Winter 2016 – Comp3007
Programming Paradigms
Course outline

Description

An introduction to functional and logic programming. Topics include: semantics of functional
programming, assignment-free programming, the meta-circular interpreter, recursive functions,
Prolog, backtracking, cutting, negation.

Prerequisites for the course: COMP2402 or equivalent

Topics Covered

Here is a list of the main topics covered:

- An Introduction to programming paradigms
- Introduction to Scheme
- Building abstractions (procedural and data)
- Modularity in object state
- Environments
- Metalinguistic abstractions
- Introduction to logic programming
- Programming in Prolog
- Recursive logic programming
- The Prolog cut

Textbook

Course textbook for Scheme is Structure and Interpretation of Computer Programs by Harold
Abelson and Gerald Jay Sussman
Course textbook for Prolog is Prolog Programming a First Course by Paul Brna
Click the link for access to these free resources.

Software

You will be programming using Scheme and Prolog.
Please go to racket-lang.org to download Racket on your machine.
Please go to swi-prolog.org to download Swi Prolog on your machine.

Evaluation

Students will be evaluated in this course according to the following measures:
<table>
<thead>
<tr>
<th>Component</th>
<th>Weight</th>
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<tbody>
<tr>
<td>Assignments</td>
<td>30%</td>
</tr>
<tr>
<td>Mid-term exam</td>
<td>15%</td>
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<tr>
<td>Final Exam</td>
<td>55%</td>
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**Midterm**

The midterm will be closed-book and will cover material discussed up to the lecture prior to the midterm. The date for the midterm is tentatively scheduled for February 25th during regularly scheduled lecture. Attendance is mandatory! Your test must be handed back immediately when completed in order to be graded. You must attend and write the midterm. If sick, you must inform the instructor via email by at least the day before at the latest, and you will need official documentation as well (see below). Exceptions are only granted at the discretion of the instructor.

**Assignments**

There will be 4 assignments in this course, which will be available on the course web page. All assignments are counted equally towards the final grade equally. Assignments must be handed in before the due date and time. Late assignments will be penalized 25% per day. You will be using Carleton's cuLearn system to submit your assignments and view your grades throughout the term. DO NOT email your assignments to any TAs unless requested to do so. Always keep a backup of your work. Online backups such as email or Dropbox are recommended. That way you can access your code from anywhere. You should take the time to ensure that assignments are neat, legible and easy to understand. Any instructions required by the teaching assistants (for example any assumptions you made about the assignment) should be clearly indicated on a separate README.TXT file, included with the assignment. Remember, it is YOUR responsibility to demonstrate that you have understood and completed the assignment. A portion of your grade for assignments will be given for the readability of them and for your demonstration that you have completed the assigned tasks. The cuLearn system also allows you to view your marks on-line. You should ensure that the posted marks are correct. Any complaints regarding assignment marks should be brought to the attention of the TA who marked it (only if the TA does not address the problem to your satisfaction should you bring the matter to the instructor). This should be done no later than two weeks after the assignment has been returned to you. After this time, no remarking will be done. Being "sick" on the day an assignment is due is not an excuse for not doing it. Last minute issues such as a home internet failure are not considered acceptable excuses. You will be given ample time to complete each assignment. Start early and keep submitting partially completed versions. That way, if you get sick, your partially completed version will be marked, and you will not get 0. If you are sick for an extended period of time, please inform the instructor (not the TAs) immediately. All requests must be documented via email; a verbal agreement is insufficient. You will need to have official documentation of illness (see below). At this point, it will be up to the instructor's discretion as to how to handle the situation.

**Final Exam**
The final exam will be scheduled formally with the university. The time and date will be announced partway through the term. Do not make travel plans until the dates are known. No advance exams will be given. Attendance of this exam is mandatory. Note the "Double pass" rule is in effect for this course. That is, a grade of less than 40% on this exam will result in failure of the course.

**Collaboration Policy**

Collaborating on assignments is strictly disallowed. You must complete the work by yourself. If you need help, please see a TA or your instructor. Posting assignment solutions on discussion boards is also prohibited.

**SCS Computer Accounts**

Any student taking an SCS course qualifies to have an SCS account. SCS accounts can be created at the following URL: [http://www.scs.carleton.ca/newacct](http://www.scs.carleton.ca/newacct). SCS students can access one of the designated labs for your course. The labs are operational 7 days a week 24 hours per day, please be advised that the building will be closed overnight, Mon. - Fri. 23:00 - 8:00 and on weekends from 17:00 - 8:00. Technical support is available in room HP5161 Monday to Friday from 9:00 until 17:00. All SCS account related information is accessible at the following URL: [http://www.scs.carleton.ca/nethelp](http://www.scs.carleton.ca/nethelp).

**Undergraduate Academic Advisor**

The Undergraduate Advisor for the School of Computer Science is available in Room 5302C HP, by telephone at 520-2600, ext. 4364 or by email at undergraduate_advisor@scs.carleton.ca. The undergraduate advisor can assist with information about prerequisites and preclusions, course substitutions/equivalencies, understanding your academic audit and the remaining requirements for graduation. The undergraduate advisor will also refer students to appropriate resources such as the Science Student Success Centre, Learning Support Services and the Writing Tutorial Services.

**University Policies**

**Student Academic Integrity Policy**

Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Some examples of offences are: plagiarism and unauthorized cooperation or collaboration. Information on this policy may be found in the Undergraduate Calendar.

**Plagiarism**
As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". Such reported offences will be reviewed by the office of the Dean of Science.

Unauthorized Co-operation or Collaboration

Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

Students with Disabilities Requiring Academic Accommodations

Register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website: http://www.carleton.ca PMC/new-and-current-students/dates-and-deadlines

Religious Obligation

Write to me concerning any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website http://www.carleton.ca/equity/accommodation

Pregnancy Obligation

Write to me concerning any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website http://www.carleton.ca/equity/accommodation

Medical Certificate

The following is a link to the official medical certificate accepted by Carleton University for the deferral of final examinations or assignments in undergraduate courses. To access the form, please go to http://www.carleton.ca/registrar/forms