UBC Math 100

2026 WT1

Acknowledgement

UBC's Point Grey Campus is located on the traditional, ancestral, and unceded territory of the xʷməθkʷəy̓əm (Musqueam). The land it is situated on has always been a place of learning for the Musqueam people, who for millennia have passed on culture, history, and traditions from one generation to the next.

If you would like to know more about the joint history of UBC and Musqueam, one place to start is at UBC's Indigenous portal.

Course Information

Course Title	Course Code Number	Credit Value
Differential Calculus with Applications	MATH 100	3

MATH 100 involves both topics from differential calculus as well as multi-variable calculus. Students will learn the basic ideas, tools and techniques that they can use to solve problems with real-life applications.

Contacts

Do not email your instructor directly with questions, you are encouraged to attend office hours, and ask questions during lectures and especially during small classes. For questions about mathematics and homework, use the Piazza forum. The Math Learning Centre is also available for additional homework help.

For questions and issues regarding personal or administrative matters, use the Calculus Contact Form. This form can be found on your class Brightspace site, it's also here: https://secure.math.ubc.ca/php/MathNet/Calculus-Form/.

For office hours, please see Brightspace → Calculus Common Room (Office hours).

Instructors

The large class instructors:

MATH 100A	MATH 100B	MATH 100C	MATH 100-Vantage
Patrick Walls Sebastien Picard	Adam Martens Christoph Hauert	James (Jimmy) Feng	Jinting Liang

Course Structure

There are three "flavours" of MATH 100, each with different applications.
Flavour "A" includes applications to Physical Sciences and Engineering.
Flavour "B" includes applications to Biology and Life Sciences.
Flavour "C" includes applications to Commerce and Social Sciences.

All flavours share a similar style of homework, tests and exams. The underlying concepts taught in each flavour will largely be the same, but the context they are referenced in may be different, hence the distinction by "flavour".

Most weeks, you will attend one 2-hour lecture taught by the professor, and one 1-hour small class taught by a small class instructor and TA. There will be group work in small classes so attendance is mandatory, and will be taken.

Schedule of topics

A tentative schedule of topics is included at the end of this document, it is subject to change throughout the semester and will be updated to reflect these changes.

Learning Materials

Our course materials are linked to UBC's learning management system, Brightspace.

This course uses the UBC MATH 100 textbook. This is a free online textbook created by UBC professors for UBC students; there are no physical copies available but the PDF file is easily printable (given the link, copy shops will print and bind). There may be some reference to the CLP-1, OIL, or Differential Calculus for the Life Sciences textbooks; also free and available online.

Instructors may make additional materials available to you - typically these will be made available on Brightspace.

Assessments of Learning

GRADE CALCULATION

Your provisional course grade will be calculated as follows:

15% Engagement
10% In-class Quizzes
25% Midterm Test
50% Final exam

The instructional team reserves the right to scale test grades and all failing grades are double-checked before they are submitted.

WeBWorK ASSIGNMENTS

There are WeBWorK assignments each cycle, and failing to correctly complete at least 75% of a WebWork assignment will result in the lost of 1 engagement mark. However, you may miss up to 2 WebWork assignments without affecting your engagement mark. This is intended to account for technical difficulties, illness, and other personal situations, that may prevent you from completing WeBWorK assignments.

WeBWork questions come in a number of different formats, and some questions will require you to type out an exact answer in order for the question to be correct. These answers are not always numbers, so making a typo could cost you marks. It is suggested that you click the PREVIEW ANSWERS button before you submit your work. If you have questions about formatting while you are doing your assignments or practicing, ask them on Piazza.

If you would like to get more familiar with WeBWorK, it is also encouraged that you complete the **optional** "WeBWorK Tutorial" quiz. **The "WeBWorK Tutorial" is not scored, and does not contribute to your course grade.**

If you would like to get some Precalculus practice, it is encouraged that you do some Pre-Calculus WeBWorK lessons in the Precalculus Review course that you can find in Canvas courses. **These lessons are not scored, and do not contribute to your course grade.**

MIDTERM TEST

There is one midterm test in MATH 100, worth 25% of your provisional grade; it is written individually, not in groups. Information required to sit the midterm test will be published on the Brightspace "Tests" page.

