

# Course Outline

## Comp3007 - Programming Paradigms

### Description

An introduction to alternative programming paradigms such as functional, constraint-based, concurrent, and logic programming.

Prerequisites for the course: COMP 1805 with a minimum grade of C-, and either COMP 2402 or both of SYSC 2004 and SYSC 2100.

### Topics Covered

Here is a list of the main topics covered:

- Introduction to programming paradigms
- Introduction to functional programming (using Scheme)
- Procedural abstractions and recursive design
- Data abstractions
- Environments, Bindings, and Scoping Rules
- Modularity in object state
- Metalinguistic abstraction
- Introduction to logic programming (using Prolog)
- Recursive logic programming
- The Prolog cut

### Course Objectives

This course will teach you to view programming languages from a broader perspective. An introduction to declarative paradigms of programming is intended to compare and contrast with your already attained knowledge of more "mainstream" imperative programming languages. An incremental focus using the simple syntax of Scheme will provide you with an appreciation and understanding of the elements of programming language design, in both Scheme as well as in programming languages in general. An introduction to logic programming using Prolog will further illustrate the consistencies and nuances of alternative programming paradigms.

### 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(s) for access to these free resources.

## Software

You will be programming using Scheme and Prolog.

Please go to [racket-lang.org](http://racket-lang.org) to download Racket on your machine.

Please go to [swi-prolog.org](http://swi-prolog.org) to download Swi Prolog on your machine.

## Evaluation

Students will be evaluated according to their performance over all of the assessment items for the course. In this course students will be evaluated according to the following measures:

Component	Weight	Tentative Dates*
Assignments	45% (9% each)	Jan.31 Feb.14 Mar.07 Mar.21 Apr.11
Mid-term exam	20%	Week of Mar.01
Final Exam	35%	<a href="#">TBA</a>

Assessment items will not be reweighted.

\*Due dates subject to change. Announcements will be made in the event of any changes.

## Assignments

- There will be 5 assignments in this course.
- All assignments will be made available on the course web page as they are released.
- All assignments submissions must be your own individual and original work (see [Academic Integrity](#)).
- Software may be used to analyze and compare submissions to ensure that no instances of academic misconduct have been committed.
- All assignments are counted towards the final grade.
- Recommendations:
  - Do not wait until the last minute to submit your assignments.
  - Start early and keep submitting partially completed versions. That way, if you are unable to complete your assignment, your partially completed version will be marked, and you will not get 0. Being sick on the day an assignment is due is not an excuse for not doing it. Last minute issues (e.g., home internet/device failure, sudden illness) are not considered acceptable excuses for having completed no work over the duration that the assignment was available.

- Always keep a backup of your work, perhaps on a USB flash drive, via Dropbox/OneDrive, or by sending yourself an email with your assignment attached. That way you can access your code from anywhere.
- If any instructions are unclear, please ask for clarification. Incorrect assumptions or misunderstood directions will not be accepted as valid excuses. It is your responsibility to ensure you understand the question completely.
- Submission Guidelines:
  - You will be using Carleton's cuLearn system to submit your assignments and view your grades throughout the term.
  - You should take the time to ensure that assignments are neat, legible and easy to understand. 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. Often this is in the form of documentation and testing.
  - The assignment page will contain a section on submission guidelines. Please observe all special requirements placed there as well.
  - 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.
  - DO NOT email your assignments to any TAs unless requested to do so.
  - It is your responsibility to ENSURE that your submission was successful. Submitting the wrong file or failure to correctly submit your work will result in a mark of zero for that unit.
- Grading:
  - All assignments submitted through cuLearn will be graded by the TAs or the Instructor.
  - Grading turn-around is expected to be within one week of the submission deadline, though this may vary depending on the volume and complexity of assignments.
  - You will be provided with a mark and feedback on your assignment through cuLearn as well.
  - You should ensure that the posted marks are correct.
  - Any concerns regarding assignment marks should be brought to the attention of the person who marked it, not the instructor. Contact emails are available via the [Schedule](#) page.
  - If the TA is unable to reasonably assess your concerns, either they or you may contact the instructor to arbitrate the discussion.
  - Voicing your concerns must be done **no later than two weeks** after the assignment has been returned to you. After this time, no remarking will be done.
- Late Policy & Accommodations:
  - Assignments must be handed in before or on the due date and time.
  - You will be given a sufficient amount of time to complete each assignment.
  - Any assignments submitted after the deadline will be marked with a late penalty.
  - The standard late penalty is -25% of the maximum grade per day. (E.g., if you earned 43/60, but you submitted 3 hours late your grade is  $43 - (60 * .25) = 28$ ).
  - If an assignment indicates that no lates will be accepted then the late penalty will be 100% immediately following the deadline.

