MATH 200: Calculus III

2026W, Term 1

University of British Columbia

General Information

General inquiries should be sent directly to the administrative assistant at calc-coord@math.ubc.ca. To ensure a response, please begin your subject line with "MATH200", followed by your section number, and then your student number.

Any questions about registration into, or between, sections of the course are handled by the Undergraduate Chair (individual instructors do not have this authority) and must be directed through the Undergraduate Advising Contact Form.

Section	Meeting time	Instructor	Classroom
101	Tuesday/Thursday, 8:00–9:30	Mathav Murugan	HEBB 100
102	Tuesday/Thursday, 11:00–12:30	Johana Thomas Zapata	WESB 100
103	Wednesday/Friday, 10:00–11:30	Cyrille Kenne	CIRS 1250

Instructor contact information, office hours, and section-specific announcements will be posted on Canvas: `https://canvas.ubc.ca/courses/190656`.

Prerequisite. One of MATH 101, MATH 103, MATH 105, MATH 121, SCIE 001, MATH_O 101, or MATH_O 103.

Textbook. We will use *CLP-3 Multivariable Calculus* by Joel Feldman, Andrew Rechnitzer, and Elyse Yeager. The order in which topics are covered in lectures differs in places from the order in the textbook, so students should follow the course schedule and Canvas announcements.

Course Description and Learning Goals

MATH 200 extends differential and integral calculus to functions of several variables. The course develops the geometry of vectors and surfaces in two and three dimensions, differentiation of multivariable functions, optimization, and double and triple integration.

By the end of the course, students should be able to:

1. use vectors, dot products, cross products, and projections in geometric calculations;
2. calculate and interpret limits, partial derivatives, directional derivatives, and gradients;
3. use linear approximation, tangent planes, the chain rule, and implicit differentiation;
4. solve unconstrained and constrained optimization problems, including problems using Lagrange multipliers;
5. set up and evaluate double and triple integrals in appropriate coordinate systems.

Assessment

The course uses WeBWorK homework, two in-class midterm examinations, and a final examination. The course grade (subject to possible scaling) is computed as the maximum of:

	WeBWorK	Midterm 1	Midterm 2	Final
Scheme A	10%	20%	20%	50%
Scheme B	10%	20% (best midterm)		70%

Examinations. The midterms and final exam are closed-book and closed-notes. Calculators and computer algebra systems are not permitted. The final examination is scheduled by UBC during the December examination period.

Midterm Dates

Sections	**Midterm 1**	**Midterm 2**
101 and 102	Thursday, October 8	Tuesday, November 17
103	Friday, October 9	Wednesday, November 18

Both midterms will be held during the regular class period and will be 60 minutes long. A tentative midterm syllabus is given below; further information will be posted on Canvas.

Tentative Lecture schedule

The course has 22 regular 75-minute lectures, in addition to the two in-class midterms. The following schedule is tentative and may be adjusted slightly as the term progresses.

Lectures	**Topics**
1–2	Vectors, vector arithmetic and dot product; projections and cross product (CLP §§1.1–1.2). Introduction to functions of more than one variable(§2.1).
3–4	Limits and continuity (§2.1); partial derivatives and implicit differentiation (§2.2); higher-order partial derivatives (§2.3).
5–7	Directional derivatives and gradient (§2.7); linear approximation and differentials (§2.6).
Midterm 1 syllabus (tentative): §§1.1, 1.2, 2.1, 2.2, 2.3, 2.6, 2.7.	
8–9	Lines and planes in three dimensions (§§1.4–1.5); sketching surfaces; level curves and level surfaces (§1.7).
10–12	Tangent planes to level surfaces and graphs (§2.5); chain rule (§2.4).
13–15	Maximum and minimum values, saddle points, and Lagrange multipliers (§§2.9–2.10).
Midterm 2 syllabus (tentative): §§1.4, 1.5, 1.7, 2.4, 2.5, 2.9, 2.10.	
16–18 and first half of 19	Double integrals (§§3.1–3.2), including Cartesian and polar coordinates.
Second half of 19–22	Triple integrals (§§3.5–3.7), including Cartesian, cylindrical, and spherical coordinates.

WeBWorK

Online homework will be delivered through WeBWorK, accessible from Canvas. Students may make repeated attempts on WeBWorK problems, and many questions are generated with different numerical data for different students. Students are strongly encouraged to begin assignments early rather than waiting until the deadline. All assignments will be made available from the first day of class.

Individual extensions will generally not be granted for WeBWorK assignments. Instead, the two lowest WeBWorK assignment scores will be dropped at the end of the term. This policy is intended to account for occasional circumstances such as illness, late registration, or other situations that may prevent a student from completing an assignment by the deadline, without requiring documentation for each occurrence. The weight of the dropped assignments will be redistributed among the remaining WeBWorK assignments. Students will still be able to access the WebWork assignments after the due dates for additional practice or review, but they will no longer be able to complete them for credit.

Although the assignments account for only 10% of the final grade, they are an essential part of the course and are where much of the learning takes place. Working through the problems carefully and consistently is one of the best ways to develop the understanding and problem-solving skills needed for the midterms and final exam.

Assignment	**Due date**	**Main topics**
1	Fri. Sep. 18	Points in 2D/3D; vectors; vector arithmetic and dot product; projections.
2	Fri. Sep. 25	Cross product; limits and continuity; partial derivatives; higher-order partial derivatives.
3	Fri. Oct. 2	Directional derivatives.
4	Fri. Oct. 16	Linear approximation/differentials; lines and planes in 3D; level curves and level surfaces.
5	Fri. Oct. 23	Level curves and surfaces; tangent planes to level surfaces and graphs.
6	Fri. Oct. 30	Chain rule.
7	Fri. Nov. 6	Maximum and minimum values; classification of critical points; Lagrange multipliers.
8	Fri. Nov. 13	Double integrals in Cartesian coordinates.
9	Fri. Nov. 27	Double integrals in Cartesian and polar coordinates; triple integrals in Cartesian coordinates.
10	Mon. Dec. 7	Triple integrals in all coordinate systems covered in the course.

Important Calendar Notes

- Sections 101 and 102 do not meet on Tuesday, September 8 (Imagine UBC).
- WeBWorK 10 is due Monday, December 7 while the other WeBWorK is due on Fridays.
- There is an additional "Practice WeBWorK" due on Friday, December 11. It will not count toward your course grade and is intended to provide additional practice with integration.

Generative AI usage

Midterm and final examinations and WeBWorK assignments are intended to assess your individual understanding of the course material. No electronic devices (such as mobile phones, smart watches) may be used during examinations. The use of generative AI or any other form of AI assistance is prohibited on examinations and WeBWorK assignments.

Getting Help

Canvas is the primary source for announcements, lecture-specific information, office hours, and updates to the schedule. Students are responsible for checking Canvas regularly.

There is a link to Piazza on Canvas: https://canvas.ubc.ca/courses/190656/external_tools/201?display=borderless. Please use Piazza for questions that arise in your learning related to the course.

Students are encouraged to make use of instructor office hours (announced on Canvas), Piazza, and the Math Learning Centre.

Academic Concessions and University Policies

If illness or another serious circumstance causes a student to miss a midterm, the student should contact the course administrative assistant within 72 hours of the missed midterm and follow UBC's academic concession procedures. Course policies are subject to UBC regulations concerning academic integrity, accessibility, accommodations, respectful learning environments, and student well-being. Current university policies and student-support information can be found at UBC Senate policies and resources.

Copyright and Course Materials

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Updated: September 15, 2026