IN-CLASS QUIZZES

There are two in-class quizzes, that together make up 10% of your final grade. These will be written during your regular Large Class time. Information required to sit the in-class quizzes will

be published on the Brightspace "Tests" page.

ENGAGEMENT

Engagement is worth 15% of your final grade. Every student starts the term with 15 engagement points, and points are deducted for failing to participate fully and complete various tasks. Details are outlined below.

Small classes: Engagement means not only attendance, but active participation: asking and answering questions, contributing in team problem solving, and refraining from unrelated activities (e.g. checking your phone). Small class time is not the time for you to work on WeBWorK. You may skip one small class without penalty. This is intended to account for illness and other personal situations; otherwise you will lose 1 engagement point for every small class you are absent or unengaged.

ComPAIR assignments: ComPAIR implements a peer-feedback process using comparative judgement, in which you will be asked to assess pairs of your peers' solutions to a problem and asked to say which one is better. You will lose 1 engagement point for every ComPAIR assignment you do not complete. In order to complete a ComPAIR assignment, you must complete all three phases of the assignment – make a submission, do comparisons, and complete the self-reflection.

Diagnostic test: This is a test written on WeBWorK to ensure you can access the necessary resources and navigate the WeBWorK assignments. You will lose 1 engagement point if you do not submit an answer for every question on the diagnostic test.

You are required to complete a WeBWorK Diagnostic Test to check in on your precalculus skills. By answering as true to your current ability as possible, without any external aids, you will gain useful information about what precalculus skills you may need to brush up on in order to succeed in this course. **This test is not for marks** and does not count as one of your regular WeBWorK assignments; you will not be penalized for incorrect answers, nor rewarded for correct ones. However, **completion of the Diagnostic test contributes to your course engagement**; you will lose 1 engagement point if you do not submit an answer to all questions.

Other engagement grades: There may be other opportunities to participate throughout the term. In some cases, failing to complete an engagement task will result in a penalty.

FINAL EXAM

The final exam is an evaluative assessment of your understanding of the course material, information relating to the exam will be published on Brightspace. The date and time of the exam will be published on Workday later in the semester; please do not make travel arrangements prior to its announcement.

Final exams are not returned, but if you would like to view yours, you need to fill out the exam viewing form and follow the instructions provided.

University Policies

"UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious, spiritual and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available here."

Classes may be cancelled under extreme weather (most commonly heavy snowfall), cancellation will always be announced on Brightspace in accordance with weather advisory posted by UBC. You can check official campus notifications here.

MATH 100 academic policies

This is a long-winded and exhaustive description of the academic policies governing this course. It complements the usual academic policies governing all courses at UBC listed under "University Policies".

GENERATIVE AI & OTHER TOOLS

Learning to think critically is an important goal of this course. As such, you are expected to come up with your own ideas, alone or working with other students, without looking up answers online. The use of generative AI tools, including ChatGPT and other similar tools, to complete or support the completion of any assignment in this course is not allowed, and would be considered academic misconduct. The use of computing tools such as WolframAlpha or integral calculators to help complete your assignments is also not allowed, except where explicitly stated and/or linked to in a question. When we say you may use a calculator, we mean a scientific calculator – something that can compute e.g. logarithms and sines, but not draw graphs. Choosing to supplement your own learning by the use of tools *after* you have completed a question is fine.

LATE SUBMISSIONS, MISSED ASSESSMENTS & MISSED CLASSES

WeBWorK assignments will not be accepted after the submission deadline. You are permitted to miss up to two WebWork assignments without affecting your engagement grade. This policy is intended to ease administrative burden and will be used to account for the first two instances where illness, injury or personal circumstances prevent you from completing WeBWorK assignments.

