COMP 208
Computers in Engineering
Fall, 2016

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures (see www.mcgill.ca/integrity for more information).

In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded.

1. Instructor

Nathan Friedman, ENGMC 325, 514 398-7076

email: nathan.friedman@mcgill.ca
Office Hours: Tu 3:00-4:30
We 11:00-12:30

2. Teaching Assistants

The list of TA's for the course has not yet been finalized. Check MyCourses for the list of TA's, their contact information and a schedule of office hours and tutorials. The scheduling information will be posted on the MyCourses calenday.

3. Course Resources

I encourage you come to office hours to meet and interact with the course staff. You are also welcome to contact the instructor or the TAs by email with questions you may have about assignments and the course material

The discussion groups on MyCourses are an invaluable resource and we encourage you to raise any questions or issues of general interest there. The instructors and TA's will monitor these forums and try and help answer questions. Other students may have had problems similar to those you encounter and can be of great help.

Textbook

- We will be using an online text produced by zybooks

- There will be required exercises from this text book
- To access your copy of the text:
    1. Sign up at zyBooks.com
    2. Enter zyBook code McGillCOMP208FriedmanFall2016
    3. Click Subscribe
- **You must use your official McGill email address to subscribe.** If you use a different email address, your grades will not be recorded properly
- For more detailed instructions, you can access: vimeo.com/135692064
- Please complete the questions in "How to use zyBooks"

MyCourses resources provide much additional material. These resources include:

- Lecture notes
- Code for algorithms studied in class
- Previous midterms and final examinations
- Reference material on the languages studied

4. Tests and Assignments

There will a midterm test worth 20% of the final mark.

Completion of activities from the zybook text will be worth 10% of the final grade.

There will be 6 programming assignments. These will be worth 20% of the final grade.

The final examination will be worth 50% of the final grade.

Programs must be submitted using MyCourses with the source code and, if requested, test cases that demonstrate that the program meets the problem specification.

5. Course Outline

The course has four components. It first covers the design and implementation of programs using C as the programming language. A second and very different language, Matlab, will be studied and used. The concepts discussed will be applied to an assortment of algorithms that arise in solving many Scientific and Engineering problems. Finally, it introduces the programming language Fortran, focusing on features that are similar to those found in C while explaining important differences.

The following is an approximate outline of the material covered. The times given may vary depending on the specific examples and applications chosen to illustrate the concepts. There will be review lectures before the midterm and before the final exam.

- A general introduction to programming and machine organization (2 lectures)
- Programming in C – getting started (1 lecture)
- Arithmetic expressions (1 lecture)

- Selection mechanisms in C (1 lecture)
- Loops (1 lecture)
- Functions (1 lecture)
- Files and arrays (1 lecture)
- Pointers (1 lecture)
- Number representation and more C operators (1 lecture)
- Multidimensional arrays (1 lecture)
- Additional Topics in C (1 lecture)
- Searching and Sorting Algorithms (1 lecture)
- An introduction to MatLab (3 lectures)
- Recursion (1 lecture)
- Mergesort (1 lecture)
- Finding the roots of nonlinear equations (1 lecture)
- Initial value problems for ordinary differential equations (1 lecture)
- Numerical Integration (1 lecture)
- Solving Linear Systems of Equations (1 lectures)
- The transition from C to Fortran (2 lectures)