Syllabus for Computation & Cognition  
Spring 2006

Vital Statistics:
  **When:** TR 9:45 – 11:00 AM  
  **Where:** 221 Technology Center  
  **Who:** Prof. Amanda Holland-Minkley  
  ahollandminkley@washjeff.edu  
  228 Technology Center  
  724-503-1001 ext. 3400  
  Office Hours: MW 1:00-2:00, R 11:00-12:00 (or by appointment)

Important Dates:
  First Day of Class: Wednesday, February 1st  
  Last Day to Add/Drop: Tuesday, February 7th, 5:00 PM  
  Midterm Exam: Thursday, March 16th  
  Last Day for S/U or Withdrawal: Monday, March 27th  
  Last Day of Class: Tuesday, May 9th  
  Final Exam: Tuesday, May 16th, 8:00 – 10:30 AM

Catalog Course Description:
A survey of the fields of artificial intelligence and cognitive studies with particular attention given to the 
ability of computers to mimic, rival, and occasionally exceed humans in the performance of “intelligent” 
activities. This course examines the central role of information in producing intelligent behavior, and 
contrasts the information processing activities of cognitive- versus computation-based systems. Course 
readings will cover such topics as current uses of intelligent computation systems and the technological, 
psychological, and linguistic issues related to the construction of computation-based intelligent systems.

Course Objectives:
By the end of the course, students will possess:
  - A solid understanding of the role of information in intelligence,  
  - A working knowledge of the capabilities and limitations of current “intelligent” information 
    systems, and the near future of these systems,  
  - The ability to identify and evaluate the use of intelligent system technology in real world 
    applications,  
  - The ability to identify and contrast the information requirements of cognitive- and computation-
    based intelligent system,  
  - A multi-disciplinary understanding of the possible definitions of intelligence and the arguments 
    for and against each.

Required Text:

There will also be supplemental readings beyond the textbook, such as articles or web pages, which will 
be assigned throughout the semester.

Assignments, Evaluation and Grading:
There will be four forms of evaluation in this class: homework assignments, in-class activities, a final 
project and exams.

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Assignments will be worth 40% of the final grade. They will take a variety of forms, including but not limited to computer work, written reports, and problem-solving exercises. Unless otherwise stated, all assignments are to be done independently by each student; if you are in doubt as to whether you may collaborate on an assignment, ask me!

Another 10% of the final grade will be based on class activities, including computer-based exercises and group activities. Because of this, class attendance will be important, but for some exercises you may be given extra time, allowing the activities to be completed at home.

In the second half of the semester, a significant research project will be assigned in which students will study a particular topic within artificial intelligence and the cognitive sciences. This project and the associated paper will be worth 20% of the final grade and will be due on the last day of class, with intermediate deadlines assigned prior to that.

Finally, the remaining 30% of the final grade will be based on an in-class midterm exam on Thursday, March 16th, worth 15% for the final grade and a comprehensive final exam worth 15%, to be held Tuesday, May 16th from 8:00 – 10:30 AM.

Late Policy:
All assignments must be turned in promptly. Late assignments will be accepted, but at a 5% reduction in grade for each day that they are late (defined as each 24-hour time period after the original due date). All assignments, unless otherwise noted, will be submitted through Moodle, in a MSWord compatible format. It is your responsibility to ensure that your assignment has been submitted correctly and in a timely fashion.

Academic Honesty Policy:
It is assumed that you have read and are familiar with the college’s Academic Honest Policy. Applying the policy to this course, it is expected that all work submitted will be yours alone, unless you are explicitly permitted to work with others on that specific assignment. Be aware that plagiarism in this course would include not only using another’s words, but another’s specific mathematical or logical calculations. Assignments must be done independently and without reference to another student’s work. Any outside sources used in completing an assignment, including internet references, must be fully cited on any homework assignment or exercise. All cases of academic misconduct will be pursued per the procedures laid out in the academic honesty policy and may result in failure of the class and reporting to the Office of Academic Affairs.