Quizzes and the Midterm Test are written in-class. If you are unwell or other personal circumstances unavoidably prevent you from writing an in-term test, please request concession via

the Calculus Contact Form. Circumstances which warrant concession are described in CONCESSIONS. Short term illnesses are self-declared; medical documentation from a physician is not required, but you must specify that illness prevented you from sitting the test.

The **final exam** for this course is a major assessment, no-one in the Math department (instructors, staff, TA's, the department head) can grant concession for this assessment. If you are unwell or other personal circumstances create a substantial and unavoidable obstacle in writing the final exam, do not start writing it, instead contact your faculty's advising office as soon as possible. The process for obtaining a concession on the final exam differs by faculty (Science, Arts, APSC, etc.), though it is typically more rigorous than obtaining an in-term concession; be prepared to provide documents (e.g. a medical certificate) supporting your request.

If you are absent from a **large class** you do not have to inform anyone of your absence. It is expected that you will be responsible for your own learning and catch up on the material missed in your own time; helpful resources such as lecture notes (or for some sections, recordings) may be posted on Brightspace, but instructors are not required to share their notes with students; you can ask a classmate to share their notes.

You are required to attend **small classes** and will lose engagement points if you fail to attend. **You do not need to inform anyone of your first small class absence**: All students can be absent from one small class without consequence, this small class, despite not appearing as 'excused' in the Brightspace Gradebook, will not affect your engagement score for this class. The policy of forgiving one absence is intended to ease administrative burden and will be used to account for the first instance of illness, injury or other personal circumstance that prevents you from attending class.

If you are absent from additional small classes please complete the calculus contact form, briefly describing which small class you missed and why you were absent; in most cases of illness/injury supporting documentation is not required. Again it is expected you will be responsible for your own learning and catch up on missed material in your own time.

CONCESSIONS

Requests for in-term concessions are to be directed to the Calculus Contact Form and will be treated in accordance with the UBC Vancouver Senate policy for academic concession. Grounds for academic concession may exist when a student's personal circumstance unexpectedly or unavoidably hinders or prevents them from fulfilling the requirements of a course in a timely manner.

Concessions for missed assessments are considered and offered on a case-by-case basis, no two students will undertake the academic load of this course in the same way, and as such require different consideration; a friend or fellow class member receiving concession for an assessment does not guarantee the same or any concession will be offered to you.

Concessions cannot be offered to students where grounds for concession depend upon long-term conditions (chronic injuries, illnesses, mental health conditions, etc.) without endorsement from the student's administering faculty or the Centre for Accessibility (CfA).

Requests for concession must be delivered in a reasonable time, unreasonably late requests will

be deferred to a student's administering faculty.

Falling ill on the day of an assignment deadline (excluding tests) or experiencing technical issues generally does not qualify for concession or waiving of any late penalties; this is something students should plan around and take precautions against.

WeBWorK assignments are available for a week each, are completed online, and can be completed from anywhere. The high accessibility of WeBWorK assignments generally preclude them from concession however, requests are considered on a case-by-case basis.

Quizzes and the midterm test are major assessments in this course. If you are absent for an in-term test, with valid grounds for concession, the standard concession provided is to shift the weight of that test to the final exam. Being absent for both quizzes or from the midterm test is cause for concern, so upon requesting concession for your second in-term test, you will be directed to request concession from your administering faculty's advising office (or equivalent), as per the Senate policy.

The **final exam** is not an in-term assessment. As described in LATE SUBMISSIONS & MISSED ASSESSMENTS instructors and staff in the Math department cannot offer concession on the Final Exam; you will be directed to request concession from your administering faculty. Obtaining a Standing Deferred (SD) status in MATH 100 is the only concession available for the Final Exam, and may only be granted by the advising office of your administering faculty, read more about standing deferred status here. Note that the decision to grant Standing Deferred status takes into account students' term work, and students who have not substantially completed their in-term assessments may be denied a deferred exam.

