LGCS 11: Introduction to Cognitive Science  
Spring, 2008  
Professor Deborah Burke, Pomona College

Office Hours for Prof. Burke: Wed. 10:30-12, Thursday 5:30-7 pm and by appointment. Phone: 72440; dburke@pomona.edu. Office: 2136 Lincoln.

Brief Course Summary: The goal of cognitive science is to explain the operations of the mind—its ability to perceive the world, to think and talk about the world, and to reflect self-consciously about its own thoughts. Cognitive science integrates research from multiple disciplines: cognitive psychology, linguistics, philosophy, computer science, and neuroscience. In this course, we examine some of the fundamental questions raised in cognitive science and we evaluate the methods in these multiple disciplines that are used to investigate these questions.

Reading: The required readings for this course are in a text book, Cognitive Science: An Introduction to the Study of Mind (2006) by J. Friedenberg and G. Silverman, and from primary sources that offer you direct experience of how cognitive science is conducted. The reading assignment should be completed by the date of assignment. All readings, except the text, are available on Sakai.

Grading: Your grade will be determined by three exams (40%), your class participation (15%), presentations by your student group (15%), and the final project (30%).

Demonstration: You will work in a group of 3-4 students and present a demonstration to the class. The demonstration will consist of an experiment in language processing research described in Altmann (2001). You may also find a suitable experiment in another source. The demos will replicate a published experiment testing students in the class. The original experiment will be modified in collaboration with the instructor.

Final Project: The final project will be a cognitive science experiment developed in collaboration with your student group and the instructor. You will form a hypothesis, design the experiment, gather experimental data, and present your findings to the class at the end of the semester. Each individual student must hand in her or his own written report. The style and format of the report will be discussed in class.

Class attendance: If you must miss class because of a field trip, illness or emergency, please inform the instructors. Material presented in class is often not in the reading and will be covered in exams. Part of your grade will reflect your participation in class and you cannot participate if you are not there.

SYLLABUS

Jan 22  Introduction and Overview of the Class  
Why do we think that there is a mind? What is the mind and who has one? Why is it important to study the mind? How do we study the mind.
Reading: F&S Chap 1

Jan 24  Is the Mind Separate from or the Same as the Body?
Materialism and Dualism

Reading: F&S Chap 2, p.29-44
Descartes: Meditations I and II

Jan 29  What is Consciousness, what does it do and where does it come from?

Reading: F&S p.49-64
Searle (1998)

Jan 31  Neural Correlates of Consciousness

Reading: Crick & Koch (1998)
LA Times Op Ed

Feb 5  Discussion of Mind/Body and Consciousness with Professor William Banks
Bring 2 written questions for Prof Banks to class.

Feb 7  Do We Need Mind to Explain Behavior?

Reading: F&S Chap3

Feb 12  Behaviorism versus Cognitive approaches

Reading: F&S, Chap 4, p.95-98
Chomsky (1959); Breland & Breland (1961)

Feb 14  The Scientific Study of the Mind
How do we measure behavior and what does this tell us about the mind?

Feb 19  Exam 1

Feb 21  Modeling the mind: The mind as a computational device.

Reading: F&S Chap 10; Searle (1980)

Feb 26  Modeling the Mind: How do we process language?

Reading: F&S Chap 9
Altmann (2001); Burke & James, 1994
Optional: Jackendoff (1994) p.3-26
Feb 28  No class; Meet with Prof about demonstration

Mar 4  Modeling the Mind: Constructive processes in perception
Reading: F&S, Chap 4, p.100-122

Mar 6  Modeling the Mind: Constructive processes in memory: Chunking, semantic priming and false memory
Reading: F&S, Chap 5, p.125-139
Roedigger & McDermott (1995)

Mar 11, 13  Student demonstrations of experiments
How do we measure language processing? Students will show methodology in class, explain predictions in terms of theory, and interpret results.

Mar 18 and 20  Spring Break

Mar 25  Memory Models: Memory without Awareness
Reading: Tulving & Schacter (1990)

Mar 27  Exam 2

Apr 1  The Neural Basis of Mind: Neurons and Neural systems
Reading: F&S, Chap 6

Apr 3  The Neural basis of mind: What does Neuroimaging Tell us about the Mind?
Reading: Bookheimer et al., 2000

Apr 8  When the mind breaks down: Brain damaged patients
Reading: Zeman, 2002, chap 6; Hilts, 1995

Apr 10  film

Apr 15, 17  Modelling the mind III: Serial versus parallel processing models; connectionist versus symbolic models
Reading: F&S, Chap 7; McClelland, Rumelhart & Hinton (1986); Farah, 2006

Apr 22, 24  Cognition and emotion
Reading: MacKay et al. (2004)

Apr 29 Language and Thought: Imagery versus propositional representation

Reading: F&S, Chap 5, p.140-149; Shepard & Metzler (1971)

Apr 29 Evolutionary accounts of cognition focusing on language.

Reading: Hauser, Chomsky & Fitch (2002); Lewontin (1998)

May 1, 6 Student presentations of projects

Wednesday May 7, REPORTS OF FINAL PROJECTS DUE IN PROF BURKE’S OFFICE 5pm. EACH STUDENT HANDS IN A REPORT

Thursday May 15, 9AM EXAM 3