McMaster University
Department of Computing and Software
Dr. W. Kahl

Design and Selection of Programming Languages

7 September 2006

Outline

It is the student's responsibility to be aware of the information in this course outline!

Instructor: Dr. W. Kahl
Department of Computing and Software, McMaster University, ITB-245
E-Mail: kahl@cas.mcmaster.ca

Office Hour: Wednesday, 12:30-13:20

Calendar Description:

> **Fundamental structure of programming languages, language design and implementation, promote student awareness of the range of available languages and their uses. Acquire programming skills in selected programming languages.**

Goals:

The student who successfully completes this course should understand the fundamental structure of programming languages, be familiar with key issues in language design and language definition, and be aware of the range of available languages and their uses.

For this, you need to acquire **knowledge** and **understanding** of **programming language concepts**.
Understanding implies the ability to **apply** the knowledge to new circumstances.

Understanding of programming language concepts is not equivalent to mastering a large variety of programming languages. However, understanding important concepts will come together with **reading skills** for typical programming languages exhibiting those concepts, and **feature identification and comparison skills** that can be applied to previously unknown languages.

In addition students are guided to acquire **programming skills** in **selected programming languages** as part of this course. The process of learning these programming languages should, at the same time, be used to improve awareness of differences between programming languages and to improve the understanding of programming language concepts and fundamentals.

Topics Intended to be Covered: Syntax, type systems, semantics, abstraction mechanisms in programming languages, pure functional programming in Haskell, topics of object-oriented programming in Java

Course Pages: http://www.cas.mcmaster.ca/~kahl/SE3E03/2006/

This is where you find further information, especially concerning tutorial organisation and software installation. Electronic versions of the exercise sheets will also be kept there.

It is the student's responsibility to be aware of the information in the course Web pages, and to check regularly for announcements.

Literature:

- **Principles of Programming Languages Textbook** (optional — some technical and notational differences to the presentation in class, but close in spirit):

  Allen B. Tucker, Robert E. Noonan. *Programming Languages: Principles and Paradigms.* McGraw-Hill, 2002. URL *http://www.mhhe.com/tucker/*. ISBN 0-07-238111-6

- **Haskell Textbook** (optional — strongly recommended for learning Haskell properly):

  Simon Thompson. *The Craft of Functional Programming.* Pearson — Addison Wesley. Second Edition, 1999. ISBN: 0-201-34275-8

Tutorial Exercises:

There will be weekly **exercise sheets**. Every student is expected to complete these exercises *before* the corresponding tutorial session. The tutorial sessions are intended for ***discussion*** of ***student solutions***.

Details of the tutorial organisation will be announced separately.

Grading:

All examinations in this course will be **Closed Book**. That is, no written or printed material, nor otherwise recorded media, nor a calculator or other electronic aids may be used during the examinations.

The **final examination** will be scheduled by the Registrar's Office in the usual way. It will be a closed book examination of three hours duration and cover the material of the lectures, tutorials, handouts, and exercises.

In addition, there will be **three midterm tests**; details to be announced.

All grades will be percentage grades.

For every student, the course grade is calculated as a weighted average of the grade of the final exam, the grades of the three midterm tests. Those midterm tests where you have a better mark than on the final will have weight 20% each, and those tests that are not better than the final count 10% each.

The course grade will be converted from a percentage grade to a letter grade according to the scale of the Registrar's Office.

The instructor reserves the right to conduct any deferred exams orally.

Academic Dishonesty

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at http://www.mcmaster.ca/senate/academic/ac_integrity.htm

The following illustrates only three forms of academic dishonesty:

(1) Plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained.

(2) Improper collaboration in group work.

(3) ***Copying or using unauthorised aids in tests and examinations.***

Discrimination

The Faculty of Engineering is concerned with ensuring an environment that is free of all adverse discrimination. If there is a problem that cannot be resolved by discussion among the persons concerned, individuals are reminded that they should contact the Department Chair, the Sexual Harassment Office or the Human Rights Consultant, as soon as possible.