

Learning, Memory, and Knowledge Organization Psych P212

Prof. Mark Steyvers

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Class Time: Monday 9-11:50am

Class Location: SSPB3218

Office Hours: by appointment (SSPA 2109)

Course Description. In this course, we will address some fundamental issues in cognitive science involving memory, inductive reasoning, and knowledge organization. We will draw on insights from empirical results in cognitive psychology as well as formal models in cognitive science and machine learning. We will explore several current and classic issues in these fields. How can our knowledge of the world be represented? How can we store and retrieve such information? How can we acquire new knowledge about the world and integrate this with our existing representations? How does our knowledge organization reflect the environment we interact with? We will review prominent computational approaches in these areas mainly in the area Bayesian modeling.

Course format. The format of the course will be discussions and presentations by students. Each week, one or two students will lead the discussion. Everyone is expected to contribute to the class discussion. To prepare for this, you should come up with at least two questions or observations about the assigned reading(s). This will ensure that you have something you are comfortable discussing in class. Before coming to class, be sure you can summarize the key points (or key confusions) of the reading selection(s) to be discussed. **Your questions/observations will be due by 8am the day of class**, submitted via email to the instructors (please send them to both of us) and the student leading the discussion for that session. (If you are the one leading the discussion, you're exempt from emailing discussion questions for that class session.) Plain text in email is strongly preferred. Even if you miss the class session, you are still responsible for submitting your questions about the material to be covered in the session.

Grading Basis. The grade is determined solely by class participation and the ability to lead the discussion. *However*, if you do not participate satisfactorily, you will be asked to write a final paper. The paper can be written about any topic relevant to the course. One possibility is to report on a simulation of a computational model of memory, inductive learning or knowledge organization. Another is to report on empirical results (behavioral or brain imaging) that might constrain or inform theoretical models of memory. Finally, it is possible to write a review paper contrasting several theoretical approaches.

Reading Schedule: posted at <http://psiexp.ss.uci.edu/research/teaching/P212.htm>