MATH 101: INTEGRAL CALCULUS

Course outline

BASICS

All announcements, homework assignments and additional resources will be posted on the Canvas course page.

The teaching team and types of teaching. This course is taught by a team of faculty, graduate and undergraduate instructors. Contact information for the teaching team will be posted on the Canvas course page.

Most weeks will include the following classes.

1. One 50-minute *lecture*, taught by the faculty instructor. The lecture will establish the main results and introduce the theoretical framework of the week.
2. Two 50-minute *small classes*, taught by the graduate and undergraduate instructors. In small classes, you will extend and explore the material introduced in the lecture.

Attendance and participation are mandatory. In your lectures, and especially in your small classes, you are required to participate actively — to ask questions, propose solutions and extend results.

Textbook. The main textbook for this course is *A first course in calculus*. There is a link to the text on the Canvas course page. For additional practice problems, there are a number of suitable free online textbooks. The best is the CLP textbook, written by the UBC mathematicians Joel Feldman, Andrew Rechnitzer and Elyse Yeager. There is a link to this textbook in the "Additional resources" section of the Canvas course page.

Piazza. Piazza is an online forum where you are encouraged to post and answer questions. You must sign up for Piazza through the link on the Canvas course page.

Office hours. Office hours provide you with opportunities to ask questions about course material or mathematics in general. Office hours will take place in MATH 114. They are indicated on the course calendar, available on the Canvas course page. You may also book appointments over email with the faculty instructor.

ASSESSMENTS

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 eight assignments, each with an online part and a written part. Both parts may be accessed through the Canvas course page.

Online part. The online problems are on the WeBWorK platform. They develop your technical and computational skills.

Written part. The written problems develop 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. 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 them. 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 and the sciences. The course webpage has a link to a free online LaTeX compiler.

Tests and exams. There will be two 50-minute tests, on January 29 and March 11. The 150-minute final exam will take place in April. Calculators are not permitted on tests and exams.

Grade summary. Your final grade is based on assignments (20%), tests (30%), and the final exam (50%). Attendance and participation are mandatory, and a penalty of up to 5% may be deducted for poor attendance or participation.

SCHEDULE

Important information is contained in the course calendar, which is available on the Canvas course page. This is a very important document. Download a copy and display it prominently.

An approximate schedule of topics is below.

Dates	Topics
January 8 - 14	Riemann sums and integrability
January 15 - 21	The Fundamental Theorem of Calculus
January 22 - February 4	Techniques of integration
February 5 - 11	Volumes and work
February 12 - March 3	Power series
March 4 - 24	Linear and higher degree approximations
March 25 - April 8	Differential equations