- Any changes made to an assignment submission after the deadline (even minor or insubstantial ones) will result in the *entire* submission being considered late.
- Any submissions subject to a 100% late penalty will not be marked.
- Illness during the course of an assignment does not excuse you from completing the assignment.
- If you experience a prolonged illness or some other reason for being unable to work on the assignment contact the instructor **before** the due date of the assignment.
- Any last minute disruptions (including illness or technological malfunction) will not be considered sufficient causes for accommodation. Students will be given sufficient (if not substantial) time to complete each assignment, and are expected to not wait until the last day to do them. If they do, they do so at their own risk.
- All accommodations are provided only at the discretion of the instructor.
- Accommodations will not be provided after the due date for any reason.
- To prevent abuses of accommodation policies, repeated requests for accommodation may be met with more stringent evidence requirements.

## Tutorials

There are no scheduled tutorials for this course.

## Midterm

The midterm will be held during regularly scheduled lecture. Tests are expected to be completed individually, any communication during the test will be considered cheating. You must attend, write, and submit your test immediately upon completion in order to be graded. In courses with more than one section, you are required to write the midterm in the section which you are registered.

By sitting to write any test you are confirming that you are of sound mind and body to do so. No accommodations will be made after that point. If you are unable to attend the test due to extenuating circumstances, you must inform the instructor via email before the test is scheduled to begin. You will need to submit a doctor's note (or other equivalent documentation) to verify your condition. Doctor's notes must be submitted within one week of the listed accommodation date. Accommodations are granted at the discretion of the instructor. Failure to follow the above instructions will result in a grade of 0 for your missed test. Deferred midterms may be held on evenings and/or weekends depending on availability. Failure to attend a deferred test will result in a grade of zero for the original missed grade item, there will be no deferred deferrals.

Some unfortunate circumstances that are *not* considered reason for accommodation include (but are not limited to):

- Missed the bus/stuck in traffic
- Illness of house mates/family members who aren't you
- Sore foot
- Slept through alarm/alarm malfunction

- Broken heart or other romance-related ailments
- Undisclosed "personal" issues
- Another test the same day
- Elective travel

It is your responsibility to ensure that your test marks posted to cuLearn are correct, and to do so within two weeks of those marks being made available.

## **Final Exam**

The time and place, as well as the format of the final exam will be announced later in the term. Attendance of the exam is mandatory. Do not make travel plans until the dates are known as no advance exams will be given. The exam period can be found at <http://carleton.ca/registrar/registration/dates-and-deadlines/>.

If you become ill during the examination period and need to apply for a deferral, please visit the [Registrar's Office website](#) for the most up-to-date information about deferred examination eligibility, deadlines, application, documentation and more.

## **Academic Integrity & Collaboration Policy**

While sharing of ideas among peers is encouraged, sharing of solutions, source code, or other gradable material is prohibited. **Collaborating on assignments, quizzes, tests, or final exams is strictly disallowed.** You must complete the work *by* and *for* yourself. If you need help in the course please use the course cuLearn forum, see a TA, or contact your instructor.

Any coursework that you submit for grades must be your own original work. Any work submitted that does not meet this description will be considered an act of academic misconduct. To investigate whether any instances of academic misconduct have been committed, all submissions will be considered by a combination of manual and automatic analyses.

