This syllabus is a brief summary of the most important administrative information for CISC 260. For complete details, you must refer to the course web page: http://courses.caslab.queensu.ca/cisc260/. The course also has an OnQ area.

Section 1 Instructor: Margaret Lamb  
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office hours: may vary during the semester; current details will always be on instructor's home page  
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Section 2 Instructor: Juergen Dingel  
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Lecture Times (for both sections):  
Mondays 9:30-10:20  
Wednesdays 8:30-9:20  
Thursdays 10:30-11:20  

There will be no lectures during Reading Week (Feb. 20-24)

Lecture Locations:  
Section 1 is in Walter Light 205. Section 2 is in Stirling B (on Mondays and Wednesdays) and Stirling C (on Thursdays).

Pre-requisite: CISC 124

Pre or Co-requisite: CISC 204

Calendar Description:  
Review of imperative programming features. Introduction to other widely used programming paradigms. Functional programming languages, such as LISP and Haskell. Higher order functions, lazy evaluation, abstract and recursive types, structural induction, symbolic expressions. Logic programming languages, such as PROLOG. Operational interpretation of predicates and terms, proof search, unification, backtracking. Typical applications.

Purpose: This course is designed to introduce students to programming paradigms beyond the imperative paradigm used in courses up to this point. It focuses on the functional and logical paradigms, using the Haskell and Prolog languages. These paradigms and languages will be useful for many students in later courses, and the ideas gained from studying them will be of use in future programming for every student. The languages from the course and similar languages such as Lisp, F# and many others are used in industry for a wide range of applications.
Learning Outcomes: By the end of the course you should be able to do the following things:

- in Haskell:
  - write interesting and useful functions in the pure functional subset of Haskell
  - read and understand functions written in the pure functional subset of Haskell
  - understand the Haskell type-checking system
  - use structural induction to prove properties of simple functions
  - understand and use higher-order functions
  - understand and use "lazy evaluation"

- in Prolog:
  - write facts, rules and queries to solve small problems in Prolog
  - read and understand small prologs in Prolog
  - understand and explain the difference between the declarative and procedural meaning of a program
  - use negation and cuts in Prolog functions

- in both languages (and others):
  - use recursion confidently
  - use accumulators in recursive programs to help solve problems and be able to identify situations in which an accumulator would make a recursive function easier to write and/or more efficient.

Textbooks: There are two required textbooks for this course:

- *Prolog: Programming for Artificial Intelligence*, by Ivan Bratko (fourth edition)

Prior to Winter 2013, we used a custom text composed of sections of earlier editions of these two texts (titled *Programming Paradigms*, compiled by R. D. Tennent). If you find a used copy of that custom text, that's an acceptable substitute, but you'll have to search for each topic from the course. We will only be posting specific page and section numbers for the current editions. If you plan on taking future courses in Artificial Intelligence, you might want to invest in the complete current versions of the two texts, because the additional material in each might come in handy.

Whatever text you use, you **must read the textbooks as assigned**. You can't expect to pick up everything you need for this course just from lectures. Many students find this course difficult and you should make sure you have the resources to handle it.

Course Organization: For most topics there will be assigned readings from the textbooks or other sources. Lectures will not review the readings in detail but will focus on examples to illustrate the techniques and ideas in the readings and to demonstrate good programming techniques. Students will be given several marked assignments as well as many unmarked practice problems to work on.

Course Schedule: Will be available on the web page by the start of the term. Students will have adequate warning of all quizzes and assignment dates.

Marking Scheme:
The basic marking scheme is as follows:

- assignments (average of the best 4 of your 5 assignments): 20%
- quizzes (average of the best 2 of your 3 assignments): 40%
- final exam: 40%
- total: 100%
Quizzes and Exams:
- The dates and locations for the quizzes and the final exam will be announced far ahead of time. For the quizzes, the class will be split between several rooms, with some students writing in a room different from their usual location. It is your responsibility to note the time and place for your quizzes and exam and to show up. Students who forget or oversleep will get a zero.
- The marking scheme drops your lowest quiz mark. If you miss one quiz for any reason, that will be the quiz mark that you drop even if you have a good excuse. If you miss two quizzes with good excuses for both of them please talk with your instructor and we'll come up with a fair arrangement. If you miss one quiz with a good excuse and another one without an excuse, there will be no accommodation.
- This means that an extremely bad idea to plan on skipping one of the first two quizzes. If something unexpected happens and you are not able to write Quiz 3 you will have to accept a zero.
- If you have to miss a quiz or exam due to illness or some other legitimate reason, it is your responsibility to inform the instructor as soon as possible and to obtain documentation if possible.
- The final exam will be cumulative; anything we do during the semester may show up in an exam question.

