

MATH0009- Calculus and Vectors - Fall 2020

Instructor: Dr. Zahra Montazeri
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Lectures: Two **Asynchronous Lectures**; available on CuLearn each **Tuesday and Thursday** .

Office hours: Online office hours will be offered in 2 different times per week: **Tuesdays 4-5pm and 5-6pm**. Participating in one of them is mandatory.

Tutorial/Activity: It is on **Thursday , 2:35-3:25pm** including solving problems and quiz. Attending tutorial is mandatory.

Prerequisites: Grade 12 Mathematics (Advanced Functions); or both MATH 0005 and MATH 0006; or permission of the School.

/Users/dr.zahramontazeri/Documents/Teaching/0009/Lectures-F20/Lecture 8-1.pdf **Text Book:**

- Applied Calculus by S. Calaway, D. Hoffman and D. Lippman. The free online version is here
- Solution to selected problems from textbook, you may find it in CuLearn page
- Algebra and Geometry, by Dunkley, Gilbert, Anderson, Crippin, Davidson, Rachich, and Zorzitto.
- Instructor's Notes on CuLearn

Marking Scheme: The course will be made up to three parts:

- Tutorials/Activities ————— 10%
- Office hours ————— 10%
- 2 Tests ————— 20%
- 3 Assignments ————— 20%
- Final Exam ————— 40%

Tests: : There will be two 50-minute tests on **Oct. 15, and Nov.26**. There are no make-up tests.

Assignments: There will be 3 assignments with deadlines **Oct.3, Nov. 7, Nov 21**

Final Exam: 3-hour online final examination to be held during the exam period (date and time TBA) covering the entire course.

Important Notes:

- If you miss the any activity, test or assignment you will receive a zero unless you provide me with a proper documented reason (e.g., medical), in which case the weight of the test will be shifted to the final exam.
- Selected exercises, mainly from the text, will be assigned for your practice. These exercises are not to be handed in and will not be graded. However, to succeed in the course it is absolutely essential that you do the exercises on a regular basis.

Academic Accommodations:

Pregnancy obligation: Write me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the Student Guide.

Religious obligation: Write me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, see the Student Guide.

Students with disabilities: requiring academic accommodations in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented disabilities include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC every term to have a Letter of Accommodation sent to the Instructor by their Coordinator. In addition, students are expected to confirm their need for accommodation with the Instructor no later than two weeks before the first assignment is due or the first in-class test/midterm. If you require accommodations only for formally scheduled exam(s) in this course, you must request accommodations by the official accommodation deadline published on the PMC website.

Note: November 13 , 2020 Last day to request Formal Examination Accommodation Forms for August examinations to the Paul Menton Centre for Students with Disabilities.

Detailed Class Outline

DATES	TOPICS
Week 1	Basic Algebraic Operations Solving Equality and Inequality
Week 2	Functions and Graphs Factoring and Fractions and Quadratic Equations
Week 3	Exponentials and Logarithms Functions Inverse function, Exponential Growth and Decay
Week 4	Trigonometric Functions Limits, Evaluating Limits at Infinity
Week 5	Continuity, Introduction to the Derivative Basic Rules of Differentiation
Week 6	Product and Quotient Rules Marginal Analysis and Chain Rule
Week 7	Fall Break
Week 8	Implicit Rule Derivatives of Exponential and Logarithm Functions
Week 9	Increasing and Decreasing Functions Relative Extrema, Concavity and Curve Sketching
Week 10	Business and Economics Applications of the Derivative, Optimization Problems
Week 11	Introduction of Vectors and Vector Operations Dot and Cross Products, Projections
Week 12	Equations of Lines and Planes in 3 Dimensional Space Intersection points and distance between points, lines and planes
Week 13	Course Review

The above class outline is subject to change depending on the progress of the course.