General Course Mechanics and Classroom Expectations:
This will be a classroom lecture-style course without lab sections. There will be significant in-class discussion and activities. In order to get the most out of class, it will be important that you do all of the readings promptly as assigned, as lectures will assume you have done so. I expect all students to participate in class discussions. The course topics will follow the presentation in the text, with frequent supplements detailing current related research.

You are expected to attend class regularly, and you are fully responsible for any readings or assignments given in class, in-class activities, and for content covered in class which is not in the course text. Experience shows that students who do not come to class have difficulties with later homework assignments and exams. If you miss a class, it is your responsibility to find out what material you missed and make up any in-class activities. Note that W&J does not recognize “excused absences”. However, we do acknowledge that attendance is sometimes impossible due to emergency or other extenuating circumstances. These situations can only be accommodated if you make arrangements with the instructor, in advance if possible, or at the earliest possible time after the missed class (do not wait until the next
In the case of an emergency that causes you to miss meetings of multiple courses, you should contact the Dean of Academic Affairs or Dean of Student Life; they will be able to contact your instructors and help you make any necessary arrangements.

We will be making use of the Moodle course management system instead of Blackboard in this class, available at http://www.washjeff.edu/moodle/; be sure that you can log in and access the course pages through it and contact me if you have any problems. You are responsible for checking the system regularly for updates about assignments or class meetings, particularly if you miss class. You should also check your e-mail on a regular basis; I will assume that all students in the class are reachable through their W&J e-mail account.

**Topics:**
The following is a rough calendar of the topics that we will be covering in class; this schedule to revision based on class interest:

| Week 1: 2/2 | Introduction |
| Week 2: 2/7, 2/9 | Representation and Computation |
| Week 3: 2/14, 2/16 | Logic |
| Week 4: 2/21, 2/23 | Rules |
| Week 5: 2/28, 3/2 | Concepts |
| Week 6: 3/7, 3/9 | Analogies |
| Week 7: 3/14, 3/16 | Midterm Exam, Images |
| Week 8: 3/28, 3/30 | Connections |
| Week 9: 4/4, 4/6 | Brains |
| Week 10: 4/11, 4/13 | Emotions |
| Week 11: 4/18, 4/20 | Consciousness |
| Week 12: 4/25, 4/27 | Dynamic Systems |
| Week 13: 5/2, 5/4 | Special Topics |
| Week 14: 5/9 | Special Topics, Research Project due |
Guide to Classroom Responsibilities

Students’ Responsibilities

- Come to class, on time and prepared.
- Submit all work in a timely fashion, in the format required.
- Abide by the college’s Academic Honesty Policy.
- Be attentive and participate in class discussions.
- Do not be distracting or disruptive to others in the class.
- Read all course documents and messages from the instructor carefully.

Most importantly, be aware of what you do and do not understand. Start assignments early; look at returned assignments and solution sets promptly and follow up on any problems. Ask questions often and early – if you are confused about something, odds are other people are too. Go to office hours – that’s what they are for – or make an appointment for an alternate time. However, please do bring your notes, assignment, text or whatever material for which you have questions along with you. Communicate with me – I am here to help you learn the material, but you have to speak up if there is a problem.

Take an active role in your learning!

Instructor’s Responsibilities:

- Be on time and prepared for class.
- Grade and return all work in a timely fashion, giving clear feedback.
- Enforce the college’s Academic Honesty Policy consistently.
- Attempt to find effective ways to communicate course content to all students in the class.
- Be open to student questions during class and encourage participation.
- Ensure that all students have a comfortable environment in which to learn.
- Communicate all expectations and requirements to students clearly and in a timely fashion.
- Treat all students respectfully and equitably.

My responsibility is to give every student the best possible opportunity to master course material and meet the stated course objectives. Understanding that every student comes to a class with different interests and motivations, and that these needs must be balanced within the classroom, it is my goal to create a classroom experience in which all students are supported as well as challenged.

It is my responsibility to create an environment in which you can actively learn.