

VANTAGE MATHEMATICS

Course outline for Term 1

RESOURCES

Webpage. All homework assignments and announcements will be posted on the course webpage, which is www.math.ubc.ca/~fsl/100.html.

The teaching team and types of teaching. This course is taught by a team of 5 instructors. In general, each week will include the following classes.

1. One hour-long *lecture*, normally on Monday, taught by the faculty instructor. The lecture will introduce the theoretical framework and main results for the week.
2. Two hour-long *recitations*, normally on Wednesday and Friday, taught by the recitation instructors. In recitations, you will extend and explore the material introduced in the Monday lecture.

In all of your classes, but particularly in your recitations, you are required to participate actively — to ask questions, propose solutions to problems and extend results. Attendance is mandatory.

Contact information for the teaching team is as follows. “MI”, “GRI” and “URI” refer to “main instructor”, “graduate recitation instructor” and “undergraduate recitation instructor”, respectively.

| Name | Role | Email | Webpage | Office hours |
|-------------------|------|--------------------------|--|--------------|
| Chan Gwak | URI | c.gwak@alumni.ubc.ca | - | 1:00-2:00 |
| Fok-Shuen Leung | MI | fsl@math.ubc.ca | www.math.ubc.ca/~fsl/ | 12:00-2:00 |
| Megan Nantel | URI | megannantel@gmail.com | - | 12:00-1:00 |
| Vanessa Radzinski | GRI | ver09@my.fsu.edu | blogs.ubc.ca/vradzinski/ | 12:00-1:00 |
| Pam Sargent | GRI | psargent@math.ubc.ca | www.math.ubc.ca/~psargent/ | 12:00-1:00 |
| Jasmine Yang | URI | jasmine.yangvc@gmail.com | - | 1:00-2:00 |

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 Wednesdays from 12:00 to 2:00 in ORCH 4002, with individual availability generally as shown in the table above. You may also 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 for this course. The book *A first course in calculus* is was written for this course: it is concise and at the appropriate level of difficulty. Another reasonable choice is the CLP textbook, written by the UBC mathematicians Joel Feldman, Andrew Rechnitzer and Elyse Yeager. There is a link to these textbooks in the “resources” section of the course webpage. Virtually any modern single variable calculus textbook is suitable.

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.

Online part. The online problems train your technical and computational skills. They are on the WeBWorK platform, which may be accessed through the course webpage. You will need your CWL login and password to access WeBWorK.

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 will 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 L^AT_EX, a document preparation system widely used in mathematics and the sciences. The course webpage has a link to a free online L^AT_EX compiler.

Quizzes. There are nine 10-minute quizzes, which take place in class. These are meant to assess your technical and computational skills.

Quizzes and assignments are paired. *You must pass the quiz in order to have your assignment counted, and you must pass the assignment in order to have your quiz counted.*

Exams. There will be one 90-minute midterm exam on October 18 at 6:00 p.m. The 150-minute final exam will take place in December. Calculators are not permitted on tests and exams.

Grade summary. Your final grade is based on assignments (15%), quizzes (15%), the midterm exam (20%) and the final exam (50%).

SCHEDULE

An approximate schedule of topics is below.

| Dates | Topics | Notes |
|------------------|---|---|
| Sept. 6 - 8 | Limits and infinite limits | No Wednesday recitations 10:00 lecture in LSK 200 on Sept. 6 |
| Sept. 11 - 15 | Limits at infinity and sequences | A1, Q1 on Sept. 15 |
| Sept. 18 - 22 | Series, Part I | A2, Q2 on Sept. 22 |
| Sept. 25 - 28 | Series, Part II | A3, Q3 on Sept. 28 |
| Oct. 2 - 6 | Continuity | A4, Q4 on Oct. 6 |
| Oct. 9 - 13 | Derivatives | No class on Oct. 9 |
| Oct. 16 - 20 | The Power, Product and Quotient Rules | Midterm Oct. 18 |
| Oct. 23 - 27 | The Chain Rule, implicit differentiation and related rates | A5, Q5 on Oct. 27 |
| Oct. 30 - Nov. 3 | Trigonometric and exponential derivatives | A6, Q6 on Nov. 3 |
| Nov. 6 - 10 | The Mean Value Theorem, Part I | A7, Q7 on Nov. 10 |
| Nov. 13 - 17 | The Mean Value Theorem, Part II | No class on Nov. 13 A8 and Q8 on Nov. 17 |
| Nov. 20 - 24 | Optimization | A9, Q9 on Nov. 24 |
| Nov. 27 - Dec. 1 | Review | |