate some aspects of behavioral data.

The course is mostly asynchronous. During class time, the instructor will not lecture the material but instead is available to answer questions and troubleshoot any problems that come up during the exercises.

Programming Language Requirement
It is required for students to have *some prior experience coding* in **Matlab** or **Python.** Some of

the assignments require you to submit programming code in either Matlab or Python. Other assignments will require you to answer questions regarding computational models that you implement with Matlab or Python. Go to this page to learn more about Matlab software and prerequisites. Go to this page to learn more about Python software and prerequisites.

Not sure whether you have sufficient programming skills for this course? Take the ungraded self-assessment quiz. It is fine to make some mistakes in this quiz but if you don't know how to approach the coding problems at all, you might want to take this course when you have developed more coding skills.

Teaching approach:

- The class is self-paced and mostly asynchronous. You can work at your own pace but there are cut-off dates for the assignments. Therefore, a certain pace is required to progress through the assignments.
- The assignments are open book, open notes (but do not copy answers from online resources -- the answers should be yours)
- You can partially complete each assignment and revisit later if needed. However, when you submit the assignment, you are not allowed to take the assignment again.
- There are no lectures. During class time (and TA office hours), the instructor and teaching assistants will be available to answer any questions related to the assignments or general questions about modeling.
- There is no final exam

Class Discussion

We will be using Ed Discussion for class discussion. The system is highly catered to getting you help fast and efficiently from classmates, the TA, and the instructor. Rather than emailing questions to the teaching staff, we encourage you to post your questions on Ed Discussion so that all students can benefit from the answer. There are options to make a Private post (which only the instructors can see) or post anonymously (to everyone but the instructors), if you would prefer. If you need to share sensitive information with the course staff, then you should email us.

You can access Ed Discussion through the course navigation bar on the left.

Teamwork

- You are responsible for your own answers to questions that do not require code (e.g. multiple choice questions, numeric answers)
- For any assignment or question that involves submitting code, you are allowed to work with one other student (i.e., paired programming). Please make sure that the names of you and your team mate are listed on the code. Each of you will need to submit the code separately.

- For your final project, you have the option of working alone or teaming up with one other student.

Grading Policy.

Grades will be based on assignments, extra credit assignments, and a final project. Note that there is no final exam.

Final Project
For your final project, you can choose one the following options:

1) create a program that is a variant of one of the computational models discussed in this course and/or apply a model to data (e.g. for prediction and/or explanation). The code will need to be documented. Discuss the underlying idea, the results, and demonstrate your code (whatever the language used, no restrictions, as long as it is a programming language). If you are looking for data sets to use, take a look [here](#)

2) Write a 6-8 page paper about a computational model used in cognitive science (e.g. applied to behavioral data) that has not been discussed in this course. Find a journal article or articles using this type of model and explain how the model works, its underlying assumptions, and its applications using language that your classmates will understand.

For either type of final project, you should submit a screencast of approx. 5 minutes long in which you present your final project. Feel free to get creative but do discuss your idea and get approval for the project from the instructor or TA.

Academic Misconduct
Learning, research, and scholarship depend upon an environment of academic integrity and honesty. This environment can be maintained only when all participants recognize the importance of upholding the highest ethical standards. All student work, including quizzes and code assignments must be the work of the individual receiving credit. **Academic dishonesty includes having someone else take an examination or complete an assignment for you (or doing this for someone else), or any activity in which you represent someone else's work as your own**. **Please refrain from using online sources to find or request solutions to the assignments**. Note for some of the assignments, you are required to explain your solution, and failure to explain your code can be taken as an indication that the code was not generated by you. Violations of academic integrity will be referred to the Office of Academic Integrity and Student Conduct. The impact on your grade will be determined by the individual instructor's policies. Please familiarize yourself with [UCI's Academic Integrity PolicyLinks to an external site.](#) and speak to your instructor if you have any questions about what is and is not allowed in this course.