Department of
Mathematics and Statistics

Math 1009F: Elementary Calculus with Applications to Business

Fall 2020

Instructor:	Mr. Fares Said	**Lecture:**	Posted weekly; accessible at any time
Email:	fares.said@carleton.ca	**Place:**	Online via CuLearn
Office:	Zoom, Facetime or other medium	**Office Hours:**	Online Appointment request by email or call 6138751206 after 4pm

Course Pages:

1. https://www.carleton.ca/culearn/
2. https://students.carleton.ca/

Objectives: This course covers applications of mathematics to business. Limits. Differentiation of the elementary functions. Rules of differentiation. Max-min problems, curve sketching. Functions of several variables, partial differentiation, constrained max-min. Definite and indefinite integrals.

Prerequisites: Ontario Grade 12 Mathematics: Advanced Functions, or MATH 0005 & MATH 0006.

Textbook: *Elementary Calculus with Applications, by E. Devdariani. The textbook is available at the Campus Bookstore and at Haven Books , 43 Seneca Street, (613) 730-9888. (5-minute walk from campus, two blocks from Bronson Avenue along Sunnyside Avenue.) Any edition may be used.*

Lectures: Lecture notes and pre-recorded lectures will be uploaded weekly on CuLearn. The first lecture will be uploaded on September 9, 2020.

Tutorials: Weekly tutorials via BigBlueButton (BBB) will be held on Fridays from 16:35 to 17:25. Tutorials will start on Friday September 18, 2020. The following table gives more details:

Tutorial	TA name	TA email	Time	Room
F1	Gayathra Mudalige Don	gayathramudalige@cmail.carleton.ca	Fri: 16:35 - 17:25	BBB1
F2	Amritpal Singh	amritsingh4@cmail.carleton.ca	Fri: 16:35 - 17:25	BBB2
F3	Bandhupriya	priya@cmail.carleton.ca	Fri: 16:35 - 17:25	BBB3
F4	Emily Fu	emilyfu@cmail.carleton.ca	Fri: 16:35 - 17:25	BBB4

Calculators: Non-programmable calculators are allowed for tests and the exam.

Tutorial Tests: **There will be four tests in the regular tutorial hours: on October 2, October 23, November 6, and November 27.** Students are expected to take all four tests. The best three will be counted. If you miss a test and provide adequate documentation (doctor's note, etc...), then the weighting of that test will be placed on the final exam, otherwise a mark of 0 will be given for the test. **There are no make up tests!** Any request to review your grade for your test or tutorial must be done directly to your TA within two weeks of receiving the grade.

Tutorial Quizzes: There will be an online quiz administered after each of the tutorials, from 17:30 to 17:45 excluding the days on which you have tests.

Final: The final exam will be an online three-hour closed book exam to be held during the period of December 12-23, 2020 (including Saturdays and Sundays). Please check the link provided on CuLearn

to confirm the exact date and time of the final exam as that period approaches. Students who wish to review their final examination must do so within one week from the release of final grades. This privilege is for educational purposes and not an opportunity to argue about the marking.

Grading Scheme:

- *Forum participation (5%)*
- *Tutorial quizzes (20%).*
- *Tutorial tests (30%) - 4 Tests*
- *Final Examination (45%).*

Tutorial Centre: 3422 HP (near the Science Student Success Centre): This is a drop-in centre where students in elementary courses can get one-on-one help in mathematics and statistics, on a 'first come first serve' basis. For more information, including hours of operation, see: http://www5.carleton.ca/math/math-tutorial-centre/

MS-LAP: Online support is available for this course through MS-LAP. You should automatically be registered in MS-LAP via CuLearn. You have access to online tutorial videos free of charge. For more information and tutorials on how to access MS-LAP, please see: https://carleton.ca/math/math-learning-assistance-program/

Policies

Academic Integrity: All tests, assignments, quizzes, and exams are to be done independently. Any instance of suspected cheating or plagiarism will not be tolerated. Suspected cheating will be reported to the Dean, according to the policies stated in General Regulations. For more information, please consult:http://www.carleton.ca/cu0607uc/regulations/acadregsuniv14.html

Academic Accommodations: You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy or religious obligation: write to 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 visit the Equity Services website http://www2.carleton.ca/equity/accommodation/

Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at +1613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Accommodation for Student Activities: Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation must be provided to students who compete or perform at the national or international level. Please contact your instructor 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. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

Tentative Course Outline: The weekly coverage might change as it depends on the progress of the class. However, you must keep up with the reading assignments.

Week	Content
Week 1 September 9, 11	• 1.1 Definition, domain range. • 1.2 Algebra of functions. • 1.3 Transformation of graphs. • 1.4 Polynomial, rational, power functions.
Week 2 September 16, 18	• 1.5 Exponential functions. • 1.6 Logarithmic functions. • 2.1 The limit of a function at a point. • 2.2 Properties of limits.
Week 3 September 23, 25	• 2.3 Limits at infinity. • 2.4 Continuous functions. The Intermediate Value Theorem. • 3.1 The derivative as the rate of change and as the slope of the graph of a function.
Week 4 Sept. 30 & Oct. 2	• 3.2 Basic rules of differentiation. Power Rule. Product and Quotient Rules. Chain Rule. Implicit differentiation.
Week 5 October 7, 9	• 3.3. Higher order derivatives. • 4.1 Determining the intervals where a function is increasing/decreasing.
Week 6 October 14, 16	• 4.2 Marginal Concepts in Economics. • 4.3 Elasticity of Demand. • 4.5 Maximum and minimum values.
Week 7 October 21, 23	• 4.6 Second derivative. • 4.7 Curve sketching.
NA October 26 to 30	• **FALL BREAK WEEK**
Week 8 November 4, 6	• 4.8 Optimization problems. • 4.9 Exponential models (continuously compounded interest, exponential growth and decay, learning curves)
Week 9 November 11, 13	• 5.1 Examples of Functions of Two and Three Variables. • 5.2 Partial Derivatives. • 5.3 Maxima and Minima of Functions of Two Variables.
Week 10 November 18, 20	• 5.4 Lagrange Multipliers. Constrained Optimization. • 6.1 Antiderivative. Basic rules of integration.
Week 11 November 25, 27	• 6.2 Integration by substitution. • 6.3 The definite integral.
Week 12 December 2, 4	• 6.4 The Fundamental Theorem of Calculus. • 6.5 Evaluation of definite integrals. • Review and exam prep
Week 13 December 9, 11	• Review and Exam prep

Important Dates:

September 9 ..... First class
September 23 ..... Last day for registration
September 30 ..... Last day to withdraw from winter term with full fee adjustment
October 2 ..... Test 1
October 12 ..... Statutory holiday
October 23 ..... Test 2
October 26-30 ..... Fall break. Classes are suspended
November 6 ..... Test 3
November 13 ..... Exam accommodation request
November 27 ..... Test 4
December 11 ..... Last day to withdraw from the course
December 11 ..... Last day of classes
December 12-23 ..... Final Exam

For more information please visit
http://carleton.ca/registrar/registration/dates-and-deadlines/