

## COURSE OUTLINE

# MATH 200 - Multivariate Calculus

Summer 2023, Section A01 (CRN: 30550)

### General Course Information

**Lectures:** [A01] MR, 8:30am – 9:50am (ECS 116)

**Tutorials:** [T01] W, 2:30pm – 3:20pm (MAC D116)  
[T02] W, 3:30pm – 4:20pm (MAC D116)

**Office Hours:** As posted on Brightspace.

**Prerequisites:** Math 101

**Units:** 1.5

**Hours:** 3-0-1

**Note:** Credit will be granted for only one of MATH 200, MATH 202, MATH 205.

**Calendar Description:** Vectors and vector functions; solid analytic geometry; partial differentiation; directional derivatives and the gradient vector; Lagrange multipliers; multiple integration with applications; cylindrical and spherical coordinates; change of variables; surface area; introduction to line and surface integrals.

### Instructor

**Lecturer** Laura Teshima **Office:** DTB A204a **Email:** LTeshima@uvic.ca

### Territory Acknowledgement

We acknowledge and respect the lək'wəŋən peoples on whose traditional territory the university stands and the Songhees, Esquimalt, and WSÁNEĆ peoples whose historical relationships with the land continue to this day.

### Office Hours and Extra Assistance

**Office Hours:** As posted on Brightspace or by appointment.

**Math & Stats AC:** The Mathematics & Statistics Assistance Centre is a large space where students can work, on their own or in groups, and obtain help with math and stats problems. The Centre is staffed with talented Teaching Assistants who are happy to assist with primarily first and second year course material with you. Please see <http://www.uvic.ca/msac> for more information.



## Course Materials and Resources

**Textbook:** *Thomas' Calculus Early Transcendentals*, 14<sup>th</sup> Edition, Weir and Hass, published by Pearson/Prentice Hall. The print copy of the textbook is available at the UVic bookstore for about \$200, and is accompanied by a **MyLab Math** (MLM) course code (see below). Alternatively, the MLM stand-alone code comes with e-book form of the textbook, and costs about \$100. **If you have purchased the MLM access code for Math 100/101/109 less than 24 month ago, it still works and can be used in Math 200.**

**MyLab Math (MyLab Math):** MLM is **not** required. If you do have MLM access, a MLM page is available for this course, and includes such materials as an e-book version of the textbook, practice problems, and the MLM Study Plan.

**Calculator:** Only the Sharp EL-510 R/RN/RNB/RTB hand calculator is permitted for use by the Math and Stats Department. It may be purchased at the UVic Bookstore or elsewhere for about \$15. Be sure to obtain one of these calculators and use it while doing homework problems so that you are comfortable with it prior to your first examination. During examinations, no other electronic device will be permitted, including cell phones, smart watches, translators, etc.

**Course Website:** Visit your Math 200 course website on Brightspace ([bright.uvic.ca](http://bright.uvic.ca)) for homework assignment questions and solutions, announcements, and other information. If you have a general question about the course, please check the Brightspace page first before asking your instructor.

**Computer Facilities:** Locations and operating hours of on campus Computer Facilities are available here <http://www.uvic.ca/systems/facilities>

## Evaluation and Grading

Your final percentage grade will be computed according to the following scheme.

Components	Dates	Note	Weights
Tutorial Assessment	Most Tutorials	Best 6 scores	$6 \times 1\% = 6\%$
Homework Assignments (5)			$5 \times 3\% = 15\%$
Midterm 1	Wednesday June 5	In Tutorial	17%
Midterm 2	Wednesday July 10	In Tutorial	17%
Final Examination	TBA		45%

**Homework Assignments:** There will be five written homework assignments this semester, each weighted evenly. The topics covered in these assignments will be closely tied to the current materials in lecture, and are designed to encourage you to keep up with the course content.

Although you are encouraged to work together on the assignments, each student must write up their own solutions, in their own words, and in reflection of their own



understanding. Poorly presented work will have marks deducted. Solutions that appear to be carbon copy identical will be treated as plagiarism.

There will be no extra assignments given to make up for missed or low-scoring course-work.

**Tutorials:** Tutorials begin the second week of classes (Wednesday May 10). During weeks without a term test, tutorial practice problems will be posted to Brightspace a few days in advance for you to study. It is expected that you attempt most of the problems before the tutorial on Wednesday. At the end of the corresponding tutorial, a short assessment quiz will be given on the material. Only your top 6 scores will be counted in calculating your final grade.