REGRADE REQUESTS

Unless announced otherwise regrade requests should be submitted via the Calculus Contact Form.

Regrade requests for **WeBWorK assignments** will not be accepted. If an error exists in a WeBWorK question you should check Piazza for a post that describes the error, or if no post exists you should create one describing the error.

The process for requesting a regrade of the **midterm test** will be described on the "tests" page on Brightspace, and announced upon release of midterm test grades.

Requesting a regrade of the **final exam** is a formal process requested via enrolment services, known as a review of assigned standing (more information here). It is recommended that you request a viewing of your final exam prior to requesting a review of assigned standing.

Other course policies

RECORDING CLASSES

Classes at UBC are not public spaces. Students are not permitted to make audio and/or video recordings of classes unless they have an academic accommodation to do so from the Centre

for Accessibility (CfA). Such accommodations are communicated by letter to course instructors. Students who are so permitted to make recordings as part of their accommodations may not share them with anyone, as per the instructions from the CfA, and must destroy them at the end of the course.

In general, students are also not permitted to take photographs during class. Some individual course instructors will allow students to photograph projected slides or material they write on the boards.

STUDENT ANONYMITY ONLINE

In order to support learning and encourage students to discuss course material on Piazza, we have enabled features in Piazza that allow students to make posts anonymously. However, course instructors can see the identities of students on Piazza.

End-of-term Student Experience of Teaching (SEoT) surveys are managed centrally at UBC, and are anonymous. In particular, instructors never have access to the identities of students who complete these surveys. However, students should be aware that it is possible for the University to identify individual students in cases where the responses are deemed to have breached a university policy such as the Discrimination Policy.

Tentative schedule of topics

Week #	Large class date (by section)			Topics
	1A_	1B_	1C_	
1	Sept. 9	Sept. 10	Sept. 11	Comparing power, logarithmic, exponential and trigonometric functions; basic curve sketching; introduction to limits
2	Sept. 16	Sept. 17	Sept. 18	Limits; horizontal and vertical asymptotes; continuity; slopes of lines
3	Sept. 23	Sept. 24	Sept. 25	**QUIZ #1**; The derivative; tangent lines; the exponential function
4	Sept. 30 (no class)	Oct. 1	Oct. 2	The linearity of differentiation; the Power, Product and Quotient Rules; trigonometric functions and their derivatives
5	Oct. 7	Oct. 8	Oct. 9	The chain rule; logarithmic differentiation; implicit differentiation
6	Oct. 14	Oct. 15	Oct. 16	Related rates; derivatives of inverse trigonometric functions
7	Oct. 21	Oct. 22	Oct. 23	**MIDTERM**; l'Hopital's rule
8	Oct. 28	Oct. 29	Oct. 30	Sketching graphs
9	Nov. 4	Nov. 5	Nov. 6	**QUIZ #2**; Optimization; linear approximation
10	Nov. 11 (no class)	Nov. 12	Nov. 13	(A): Newton's method (B): Taylor polynomials; Newton's method (C): Taylor polynomials; introduction to multivariable functions

Tentative schedule of topics cont.

Week #	Large class date (by section)			Topics
	1A_	1B_	1C_	
11	Nov. 18	Nov. 19	Nov. 20	(A): Taylor polynomials; Error in Taylor polynomials (B): differential equations: verifying solutions; initial value problems; first-order linear differential equations; slope fields (C): Multivariable functions; partial derivatives
12	Nov. 25	Nov. 26	Nov. 27	(A): Introduction to differential equations; Slope fields (B): Numerical methods for solving differential equations: Euler's method; logistic equation (C): Critical points and optimization in two variables; constrained optimization
13	Dec. 2	Dec. 3	Dec. 4	(A): Numerical methods for solving differential equations: Euler's method (B): Qualitative analysis of differential equations: phase lines (C): Lagrange multipliers