Math 100: Differential Calculus with Applications to Physical Sciences and Engineering

Instructor info:

Dimitrios Roxanas (you will sometimes see “Dimitris” or “Dimitri”; still me!)

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(please, ALWAYS include “Math 100” in the subject line)

Course info:

Time: 8:00 - 9:30 Tuesday-Thursday

Location: Buchanan (BUCH) A201

course webpage: [http://www.math.ubc.ca/~droxanas/MATH100.html](http://www.math.ubc.ca/~droxanas/MATH100.html)

the one from last term [http://www.math.ubc.ca/~andrewr/maths100180/2015/home.html](http://www.math.ubc.ca/~andrewr/maths100180/2015/home.html)


Grading Scheme:

50% Final,

20% midterm #1, Tuesday, February 2 (IN CLASS)

20% midterm #2 , Tuesday, March 8 (IN CLASS)

10% Webwork (due on Sundays(subject to change) - none this week, more info to come)

????% written Homework problem sets (2-4 for the whole term); will appropriately redistribute so that a total of 50% of the mark corresponds to term work

• Midterm #1 will TENTATIVELY cover sections 1.1 – 1.6, 2.1 – 2.4, 2.6 – 2.9 from the official course notes.

• Midterm #2 will TENTATIVELY cover sections 2.10 – 2.13, 3.1 – 3.4, and maybe also 3.5 from the official course notes.
Textbook: This year we are using only free textbooks and resources

- Two UBC faculty, Joel Feldman and Andrew Rechnitzer, have produced a set of notes for use in Mathematics 100 and 180. These notes can be found here: http://www.math.ubc.ca/~andrewr/maths100180/2015/home.html
- For other free resources check here: http://www.math.ubc.ca/~andrewr/maths100180/2015/textbook.html

Office Hours: LSK 300C, Thursday 3-4.30, Friday 1-2.30 (both subject to change) TBD and by appointment

Helpful resources:
- MLC: http://www.math.ubc.ca/~MLC/
- Exam Wiki: http://wiki.ubc.ca/Science:Math_Exam_Resources/Courses/MATH101

General advice for success

- **Effort pays off!** It is simply untrue that people have a fixed amount of math ability that determines how well they do. Just like any other skill, doing mathematics becomes easier with hard work, practice, and willingness to challenge yourself.

- **Stay caught up!** Mathematics is a very cumulative subject: what we learn one week depends crucially on understanding what we learned the week before. Students who fall behind early struggle to catch up for the rest of the course.

- **Put in the hours!** Remember the 2-to-1 rule for university courses: expect to spend an average of 2 hours outside of class for every 1 hour spent in class. In our course, that means 6 hours per week, in addition to coming to lectures, is quite reasonable (and some students will spend more than that). Jump right in and start spending that time; don’t wait until later in the course.

- **Work on the homework problems!** The WeBWorK problems and the Suggested Problems are the most direct way to practice for the exams; in particular, the Suggested Problems are very much like the midterm and final exam problems. It’s tempting to try to find some short cut to obtaining the answers, such as taking dictation from a fellow student or searching the internet. Besides the fact that cheating in this way violates UBC’s academic misconduct policies, it’s important to realize that working on the homework is the primary way for you to learn the course material. Learning to do mathematics is like learning to do anything else: you can’t learn how, just by watching someone else do it. Experience shows that people who work through the homework problems (including the Suggested Problems) do better on the exams. It’s that simple.

- **Don’t give up!** In earlier math courses, everything we needed to be able to do might have been conveniently written in boxed formulas that we can instantly apply. In more advanced mathematics courses, however, we don’t always immediately know the correct way to proceed; sometimes trial and error is necessary, and there’s nothing at all wrong with this. Trying, struggling, going back to another idea, making mistakes, fixing them—these are all part of the learning process.
• *Use our helpful resources!* If you are stuck in the middle of a homework problem or a concept from the course, you are on the cusp of a great learning moment. Myself, the TAs who staff the Math Learning Centre, and your fellow students on Piazza are very happy to help you see the way past that obstacle. That list of resources also includes ways to address larger issues such as study difficulties, health issues, disabilities, and extreme stress.

• *Consciously address what you find hard!* Why do some people get better quickly when they work hard, while others don’t seem to progress as fast? One answer is that deliberate practice is much more effective than going through the work just for the sake of finishing it. From a Freakonomics blog post: “For example, in school and college, to develop mathematics and science expertise, we must somehow think deeply about the problems and reflect on what did and did not work. One method comes from the physicist John Wheeler (the PhD advisor of Richard Feynman). Wheeler recommended that, after we solve any problem, we think of one sentence that we could tell our earlier self that would have ‘cracked’ the problem. This kind of thinking turns each problem and its solution into an opportunity for reflection and for developing transferable reasoning tools.”