SC/CSE 3401
Functional and Logic Programming

York University

Department of Computer Science and Engineering

SC/CSE 3401

- SC/CSE 3401 3.00- Functional and Logic Programming
- Vida Movahedi , vida@cse.yorku.ca
- Lectures:
  - Time: Mondays and Wednesdays, 4-5:30pm
  - Location: CLH 110
- Office hours:
  - Mondays 2-4pm CSEB 0002B

General Description

[from *2009/2010 Undergraduate Calendar*]

- **CSE 3401 3.0 Functional and Logic Programming**
- This course covers functional and logic programming. Together with the students' background on procedural and object-oriented programming, the course allows them to compare the development of programs in these different types of languages.
- "Functional programs work with values, not states. Their tools are expressions, not commands. How can assignments, arrays and loops be dispensed with? Does not the outside world have states? These questions pose real challenges. The functional programmer can exploit a wide range of techniques to solve problems." (Paulson, 1996)
- "Based on predicate logic, it [logic programming] allows computing problems to be expressed in a completely `declarative' way, without giving instructions for how the problem is to be solved. An execution mechanism, like the one embodied in implementations of Prolog, can then be used to search efficiently and systematically for a solution of the problem." (Spivey, 1996)
- Topics on functional programming may include: recursive, polymorphic and higher-order functions; recursive types and type inference. Topics on logic programming may include backtracking, resolution and unification.
- *Prerequisites: General prerequisites, MATH1090 3.0*

Text books & resources

- Textbooks:
  - *Common LISPcraft,* Robert Wilensky, W.W. Norton & Co. , 1986
  - Programming in Prolog, W.F. Clocksin, C.S. Melish, Springer-Verlag, 5'ed, 2004
- Online books:
  - Ulf Nilsson and Jan Maluszynski, *Logic, Programming and Prolog (2ed)*
  - Peter Seibel, *Practical Common Lisp,* Apress
- Website: www.cse.yorku.ca/course/3401

Workload & grading

- Logic Programming (50%)
  - Assignments (2 assignments, 20% total)
  - Test 1- midterm (30%)

- Functional Programming (50%)
  - Assignments (2 assignments, 20% total)
  - Test 2- final (30%)

- To get a passing final grade, you need to pass **both** parts of this course!

Others

- Important Dates
  - Reading week: Feb. 18-24
  - Test 1- Logic Programming: Monday, Feb. 27, 2012
  - Drop date: March 9, 2012
  - Last day of course: April 2, 2012
  - Exam Period: April 4-20, 2012
- Policies
  - Academic honesty
  - Missed exams
  - Late assignments = not-submitted assignment!
  - To get a passing final grade, you need to pass both parts of this course: Logic Programming AND Functional Programming.

Sample videos of AI projects

- http://spectrum.ieee.org/automaton/robotics/artificial-intelligence/robots-figuring-out-how-to-figure-things-out

- http://spectrum.ieee.org/automaton/robotics/artificial-intelligence/qbo-passes-mirror-test-is-therefore-selfaware