

# MATH 101: INTEGRAL CALCULUS

## Course Outline

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### RESOURCES

**Webpage.** All homework assignments and announcements will be posted on the course webpage, which is [www.math.ubc.ca/~fsl/101.html](http://www.math.ubc.ca/~fsl/101.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 *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 instructors. Recitations provide a chance to 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.*

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	Office	Webpage
Patricia Angkiriwang	URI	patricia.angkiriwang@alumni.ubc.ca	-	-
Fok-Shuen Leung	MI	fsl@math.ubc.ca	MATH 114, ORCH 1039	<a href="http://www.math.ubc.ca/~fsl/">www.math.ubc.ca/~fsl/</a>
Hudson Lynn	URI	hudson.lynn@alumni.ubc.ca	-	-
Vanessa Radzimski	GRI	ver09@my.fsu.edu	-	<a href="http://blogs.ubc.ca/vradzimski/">blogs.ubc.ca/vradzimski/</a>
Pam Sargent	GRI	psargent@math.ubc.ca	AUDX 137	<a href="http://www.math.ubc.ca/~psargent/">www.math.ubc.ca/~psargent/</a>
Cynthia Yang	URI	cynthia.yang@alumni.ubc.ca	-	-
Jasmine Yang	URI	jasmine.yangvc@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 and Thursdays from 12:30 to 1:30, and on Wednesdays from 1:00 to 2:00, in ORCH 1043. 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.** If you wish to purchase a textbook, a recommended textbook is the single-variable version of *Calculus: Early Transcendentals* by Briggs, Cochran and Gillett. *This textbook is not required.* Virtually any modern single variable calculus textbook is suitable.

## ASSESSMENT

**Assignments.** There are weekly homework assignments, each comprising up to four components: online problems, written problems, reflections, and recorded solutions.

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 L<sup>A</sup>T<sub>E</sub>X, a document preparation system widely used in mathematics and the sciences. The course webpage has a link to a free online L<sup>A</sup>T<sub>E</sub>X 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 will be posted on the course webpage.
4. *Recorded solutions* are group-based presentations of a solution to a problem. They are to be recorded and uploaded to UBC’s Collaborative Learning Annotation System (CLAS), where they will be graded. Solutions may be recorded on your cell phone. Instructions for uploading will be posted on the course webpage.

**Quizzes.** There are weekly quizzes. Each quiz will include a question taken directly from the homework assignments, as well as up to two other questions.

**Tests and exams.** There will be one 90-minute midterm test on February 16 at 6:00 p.m. The 150-minute final exam will take place in April. 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.* 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%), quizzes (20%), the midterm test (20%) and April exam (40%).

## SCHEDULES

**Lecture and recitation schedule.** The first class of every week (normally on Mondays, but occasionally on Wednesdays) will be at 2:00 in WOOD 1. The remaining classes (normally on Wednesdays and Fridays) will be recitations. The times and locations of recitations are below.

Recitation	Time	Location	Instructors
V2A	10:00	ORCH 3002	Vanessa Radzinski, Cynthia Yang
V2C	10:00	ORCH 3016	Pam Sargent, Patricia Angkiriwang
V2D	2:00	ORCH 3058	Vanessa Radzinski, Hudson Lynn
V2E	2:00	ORCH 3002	Pam Sargent, Jasmine Yang

**Topics schedule.** An approximate schedule of topics is below.

Dates	Topic	Notes
Jan. 3 - 6	Riemann sums and integrability	6:00 lecture in LSK 200 on Jan. 4
Jan. 9 - 13	The Fundamental Theorem of Calculus	A1, Q1 on Jan. 13
Jan. 16 - 20	Techniques of integration, Part I	A2, Q2 on Jan. 20
Jan. 23 - 27	Techniques of integration, Part II	A3, Q3 on Jan. 27
Jan. 30 - Feb. 3	Volumes	A4, Q4 on Feb. 3
Feb. 6 - 10	Work	A5, Q5 on due Feb. 10
Feb. 13 - 17	Power series, Part I	No class Feb. 13 Midterm Feb. 16
Feb. 27 - Mar. 3	Power series, Part II	
Mar. 6 - 10	Linear and higher degree approximations, Part I	A6, Q6 on Mar. 10
Mar. 13 - 17	Linear and higher degree approximations, Part II	A7, Q7 on Mar. 17
Mar. 20 - 24	Differential equations, Part I	A8, Q8 on Mar. 24
Mar. 27 - 31	Differential equations, Part II	A9, Q9 on Mar. 31
Apr. 3 - 6	Review	