You may use any code provided by the lecture materials, however you should include proper attribution when doing so (cite its source and location). Copying code from any unauthorized online source (even with attribution) will be considered cheating.

Please note, that it is also a serious offense to aid another student in committing an act of cheating. This includes (but is not limited to): sharing source code or other assignment, test, or tutorial solutions in part or in full, in person or in posting whether on the course forum, github, chatroom, cheating website, hallway noticeboard, or elsewhere.

[Standard](#) penalties for academic integrity offences:

First offence: A grade of F in the course

Second offence: One-term suspension from studies

Third offence: Expulsion from the University

## **Copyright & Fair use of materials**

All materials created for this course (including, but not limited to, lecture notes, in-class examples, tutorial exercises, assignments, examinations, and posted solutions) remain the intellectual property of the instructor. These materials are intended for the personal and non-transferable use of students registered in the current offering of the course, or person with interest in using the material for the purpose of their own learning. Reposting, reproducing, or redistributing any course materials, in part or in whole, without the written consent of the instructor, is strictly prohibited. A student who publicly posts or sells an instructor's work, without the instructor's express consent, may be charged with misconduct under Carleton's Academic Integrity Policy and/or Code of Conduct, and may also face adverse legal consequences for infringement of intellectual property rights.

## **Electronic Communication**

To ensure that all course announcements are received, **students are expected to check their Carleton email on a daily basis.**

Students are asked to pose all questions related to **course content** using the official **discussion board(s) on cuLearn**. Questions regarding the marking of your test/assignment should be directed to the individual who marked it. If your question is private or individual in nature please do not hesitate to contact the TAs or instructor via email. In order to ensure accuracy and accountability, *all* requests for course accommodations must be done via email to the instructor.

Emails to the TAs or instructor must include the course name in the subject line.

E.g.: Subject: "[COMP 3007B] Please Help."

Failure to do so may result in delays in response times or your message being missed completely. The instructor will attempt to answer every course-related email within 2 business days of the time it is received.

All emails and office hours are listed on the course [Contact](#) page.

## **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>. All SCS computer lab and technical support information can be found at: <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](mailto: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.

## **Centre for Student Academic Support**

The Centre for Student Academic Support (CSAS) is a centralized collection of learning support services designed to help students achieve their goals and improve their learning both inside and outside the classroom. CSAS offers academic assistance with course content, academic writing and skills development. Visit CSAS on the 4th floor of MacOdrum Library or online at: [carleton.ca/csas](http://carleton.ca/csas).

## **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 face penalties ranging from receiving a grade of F in the course to being expelled from the program or University. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration.

### **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 cooperate 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.

### **Requests for Academic Accommodation**

You may need special arrangements to meet your academic obligations during the term. For an accommodation request, the processes are as follows:

#### **Pregnancy obligation**

Please contact your instructor with 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](#)

#### **Religious obligation**

Please contact your instructor with 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,

but in no case later than the second last week of classes for that term. For more details, visit the [Equity Services website](#)

### **Academic Accommodations for Students with Disabilities**

If you have a documented disability requiring academic accommodations in this course, please contact the Paul Menton Centre for Students with Disabilities (PMC) at 613-520-6608 or [pmc@carleton.ca](mailto:pmc@carleton.ca) for a formal evaluation or contact your PMC coordinator to send your instructor your Letter of Accommodation at the beginning of the term. You must also contact the PMC no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with your instructor as soon as possible to ensure accommodation arrangements are made. For more information visit the [PMC website](#)

### **Survivors of Sexual Violence**

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and is treated with the seriousness it deserves. Survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, [visit here](#).

### **Accommodation for Student Activities**

Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor with 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. [More information](#)

For more information on academic accommodation, please contact the departmental administrator or visit: [students.carleton.ca/course-outline](http://students.carleton.ca/course-outline)

See all of [Carleton University's Academic Regulations](#)

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