MATH 180: Differential Calculus
2017W Term 1: Section 102

Resources

Webpage. All homework assignments and announcements will be posted on the course webpage, which is

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`www.math.ubc.ca/~zmurchok/180.html`

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Classes. The course is taught by a team and consists of two parts. Each week will include the following classes:

- Two 80-minute *lectures*, on Tuesday and Thursday from 8:00–9:20 am in LSK 201. In *lectures*, we will engage with most of the course material. We will use be using clickers in class.

- One 80-minute *workshop*, which consists of two parts. In the first part, *group work* (50-minutes), you will work in small groups on problems, and submit a solution to a problem for assessment. In the second part, *study hall* (30-minutes), you will work with your colleagues on homework or practice problems, and ask your TAs for guidance and help.

In all of your classes, you are expected to participate actively—asking questions, proposing solutions and extending results. Attendance is mandatory.

Contact information for the teaching team is as follows.

Name	Role	Email	Webpage
Cole Zmurchok	Instructor	`zmurchok@math.ubc.ca`	`www.math.ubc.ca/~zmurchok`

Office Hours. You are encouraged to attend office hours to ask questions about course material or mathematics in general. Office hours will take place on Tuesdays from 12:00–1:00 in LSK 300, and on Wednesdays from 11:00–1:00 in LSK 300. You are also welcome to book appointments over email.

Piazza. Piazza is an online forum where you are encouraged to post and answer questions. There is a link to Piazza in the "resources" section of the course webpage.

Textbook. There are a number of free online textbooks which are suitable. The best is the CLP textbook, written by UBC mathematicians Joel Feldman, Andrew Rechnitzer and Elyse Yeager. There is a link to this textbook in the "resources" section of the course webpage.

Assessment

To achieve success in this course, assigned work is necessary but not sufficient. You must work through extra problems, some of which will be provided to you. *The expectation is that you spend at least eight hours per week outside the classroom on this course.*

Assignments. There are nine assignments with two parts: an online part and a written part.

Written part. The written problems train your ability to synthesize information and construct arguments. Your answers should be in the form of explanations written in plain English with mathematical notations. You will be graded on the mathematical, logical, and grammatical coherence of your explanations, as well as on their economy and creativity. One of the written problems with generally be at a much higher level than the online problems; it is not unusual to spend several

days working on it. Solutions to the written problems must be handed in at the beginning of class on the due date. Late assignments will not be accepted. *You are encouraged to work on homework assignments together. However, you must write your solutions independently.*

You are required to type solutions to your written assignments. It is strongly recommended that you use LaTeX, a document preparation system widely used in mathematics, engineering, and the sciences. The course webpage has a link to a free online LaTeX compiler. Typing your solutions will help you think through the presentation of your work, and will improve the coherence of your explanations.

Quizzes. There are nine 10-minute quizzes, which take place in class. These are meant to assess your technical and computational skills, and questions will be of WeBWorK and exam difficulty.

Exams. There will be one 90-minute midterm exam on October 25, at 6:00 p.m. The 150-minute final exam will take place in December. Calculators are not permitted on quizzes nor exams.

Grade Summary. Your final grade is based on assignments (10%), quizzes (10%), workshops (10%), the midterm exam (20%), and the final exam (50%).

SCHEDULE

An approximate schedule of topics is below. An and Qn stands for assignment n and quiz n. Assignments are due at the beginning of class on the indicated date. Quizzes take place in the first 10 minutes of class on the indicated date.

Dates	Topics	Notes & Deadlines
Sep 6–8	Curves, limits, and asymptotes	First class Sep 7
Sep 11–15	The derivative	Workshops start, A0 on Sep 12 (not for grades)
Sep 18–22	Derivatives sums, products, and quotients	A1 and Q1 on Sep 19
Sep 25–29	Derivatives of trigonometric functions	A2 and Q2 on Sep 26
Oct 2–6	Derivatives of exponential and logarithmic functions	A3 and Q3 on Oct 3
Oct 9–13	The Chain Rule, implicit differentiation and inverse trigonometric functions	A4 and Q4 on Oct 10
Oct 16–20	Related rates	A5 and Q5 on Oct 17
Oct 23–27	Curve sketching, Part I	Midterm Oct 25, 6:00 p.m.
Oct 30–Nov 3	Curve sketching, Part II	
Nov 6–10	Optimization, Part I	A6 and Q6 on Nov 7
Nov 13–17	Optimization, Part II	A7 and Q7 on Nov 14
Nov 20–24	Linear and higher degree approximations	A8 and Q8 on Nov 21
Nov 27–Dec 1	Review	A9 and Q9 on Nov 28