

CARLETON UNIVERSITY

Department of Systems and Computer Engineering

SYSC 3101

Programming Languages

Winter 2012

Course Handout

Lecturer:

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Course Objectives:

Language Evaluation criteria. Principles underlying different kinds of programming languages (procedural, functional, logic programming) and their semantics. Overview of machinery needed for language support (compilers, interpreters and run-time systems).

Prerequisites:

SYSC 2004 or SYSC 2100. Students must satisfy the prerequisites in order to remain registered in the course. Students who have not completed the prerequisites are required to either withdraw from the course or submit a prerequisite waiver online at www.sce.carleton.ca/ughelp. Students not meeting these conditions will be deregistered from the course after the last day for course registration.

Textbook:

Robert W. Sebesta, *Concepts of Programming Languages*, 9th Edition ISBN 978-0-13-607347-5, Copyright 2010 Pearson Education.

References:

- Racket (Scheme) (download)
- SWI-Prolog (download)

Grading Scheme:

15% Assignments (3)

10% Group Presentation

15% Mid-Term Exam (TBD, In Class)

60% Final Examination (Scheduled, 3 hours, closed-book, no calculators).

Important Notes:

1. Students **must pass the Final Examination Paper** (50% or higher) in order to pass the course. (i.e. Failing to pass the Final Examination results in an F grade for the course).
2. The **final exam** is for evaluation purposes only and will not be returned to the student.
3. Students who miss the final exam may be granted permission to write a deferred examination (see the Undergraduate Calendar for regulations on deferred exams).
4. Students must achieve a passing grade on the course work to be eligible to write the deferred examination.

5. **Students who miss the midterm** due to illness must provide a valid medical certificate to the instructor no later than 48 hours after returning to campus. The certificate must clearly state the name of the doctor with contact information. Once the certificate has been verified, the midterm weight will be added to the final examination weigh (i.e., the final exam becomes worth 85% of your final mark).
6. **Plagiarism.** (copying and handing in for credit someone else's work) is a serious instructional offense that will not be tolerated. Please refer to the section on instructional offenses in the Undergraduate Calendar for additional information.
7. **Students who have previously taken SYSC 3101.** Please note that there are no lab exemptions from this course.
8. Accreditation of our Engineering programs requires that classes and laboratories, tutorials, or problem analysis sessions continue to run through the review period of the winter term.

Academic Accomodation

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

Pregnancy obligation: write to me 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 see the Student Guide.

Religious obligation: write to me 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 see the Student Guide.

Students with disabilities requiring academic accommodations in this course must 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.

Course Outline:

1. Introduction
2. Evolution of the Major Imperative Programming Languages
3. Functional Programming Languages
4. Describing Syntax and Semantics
5. Lexical and Syntax Analysis
6. Names, Bindings, Type Checking, and Scopes
7. Data Types
8. Logic Programming Languages
9. Subprograms

10. Implementing Subprograms
11. Concurrency
12. Expressions and the Assignment Statement
13. Data Abstraction
14. Support for Object-Oriented Programming
15. Exception Handling