# MATH 210, Section 201 (2013 Winter Term 2)

## Introduction to Mathematical Computing

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**Lectures:** 2:00-3:00PM Monday, Wednesday, Friday in LSK 360
**Labs:** 2:00-3:00PM Tuesday in LSK 121
**Instructor:** Iain Moyles
**Office:** LSK 311E/ For Office Hours
**Email:** imoyles@math.ubc.ca
**Office Hours :** TBA

**Text** There is no official text for this course. Lecture notes will be available online as well as extra notes on using the software. Various codes that we use in class may be posted as well. There are several resources online that can help you with the programming topics in this course.
**Webpage:** http://www.math.ubc.ca/∼imoyles/courses/math210

**Course Outline:**This course is an introduction to the concept of mathematical computation. We will consider many mathematical techniques and applications that you may have explored in other courses but we will investigate them from a computational framework. To reach this goal, we will utilize the software packages Maple and Matlab. We will also introduce students to typeset mathematical communication through the use of LaTeX. Some of the concepts we will be exploring in these computational frameworks include:

1. Root Finding
2. Taylor Polynomial Approximations
3. Fixed Point and Stability Analysis of Differential Equations and Iterative Maps
4. Euler's Method
5. Probability
6. Computational Applications of Physical and Natural Sciences

**Grading Scheme:**
40% Final Exam* + 30% 2 Midterms† + 25% Assignments + 5% Final Project.

∗-The final exam will be both computational (15%) and written (25%)
†-Each midterm is worth 15% and each will be computational (5%) and written (10%)

IMPORTANT: This is a 3-credit course with a maximum grade of 100. The instructor reserves the right to revise or round off grades if circumstances warrant. In order to make course grade standards consistent across sections this raw final grade will be scaled.

**Midterms & Final Exam:** There will be a final cumulative exam that will be held in December. Students are advised not to make travel plans during the exam time.
There will be two (**2**) 50 minute written midterms and two (**2**) 50 minute computational midterms throughout this course. The written portion will involve questions of applied knowledge of a topic. The computational component will be in the lab and involve submitting code for computational solutions to problems. The written midterms will be held **in class** while the computational midterms will be held **in lab**. The midterm dates are as follows:

1. Computational: **Tuesday, February 4, 2014** Written: **Friday, February 7, 2014**
2. Computational: **Tuesday, March 11, 2014** Written: **Friday, March 14, 2014**

The computational component of the final exam will be held on the last day of classes: **Tuesday, April 8, 2014**.
*Calculators, books, and notes are not allowed in any exams*

If a student misses a midterm, that student shall provide a formal documented excuse such as a doctor's note within 72 hours or a mark of zero(0) will be entered for that midterm. If you are to miss a midterm due to religious observance, two weeks written notice is required by the student. See the UBC full policy on this for more information. There will be **NO** make-up midterms. Any tests missed with legitimate reasons will have their final exam re-weighted.

**Assignments and Quizzes:** There will be weekly homework assignments which have both a written and computational component. Homework will be assigned Friday and due the following Friday by the posted time. Late assignments will not be accepted. The lowest assignment grade will be dropped at the end of term.

**Labs:** Officially this course has a lab time every Tuesday from 2:00-3:00PM in LSK 121. The only **three** dates that will be mandatory to attend are when we are having the computational exams (see above). Otherwise, this will be an office hour every week and a great place to come and use the software to solve your assignments. This lab is equipped with all the software we use in this course and it is up to the student to make good use of this lab time when completing assignments. Not having access to software will not be an acceptable excuse for late assignments.

**Final Project:** Students will be asked to submit a final project at the end of term. This project will consist of a short (3-5 page) report outlining the use of scientific computation using Maple and/or Matlab in a different course or project. Students are expected to typeset this report in LaTeX and no other text editing software will be accepted. More details of the project will become available as the course progresses.

**Extra help:** Drop-in Tutorials: There is a drop-in tutorial centre located on the third floor of

LSK.
The AMS offers tutoring services http://tutoring.ams.ubc.ca/.

**Cheating:** It is the student's obligation to inform himself or herself of the applicable standards for academic honesty. Students must be aware that standards at the University of British Columbia may be different from those in secondary schools or at other institutions. If a student is in any doubt as to the standard of academic honesty in a particular course or assignment, then the student must consult with the instructor as soon as possible, and in no case should a student submit an assignment if the student is not clear on the relevant standard of academic honesty.

*Please note the instructor reserves the write to modify this syllabus*