*Attendance to tutorials is required, and you must attend the tutorial section in which you are enrolled.*

**Term Tests:** There will be two terms tests, written in tutorial, each worth 17% of your grade. Details on the coverage and format of each exam will be given in class and posted to Brightspace.

**Final Exam:** The comprehensive final examination will be scheduled by Records to occur during the final examination period (August 8–August 18).

Students are **strongly advised not to make plans for travel or employment during the final examination period** as special arrangements will not be made for examinations that conflict with such plans.

**Essential Course Components:** To successfully complete Math 200, students must complete **all** of the following:

- (i) Complete the final exam with a minimum grade of 40%.
- (ii) Write at least one of the two term tests.
- (iii) Complete term work equivalent to at least 30% of the final course grade.

**Grading:** Percentage scores will be converted to letter grades according to the university-wide standard table (<http://web.uvic.ca/calendar/undergrad/info/regulations/grading.html>).

**Supplemental Examinations:** The Department of Mathematics and Statistics does not award 'E' grades or offer Supplemental Examinations in any of its courses.

## Policies and Ethics

In addition to the following, see the *University and Departmental Policies Attachment* and the *Information for Students Attachment* on Brightspace.



## Specific to Math 200

**Mark Disputes:** Contact your instructor via email for any mark disputes. Addition and recording errors can be fixed at any point before final course grades have been submitted. In the case of disputes regarding the grading, submit your argument via email to your instructor within 1 week after the item feedback has been posted. After this time, the recorded mark on Brightspace will be considered as final.

**Missing Work:** If you miss a term test and/or an assignment due to illness, accident, or family affliction, you should notify your instructor via email as soon as possible (within one week) and provide a written request to be excused. You are not required to have medical or professional documentation to support illnesses or afflictions for the semester.

There are no extra assignments given to make up for missed or low-scoring coursework. Deferrals will only be granted for the final exam, not course work.

- **Assignments:** *No extensions or make ups will be offered.* In the case of a missed excused assignment, the weight of the remaining assignments will increase to cover the missed work.
- **Tutorials:** *No extensions or make ups will be offered.* Only your top 6 tutorial scores will count towards your final grade. A missed tutorial (due to illness or other extenuating circumstances) will count as a dropped score. It is not necessary to provide documentation for missed assignments unless you miss three or more, in which case you should contact your instructor via email immediately. See Brightspace for additional information on assignment submissions.
- **Tests:** *No off-schedule or make up tests will be offered.* In the event of an excused absence for a term test, the weight of the missed test will be distributed between the completed term test and the final exam: the remaining term test will be worth 24% and the final exam will be worth 55%.
- **Final Exam** Off-schedule final examinations (i.e. deferred examinations) are given only in accordance with the university policy as outlined in the Calendar. Please note that family reunions, weddings, vacations, and employment do NOT meet the calendar requirements necessary to qualify for deferred status. A student will not be granted deferred status if they have not successfully completed term work equivalent to at least 30% of the final grade, or if they have been absent from class for a substantial portion of the term.

If you are unable to write a final examination due to illness, accident or family affliction, please refer to the following webpages for detailed instructions how to proceed: <http://web.uvic.ca/calendar/undergrad/info/regulations/concessions.html>

**Recordings:** Audio and/or video recording is not permitted during lecture without the express consent of the instructor.

**Unclaimed Evaluations:** Any paper evaluations that are not collected by the first day of the exam period (August 8) will be recycled.



## General Policies

**Academic Integrity:** Students are required to abide by all academic regulations set as set out in the University calendar, including standards of academic integrity. Violations of academic integrity (e.g. cheating and plagiarism) are considered serious and may result in significant penalties.

Academic integrity is intellectual honesty and responsibility for academic work that you submit individual or group work. It involves commitment to the values of honesty, trust, and responsibility. It is expected that students will respect these ethical values in all activities related to learning, teaching, research, and service. Therefore, plagiarism and other acts against academic integrity are serious academic offenses.

**The responsibility** of the institution Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing so, the institution recognizes students for their hard work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects.

**The responsibility of the student** Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are unsure about the standards for citations or for referencing your sources, ask your instructor. Depending on the severity of the case, penalties include a warning, a failing grade, a record on the students transcript, or a suspension.

