

CPSC 422 Spring 2007 — General Information

The University is a community united by a commitment to studying and learning. Basic to the survival of our community are the principles of academic freedom, respect for each other, and equality of opportunity for all. Any form of harassment to students or other persons (including harassment on the basis of sex, race, religion, sexual orientation, or ethnic background) is a threat to these principles, and will not be tolerated.

Read this sheet carefully, and save it for future reference.

Lectures	Tuesdays and Thursdays 14:00–15:15, Dempster 301
Course web page	http://www.cs.ubc.ca/spider/poole/cs422/2007/
WebCT course page	http://www.webct.ubc.ca/SCRIPT/cpsc_422_2006wt2/scripts/serve_home
Course newsgroup	ubc.courses.cpsc.422
Instructor	David Poole
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Office Hours	(see web page)
Teaching Assistants	Jacek Kisynski kisynski@cs.ubc.ca

Course Objectives

Intelligent Systems:

Building on material from CPSC 312 and CPSC 322, this course explores the science and technology developed for designing and implementing intelligent systems. CPSC 322 gave an overview of some AI topics making many simplifying assumptions (e.g., concentrating on finite feature-based representations). In this course, we investigate how to lift various of these assumptions to cover more sophisticated domains. CPSC 312 gives both methodologies for dealing with objects and relations as well as relational programming experience. CPSC 422 will build on the topics in these courses.

We will be using Java, a logical language *Cllog* that is designed for building knowledge-based systems and the *ClSpace* applets. *Cllog* and Prolog are available on the undergraduate servers and also available for home PCs.

The topics we will cover include:

- Building situated robots, hierarchical control
- Sequential decisions, Markov decision processes,

- Reinforcement learning
- Partial observability
- Multi-agent systems
- Knowledge engineering tools and how to build them
- Assumption-based reasoning: abduction and default reasoning; diagnosis and design;
- Ontologies, semantic web, OWL

The prerequisites for this course are CPSC 322 and CPSC 312.

Textbooks and materials

The course text is the unpublished second edition of

- D. Poole, A. Mackworth and R. Goebel, *Computational Intelligence: A Logical Approach*, Oxford University Press, 1998.

The chapters that we use will be available in html and pdf from the webCT site.

Much of the resource material for the course will be available on the web (at the course home page) and/or in the WebCT bulletin board. Please use the newsgroup for general issues (e.g., buying and selling textbooks) and the WebCT bulletin board for content-related issues. You will need to read these regularly. Students should also read `ubc.cs.undergrad` and `cs.gripe`.

Learning Opportunities

The course material will be covered primarily in the lectures. You should read the appropriate sections of the text prior to attending that lecture, and then review the text again, along with any additional notes you took, after the lecture.

Some of the topics will be a bit difficult. It is therefore absolutely essential that you **ask questions** whenever something is said which you don't understand.

You are required to attend all lectures; if you are unable to attend a lecture because of sickness or similar reasons, make sure you get the notes from a classmate. If you are out of class for an extended period of time because of sickness, see your instructor immediately upon your return in order to determine how to catch up.

CPSC 422 has no scheduled labs or tutorials. Students can use the usual undergraduate Computer Science labs to do homework assignments. All assignments will be able to be done on generic PCs (e.g., running MacOS, Linux or Windows). For details on lab facilities, see the Undergrad Web: <http://www.cs.ubc.ca/ugrad/>. If needed, we can schedule "unofficial" tutorials or review sessions as needed. If you would like such sessions, **please ask** your instructor.

Each student will be expected to do a number of "mini projects". These will involve implementing something or doing some research and explaining what you discovered to the rest of the class. These will often be given in one class and need to be presented at the next class. They can be done in groups, where appropriate.

There will also be a project that will expand on one of the themes of the course. You will be expected to write a report and give a presentation to the class.

Examinations

There will be one midterm (70 minutes) and a final examination, at the end of the term. Each exam will be closed-book, but you may have one letter-sized sheet of paper (21.6 by 28 cm), on which you may write any notes or soothing mantras you find useful.

The *tentative* date for the the midterm is February 27. This date will be confirmed at least two weeks before the midterm examination.

The final examination will be written on a date to be specified by the Registrar's Office. **Do not make travel plans for times during the examination period until the final examination schedule has been posted.**

If you miss an examination because of sickness or similar reasons, visit the Student Health Service or your physician, and then see your instructor (for an in-class examination) or the Dean of your Faculty (for a final examination). If you visit your own physician, get a note detailing the period during which you were medically incapable to write the exam. Do *not* write an examination if there is a medical factor which might impair your performance.

Final Mark

A tentative grading scheme is given below. Evaluation will be based on a number of assignments, a midterm, an exam and a project. The assignments are designed to teach you concepts rather than assess your knowledge. More detail on the project will be given later in the term.

- 20% for assignments;
- 20% for mini projects;
- 15% for the midterm;
- 20% for the project
- 25% for the final examination.

In addition, to get a passing mark in the course, you must pass the examinations.

Collaboration

Collaboration among students can play a valuable educational role, but the amount and form of collaboration is subject to limits that vary with the type of work involved. A high standard of scholarship is expected from all students. In general you must acknowledge all help received and reference all resources that you used.

- Homework: you¹ may discuss the assignments with other students but what you submit must be your own work written by you. You must acknowledge any collaboration or any secondary sources you used for the answers you provide. You should acknowledge all help

¹For assignments done in pairs or groups, the term "you" refers to the group.

you received and used, including from the instructor, TAs and fellow students. Copying any part of an assignment (from any source, including fellow students, past students, books, professional homework helpers and web sites), without explicit acknowledgment of the source is considered to be plagiarism, which is a serious offense. You must not *share* any code. Any programs required for a homework assignment must be written by you. You may be asked to explain your solution to a question; if you cannot satisfactorily explain how you obtained an answer, we will presume that it is not your work.

- For the project you may discuss your ideas and your analysis with anyone, but you must explicitly acknowledge who you have discussed it with, and any two students who discuss their projects must be in the same group or do projects on different topics.
- Exams: you may collaborate in studying for (and preparing the allowed notes for) exams, but you may not communicate with any other student during the exams.

Violations of these rules constitute very serious academic misconduct, and they are subject to penalties ranging from a grade of zero on a particular assignment to indefinite suspension from the University. More information on procedures and penalties can be found in the Department of Computer Science Undergraduate Handbook and in the University Calendar. If you are in any doubt about the interpretation of any of these rules, consult the instructor!