ORDINARY DIFFERENTIAL EQUATIONS, MATH 215/255

1. General Information

- Course: Math 215/255 (Ordinary Differential Equations), Summer 2016.
- Instructor: Sabin Cautis, `cautis@math.ubc.ca`
- Time: MTuF 13:00-14:50, W 13:00-13:50
- Location: Math 100
- Course website: includes syllabus and additional information
  `http://www.math.ubc.ca/~cautis/math215-255/index.html`
- Text: **Notes on Diffy Qs** by Jiri Lebl
  freely available at `http://www.jirka.org/diffyqs`

Homework: Online homework for the course will be provided via the WeBWorK system. You can find this system by going to the WeBWork site at

$$\texttt{https://webwork.elearning.ubc.ca/webwork2/}$$

and logging in with your CWL ID. Note however that the course website may not be active before the first day of classes.

There will be one assignment posted per week, each due on the following week, as per the course schedule. Please note the following items:

(1) You may attempt each question as often as you like until you solve the problem. There is no penalty for a wrong answer. This is to help you correct your own mistakes, and to get instant feedback on your attempts.
(2) The questions are generated randomly, and the numbers are different for each student.
(3) Please try to do the problems by yourself, and without the use of other calulators or software. Since calculators and software are not allowed in the exams, you should practice working without them.
(4) If you really get stuck, you can request help by clicking the email instructor button. However, it may take some time to get a response, so please dont wait till the last minute.
(5) In general, its a good idea to start the assignments early rather than waiting till the last minute. The deadlines are enforced by the system, and it will shut down automatically when time is up, so give yourself plenty of extra time in case of problems.

Note that the textbook also has many practice problems with answers in the back. It is recommended that you try some of these problems, so that you may track your understanding.

Tests: There will be two midterm exams (in class) and a final exam. The tests will be closed book-closed notes tests. Calculators will not be allowed.

The (tentative) dates for the two midterms are: Wednesday May 25th and Wednesday June 8th.

Final Exam: The final exam date will be released during the term. Book your travels accordingly!

Grades: Grades will be computed as the maximum of the following:
- Homework 10%, Midterms 20%+20%, Final exam 50% or
- Homework 10%, Best midterm score 20%, Final exam 70%.

The grades of those students who miss a midterm will be computed by the second method.

Synopsis: The course will cover more or less the material described below in the (rough) schedule.

An incredible number of phenomena in nature (from physics to chemistry to economics etc.) can be described, modeled and studied in the language of differential equations. Derivatives and integrals from first year calculus are really the first and simplest examples of differential equations (although one rarely refers to them as such).

This course is a survey of some of the basic techniques for trying to solve or at least understand some of the simplest differential equations (ordinary differential equations). These techniques are varied and draw upon some basic principles from calculus but also many tools from linear algebra.

2. Schedule

Here is a rough course schedule, subject to later adjustments.
- Week 1. Sections 1.1-1.6
- Week 2. Sections 2.1-2.2
- Week 3. Sections 2.3-2.6, 6.1-6.2
- Week 4. Sections 6.3-6.4, 3.1-3.2
- Week 5. Sections 3.3-3.9
- Week 6. Sections 8.1-8.2