DESCRIPTION: Cognitive science is an interdisciplinary approach to the study of cognition and intelligence. Cognitive science incorporates elements of psychology, philosophy, automata theory, neuroscience, and linguistics in an attempt to provide a more unified account of the nature of mind, the role of the brain in consciousness and cognitive processes, and the possibility of artificial intelligence. Computational models are playing an increasingly important role in the understanding of many human activities and in the characterization of humans themselves. This course will provide an opportunity for students to acquire some familiarity with the basic notions of these models, and to explore some of their prospects and limitations.

COURSE GOALS:
i. Development of a familiarity with the basic concepts, theories, and issues in a rapidly emerging interdisciplinary area.

ii. Exposure to recent lines of research in linguistics, psychology, computer science, and philosophy, and an understanding of the role each area plays in cognitive science.

iii. Awareness of philosophical and conceptual challenges facing computational models of human reasoning and language use.

iv. Cultivation of improved critical reasoning and reading skills.

Course Policies and Procedures:

Attendance: Attendance in lectures is expected. Since testable material is regularly introduced in lectures, it is impossible to miss class frequently and still do well in the course.

Late Papers: Assignments must be submitted at the beginning of the class period in which they are due for full credit. Late papers must be turned in by the start of the next class meeting; after that they will not be accepted. All accepted late papers are penalized a flat 10%.

Make-up Work: I am willing to re-schedule assignments for individuals who have a legitimate reason for doing so. If you know you are going to miss an exam date, you must notify me at least two class days in advance in order to receive a make-up. Unless you have made a prior arrangement with me, missed exams may be made up only in case of a documented emergency.

Disabilities Policy: If you have a specific disability that qualifies you for academic accommodations, please notify me and provide certification from Disability Services (Office of Special Students Services). The Office of Special Students Services is directed by Ms. Bernita Pulmas and is located in the Student Center, Room 270, Phone 460-7212.

Academic Dishonesty Policy: Academic dishonesty includes cheating on tests and homework as well as plagiarism. If you engage in academic dishonesty, I will notify you that you will receive an ‘F’ in the course. Upon being notified, you have five days to submit a written request to the department chairperson for a hearing on the matter, if you wish to have one. If no hearing request is made, or if the decision from the hearing goes against you, you will receive a course grade of ‘F’. Please see the Student Academic Conduct Policy of the University for details.

Procedures for Assessment of Student Performance: Given that you adhere to the course policies, your grade will be determined on the basis of graded assignments as specified below:
EVALUATION
Two Mid-semester objective exams (objective and short-essay) 15% each
Best 5 of 6 short written assignments: 9% each
Final exam (objective and short-essay): 25%

The short written assignments are to be typewritten and 3-5 pages in length. Please see the attached "Short Assignment Guide" for details. They will be due on the date I announce when I give them out (I'll usually provide about one week's notice). Short assignments are over our readings, and are graded on a scale from 0 to 10. For late papers see the policy above.

REQUIRED TEXT:
- This course has a list of required reserve readings. These are available in the Library. Three additional copies are available to be checked-out in the Philosophy Dept, HUMB 124. The check-out period is overnight. N.B.: The philosophy dept. closes at 4:00 pm most weekdays, and is closed on weekends.

SYLLABUS This syllabus is subject to change. Any changes will be announced in class.

Week  Topic and Reading
1. What is Cognitive Science?
   Philosophical Background: Dualism.
   Reading: Descartes, Selection from "Second Meditation"

2. Philosophical Background: Dualism (cont.) Identity Theory.
   Reading: U.T. Place, "Is Consciousness a Brain Process?"

3. Philosophical Background: Identity Theory, cont.
   Functionalism.

4. Reading: Selection from J. Fodor, Psychological Explanation.

5. An Informal Introduction to Functions and Turing Machines
   Reading: White, “Some Basic Concepts of Computability Theory” (From Cooney, ed., The Place of Mind, pp. 204-19.

6. The Turing Test of Intelligence.
   Reading: Turing, “Computing Machinery and Intelligence”
   EXAM #1: Friday, 2/21

7. Objections I: Is the Mind Just a Computer?
   Reading: Searle: selection from Minds, Brains, and Programs.
   Reading: Boden, "Escaping From the Chinese Room".
   **Reading:** Wasow, "Grammatical Theory".  
   (you are not required to know the technical details in section 5.3)  
   Representing Language: Semantics.  
   **Reading:** Barwise and Etchemendy, "Model-Theoretic Semantics"  
   (you may skip lightly through the technical details of section 6.4)  

   *Objections II:* Is language just symbol manipulation?  
   **Reading:** Stenlund: "Language, Mind, and Machines"  

10. **SPRING BREAK**  

11. *Objections II,* cont.  
   The "Frame Problem"  
   **Reading:** Dennet, D., "Cognitive Wheels: The Frame Problem of AI".  
   **EXAM #2 Friday, 3/28**  

   **Reading:** Smith: "Concepts and Induction"  

   **Reading:** Tienson, "An Introduction to Connectionism"  
   **Reading:** Clark, “Connectionism, Competence, and Explanation"  

   *Objections III:* Limits of Computational Models.  
   **Reading:** Dreyfus and Dreyfus, "Making a Mind Versus Modeling the Brain."  

15. *Objections III,* cont.  
   Can machines follow rules?  
   **Reading:** Shanker, "Wittgenstein Versus Turing on the Nature of Church's Thesis".  


**FINAL EXAM during scheduled final period.**