MATH 100: DIFFERENTIAL CALCULUS
Course Outline

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 7 instructors. In general, each week will include the following classes.

1. One *lecture*, normally on Monday, taught by the main instructor. The lecture will introduce the theoretical framework and main results for the week.

2. Two *recitations*, normally on Wednesday and Friday, taught by your recitation instructor. Recitations provide a chance to extend and explore the material introduced in the Monday lecture.

3. One *workshop*, on Tuesday or Thursday, taught by your workshop instructor. Workshops provide a chance to work on problems and present solutions in groups.

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

Contact information for the teaching team is as follows. "MI", "RI" and "WI" refer to "main instructor", "recitation instructor" and "workshop instructor", respectively.

Name	Role	Email	Office	Webpage
Rachel Han	WI	hanrach@alumni.ubc.ca	-	-
Fok-Shuen Leung	MI	fsl@math.ubc.ca	MATH 236	www.math.ubc.ca/∼fsl/
Hudson Lynn	WI	hudson.lynn@alumni.ubc.ca	-	-
Megan Nantel	WI	megannantel@gmail.com	-	-
Vanessa Radzimski	RI	ver09@my.fsu.edu	-	blogs.ubc.ca/vradzimski/
Saifuddin Syed	RI	ssyed@math.ubc.ca	-	www.math.ubc.ca/∼ssyed/
Dee Wang	WI	deewang62108@gmail.com	-	-

Office hours. Office hours provide an opportunity to ask questions about homework or mathematics in general. *Office hours will take place on Tuesdays at 12:30, Wednesdays at 12:00 and Thursdays at 12:30* in AUDX 157. (Enter from West Mall, and go through the doors of the School of Kinesiology.) There will be at least two instructors at any particular office hour. You may also book appointments over email.

Piazza. Piazza is an online forum where you are encouraged to post and answer questions. If you email one of your instructors, we will often reply by asking you to post the question on Piazza, where others may benefit from it. There is a link to Piazza on the course webpage.

Textbook. The recommended textbook is the single-variable version of *Calculus: Early Transcendentals* by Briggs, Cochran and Gillett. *This textbook is not required.* If you wish to have a textbook, virtually any modern single variable calculus textbook is suitable.

VANT 140. There is a VANT 140 (Content and Language Enrichment Tutorial) course associated with MATH 100. You will occasionally have opportunities in one course to work on assessments in the other. It is expected that you attend both courses regularly.

ASSESSMENT

Assignments. There are 10 homework assignments, each comprising up to three components: online problems, written problems, and reflections.

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 will spend at least eight hours per week outside the classroom on this course. You are encouraged to work on homework assignments together. However, you must write your solutions independently.

1. The *online problems* assess your technical and computational skills. In general, your answers will be in the form of numbers entered into a field, and only these "final answers" will be graded.

   The online problems will be on WeBWorK, which may be accessed through the course webpage. You will need your CWL login and password to access online assignments on WeBWorK.

2. The *written problems* assess your ability to synthesize information and construct arguments. Your answers will 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. Note that the written problems are at a much more advanced level than the online problems; it is not unusual to spend several days working on them. 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 required to typeset these solutions. It is strongly recommended that you use LaTeX, a document preparation system widely used in mathematics and the sciences. The course webpage has a link to a free online LaTeX compiler.

3. The *reflections* assess your ability to represent and reconstruct information. The ability to abstract appropriately is a key skill in higher-level mathematics. Your reflections will be in the form of biweekly writing assignments to be posted on a blog. Instructions for setting up your blog are on the course webpage.

Workshops. You are assigned to a weekly workshop in which you will solve and present calculus problems in small groups. Each workshop will include the following components.

1. A *pre-reading* to be completed before the workshop, along with *pre-reading questions* to be handed in at the beginning of the workshop.

2. A *workshop problem* to work on in groups during the workshop.

3. Either a *quiz* or a *recorded solution*. Quizzes are based on the workshop problem, and take place at the end of the workshop. They are written individually, but you have the opportunity to collect bonus marks if every member of your small group does well. Recorded solutions are simply solutions to the workshop problem recorded and uploaded by your small group.

Tests and exams. There will be one 90-minute *midterm test* on October 22 at 6:00 p.m. The 150-minute *final exam* will take place in December. Calculators are not permitted on tests and exams.

The first question on the midterm test will assess fundamental technical and computational skills of the sort assessed in the online problems. *You must receive a passing grade on this question in order to pass the course.* If you do not receive a passing grade on this question, you will be asked to rewrite it until you pass. However, no matter how many attempts you make before you pass, your original grade will remain.

Grade summary. Your final grade is based on assignments (20%), workshops (20%), the midterm test (20%) and December exam (40%).

SCHEDULES

Lecture and recitation schedule. The first class of every week (normally on Mondays, but occasionally on Wednesdays) will be at 8:00 in IBLC 182. The remaining classes (normally on Wednesdays and Fridays) will be recitations. The times and locations of recitations are below.

Recitation	Time	Location	Recitation instructor
V1A	9:00-10:00	MATH 203	Vanessa Radzimski
V1C	9:00-10:00	MATH 204	Saifuddin Syed
V1D	2:00-3:00	MATH 202	Vanessa Radzimski
V1F	2:00-3:00	LSK 462	Saifuddin Syed

Workshop schedule. The times and locations of workshops are below.

Workshop	Time	Location	Workshop instructor
V01	Friday 1:00-2:00	HENN 302	Megan Nantel
V03	Wednesday 3:00-4:00	SWNG 406	Hudson Lynn
V04	Wednesday 9:00-10:00	HENN 301	Dee Wang
V06	Wednesday 10:00-11:00	HENN 304	Rachel Han

Topics schedule. An approximate schedule of topics is below. Unless otherwise noted, workshops will run every week.

Week	Dates	Topic	Notes
1	Sept. 8 - 11	Limits and infinite limits	No workshops
2	Sept. 14 - 18	Limits at infinity and sequences	A1 due Sept. 18
3	Sept. 21 - 25	Series, Part I	A2 due Sept. 25
4	Sept. 28 - Oct. 2	Series, Part II	A3 due Oct. 2
5	Oct. 5 - Oct. 9	Continuity	A4 due Oct. 9
6	Oct. 12 - 16	Derivatives	No class Oct. 12 A5 due Oct. 16
7	Oct. 19 - 23	The Power, Product and Quotient Rules	Midterm Oct. 22 No workshops
8	Oct. 26 - 30	The Chain Rule, implicit differentiation and related rates	A6 due Oct. 30
9	Nov. 2 - Nov. 6	Trigonometric and exponential derivatives	A7 due Nov. 6
10	Nov. 9 - 13	The Mean Value Theorem and curve sketching, Part I	No class Nov. 11 A8 due Nov. 13
11	Nov. 16 - 20	The Mean Value Theorem and curve sketching, Part II	A9 due Nov. 20
12	Nov. 23 - 27	Optimization	A10 due Nov. 27
13	Nov. 30 - Dec. 4	Review	