

# MATH 100

## Differential Calculus with Applications to Physical Sciences and Engineering

Summer Term 1, May - June 2017

Home

### Course home page

Announcements

- Instructor: [Lee Troupe](#) (I go by "Lee" or "Dr. Troupe")
- Lectures:

Assessment

- Monday 4pm - 5pm
- Tuesday, Wednesday, Thursday 4pm - 6pm

Schedule &  
Outline

All lectures will be held in MATH 100 (that is, Room 100 of the Mathematics building).

Textbook &  
Resources

- Office Hours: Tuesday, Wednesday, Thursday 2pm - 3pm in LSK 300, or by appointment
- This page gives course policies, the course outline, homework problems, some old exams, other course information, and information on available resources.

Webwork &  
Offline  
Homework

### Very useful links

Quizzes

- [UBC Connect](#) - You'll be able to find your quiz grades on Connect, and we almost certainly won't use it for any other purpose.

Final Exam

- [Course Outline](#) - List of topics covered each week.
- [Learning Objectives \(8 page PDF\)](#)

Missed

Assessment

- [WeBWork](#) - Direct link to our course's WeBWork page.
- [CLP textbook](#) - Your primary textbook for the course.

Academic

Misconduct

- [CLP problem book](#) - Supplemental exercises. You should do plenty of these questions each week (you do not hand them in).
- [Access and Diversity](#) - If you require assistance from A&D, such as registering for assistance with assessment, we suggest you approach them as soon as possible.

Courses &

Registration

- [Old exams](#) - hosted on the Mathematics Department website.
- [A wiki of old exams](#) - developed by mathematics graduate students.

Piazza

- Please look at the Appendix in the [CLP textbook](#) on high school trigonometry and geometry (areas and volumes) that we expect you to know. The appendix is divided into 3 sections:
  - What you should know,
  - What you should be able to derive, and

- What you don't need to know but might find interesting.

## General advice for success

All of these tips and strategies are discussed in more detail on the [UBC math study skills wiki page](#).

- *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. This is especially true in summer courses, in which the same amount of material is presented in roughly half the time.
- *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 14 hours per week, in addition to coming to lectures, is quite reasonable (and some students will spend more than that). That seems like a lot, and it is, but I strongly encourage you to make the effort. 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 CLP Problem Book are the most direct way to practice for the exams; in particular, problems from the CLP Problem Book tend to be very much like the quizzes and the 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. Take it from someone with years of experience teaching university courses: **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. The instructors, 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](#) (boldface is my emphasis): “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.” Stephen Chew lists [several ways to develop and improve your study skills](#), summarized by “unplug and think hard about the meaning of the concepts you're studying”.