Assignments:
- There will be 5 assignments during the term – three Haskell assignments and two Prolog assignments. We will drop your lowest assignment mark and average the other 4 to make the assignment portion of your mark.
- If you do not hand in an assignment for any reason, that's the one you drop.
- If you are unable to hand in two or more assignments with a legitimate reason for each one, please talk with your instructor and we'll figure out a fair accommodation.
- The assignments are not just for marks but to help you learn (which translates to better marks on the quizzes and final exam). So even if you're not able to hand in a polished version of each assignment, it's important to work on every assignment.

Disability Accommodations:
Queen's University is committed to achieving full accessibility for persons with disabilities. Part of this commitment includes arranging academic accommodations for students with disabilities to ensure they have an equitable opportunity to participate in all of their academic activities. If you are a student with a disability and think you may need accommodations, you are strongly encouraged to contact the Queen's Accessibility and register as early as possible.

If you require accommodations in this course for any reason, it is your responsibility to provide information and your form from Queen's Accessibility ahead of time.

If you need to write your quizzes with a computer, you will be proctored by the Exams Office if you inform the Exams Office at least 10 days before the first quiz. If you don't bother to do this the 260 instructors will not be able to arrange a computer for your quizzes.

If you need other sorts of accommodations for quizzes, you must inform your instructor at least 10 days before the first quiz and include a copy of your complete class schedule (preferably a screenprint from SOLUS). If you don't do this it may not be possible to arrange a quiz that meets your needs and avoids conflicting with your other classes.

If you need any sort of accommodation for your final exam, that is handled by the Exams Office. Queen's Accessibility services will probably set this up for you, but it's your responsibility to make sure this happens. The deadline is before Reading Week, so please check with Accessibility Services early in the term. If you have a long-term disability and neglect to inform the Exams Office you will have to write in the regular exam hall without any accommodations.

If you have a short-term situation that requires accommodation, please talk with your instructor.
**Academic Integrity:** For the full statement of Queen's Academic Integrity policy, please see Arts & Science Academic Regulation 1 at [http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations/regulation-1](http://www.queensu.ca/artsci/academic-calendars/regulations/academic-regulations/regulation-1). You are responsible for familiarizing yourself with these principles, which apply to all Queen's courses.

More details about how Academic Integrity applies to this course may also be found on the course web site. Please be warned that the instructors take Academic Integrity quite seriously and WILL make formal charges if violations are detected. These charges will affect your mark and possibly your status at Queen's.

**Tips For Doing Well in CISC 260:**

- Read all of the assigned readings carefully and on time.
- Attend lectures regularly.
- Get an early start on the assignments; don't leave them until the last minute.
- Work on practice problems in addition to the assignments. Practice problems for many of the topics in this course will be suggested on the web site. Even though you don't get marks for practice problems, practicing is the best way to make sure you understand the course material and can apply it on your quizzes and exam, which are marked.
- When you have a question or don't understand something, don't be shy about asking! Help is available for you; this is part of what you're paying tuition for. *Even the very best students have questions from time to time!* It's nothing to be ashamed of. It's part of how we all learn. (Yes, even profs....)
- For general help with this course, please feel free to visit the office hours of either of the profs for this course, depending on which fit best into your schedule. For administrative issues, it's best to talk with the prof for the section in which you are enrolled.
- Subscribe to the OnQ news for this course and make a habit of checking your Queen's e-mail daily. Or else check OnQ directly every day. When we need to make important announcements they will go on the OnQ news and we will assume that students will see them there.