It is your responsibility to understand the University's policy on academic integrity:  
<http://web.uvic.ca/calendar/undergrad/info/regulations/academic-integrity.html#>

**Violations of the University of Victoria Policy on Academic Integrity will not be tolerated.** The Department will be closely monitoring for signs of plagiarism, use of unauthorized resources, etc., and will seek the strongest available academic sanctions in these cases.

What you can and cannot do:

- **Assignments:** Work in this course is to be done individually. You are encouraged to discuss problems with your instructor and other students in the class, but your final write-up must be in your own words. Do not copy homework verbatim.
- **Exams:** Any form of collaboration or communication during exams between persons within or outside the class is not permitted. Use of any aids other than those specifically permitted on an exam is forbidden.

You **must not** use homework help websites. Use of any web resources, including AIs, outside of your course Brightspace or Crowdmark page in answering assignment or exam questions is prohibited. If you use resources from the web in answering assignments, any such usage **must** be explicitly cited. Failure to do so is a violation of the Academic Integrity Policy, and will lead to referrals to the Dean, and may lead to expulsion from the University of Victoria.



By submitting your assignments and tests you agree that you have read and understood the Policy on Academic Integrity, and that you have not in any way violated the Policy in constructing or presenting your solutions.

Please note that ALL course materials provided throughout the term, including course notes communicated during lectures, tutorial materials, assignments, and all examinations are intellectual property provided to you for instructional purposes only. **You are not permitted to distribute any of this material without permission of your instructor**, such as through note-sharing or other online sites. To do so would be in violation of UVic's Policy on Academic Integrity.

Some students may be selected for individual follow-up interviews after the submission of an assignment or test. Such students will be contacted via email after the submission and will be requested to participate in a short interview about their conduct during the assignment/test and how they arrived at specific answers they submitted.

**Copyright Statement:** All course content and materials are made available by instructors for educational purposes and for the exclusive use of students registered in their class. The material is protected under copyright law, even if not marked with a ©. Any further use or distribution of materials to others requires the written permission of the instructor, except under fair dealing or another exception in the Copyright Act. Violations may result in disciplinary action under the Resolution of Non-Academic Misconduct Allegations policy (AC1300).

## Important administrative dates in Spring 2023

### Registration, holidays, and exams :

First day of classes: Wednesday May 3, 2023

Last day for adding courses: Thursday May 18, 2023

Victoria Day (University closed): Monday, May 22, 2023

Reading Break (no classes): Monday May 3 - Tuesday July 4, 2023

Last day of lectures: Thursday July 27, 2023

Examination period: Tuesday August 7 - Friday August 18, 2023

### Drop Dates :

100% fee reduction: Monday May 15, 2023

50% fee reduction: Sunday June 4, 2023

Academic drop deadline: Wednesday June 28, 2023



## Course Schedule (subject to change)

	Week of	Topics	Notes
1	May 1	12.1: Three-Dimensional Coordinate Systems 12.2: Vectors	No tutorial this week
2	May 8	12.3: The Dot Product 12.4: The Cross Product 12.5: Lines and Planes in Space	
3	May 15	12.6: Cylinders and Quadric Surfaces 13.1: Curves in Spaces and Their Tangents	Victoria Day May 22
4	May 22	13.2: Integrals of Vector Functions 13.3: Arc Lengths in Space 13.4: Curvature and Normal Vectors of a Curve	
5	May 29	14.1: Functions of Several Variables 14.2: Limits and Continuity in Higher Dimensions	
6	June 5	14.3: Partial Derivatives 14.4: The Chain Rule	Midterm #1 (in tutorial), Wednesday June 7
7	June 12	14.5: Directional Derivatives and Gradient Vectors 14.6: Tangent Planes and Differentials	
8	June 19	14.7: Extreme Values and Saddle Points 14.8: Lagrange Multipliers	
9	June 26	15.1: Double and Iterated Integrals over Rectangles 15.2: Double Integrals over General Regions	
10	July 3	15.3: Area by Double Integration	Reading Week July 3-4
11	July 10	15.4: Double Integrals in Polar Form 15.5: Triple Integrals in Rectangular Coordinates	Midterm #2 (in tutorial), Wednesday July 12
12	July 17	15.6: Applications 15.7: Triple Integrals in Cylindrical and Spherical Coordinates	
13	July 24	15.8: Substitution in Multiple Integrals	

