#### Syllabus for COMP364 - Computer Tools for Life Sciences 3 credit course Winter 2012

#### Course

Lecture: MWF 12:35 - 13:25 in Trottier 0060 Website: <u>http://www.cs.mcgill.ca/~mperre12/</u>

### Instructor

Mathieu Perreault Office:

Trottier 3130

### Phone:

(514) 398-7071 ext. 089505 (office) (514) 570-1612 (home)

Email:

mathieu.perreault@gmail.com

Office Hours:

Mondays - 11AM-12PM in Trottier 3130 Thursdays - 11AM-12PM outside Trottier 3150 (common area)

# **Teaching Assistant**

Javier Sanchez Galan - javier.sanchezgalan@mail.mcgill.ca

# Material to be Covered

Computer tools are increasingly important for the new generation of scientists that is being trained. It is often expected of scientists to analyze big sets of results, perform complex mathematical operations and get crucial statistics about a certain topic. Often, knowing the right tools at the right time is crucial to supporting an hypothesis.

This course will familiarize students with some tools currently being used in scientific research: Python, Relational databases (SQL), Matplotlib and the Unix operating system. These tools have been known to be used all over the scientific community. Though examples will be primarily drawn from genetics and molecular and evolutionary biology, as well as some examples from outside the life sciences, the emphasis will be on tools, skills, and concepts that can be applied to a wide range of datasets and problems.

### **Text and Resources**

There are no assigned textbook for this course. Topics covered in class have their own documentation online, which will be pointed out by the instructor at the appropriate times. As well, it is possible that handouts will be distributed in class to supplement the material. These handouts will also be made available on the course website.

A virtual machine is made available on the School of Computer Science for students to submit some of their work. Students will be provided with accounts on <u>comp364.cs.mcgill.ca</u> and instructions will be provided on the course website on how to access the machine.

An important tool that will be used during the semester is the Python programming language. The Enthought Python Distribution (EPD) contains the vast majority of the software packages that will be needed. It is recommended that the student install it. Enthought download URL: <u>http://download.enthought.com/epd\_7.2/</u>

### Evaluation

There will be a total of 4 assignments, each worth 5% (for a total of 20%), to be assigned in class and submitted in class to the instructor 14 days later, unless stated otherwise. Late penalty for an assignment is 10% per day.

The midterm evaluation will be worth 35% and take place during class time.

The final evaluation will be worth 45% and take place during class time before classes end for the semester. This evaluation will focus (although not exclusively) on material that was covered after the midterm.

## Suggestions

The student is strongly encouraged to suggest examples that relate to his/her experience of Life Sciences. The instructor will make efforts to show material that relate to the general field of Biology, but the student is welcomed to bring specific examples that could help demonstrate the tool under study.

### Academic Integrity, Cheating and Plagiarism

Assignments are to be completed individually, unless indicated otherwise. Unless specifically noted for a particular question, discussions with your classmates about homework problems are permitted. Direct copying of solutions is not. It is therefore recommended (and also for your better understanding of the material) that following any discussion with your classmates, any notes taken are discarded and the solution written or coded up from scratch. Discussion with classmates during exams is, of course, not permitted.

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).

# Right to submit in English or in French

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.