MATH 1009* F (Fall 2021)   **last up-dated: August 25, 2021**

Mathematics for Business

NOTE: **The whole course will be delivered online using Brightspace.**

Instructor: Professor B. Szyszkowicz

Contact: Email: bszyszko@math.carleton.ca
Office hours: online by appointment. Please email the instructor to schedule.

Textbook: "Mathematics for Business and Economics", by E. Devdariani. The textbook is in electronic format and will be available at the Campus Bookstore. It may also be purchased at the Vitalsource website (https://www.vitalsource.com/en-ca/) by searching for "Elena Devdariani", or the book title, or the ISBN number 9781774942581.

Lectures: Asynchronous, posted on Brightspace, beginning on September 9, and then every Tuesday & Thursday. All lectures end on December 9.

Tutorials: Thursdays, 15:35 PM – 16:25 PM, beginning September 23.
A Teaching Assistant (TA) will be present on the tutorial session to demonstrate solutions to tutorial problems and to answer questions from students (when there is no test).
More information about tutorials (their format) will be posted on Brightspace soon. The class will be subdivided into tutorial groups. The subdivision and the names of the TAs (and their office hours) will be posted later.

Evaluation:

(1) Term Mark 60% (4 tests, 3 best count)

(2) Final Examination 40%.

Term mark : There will be four "open book" tests online in the regular tutorial hours: on September 30, October 14, November 4, November 25.
Further instructions will be provided before tests.

Students are expected to take all four tests. The best three will be counted. There will be **ABSOLUTELY NO** make-up tests as we do not have the resources to provide such tests. This lack of resources is the reason why the students are allowed to miss one test without penalty. The instructor **will not answer any emails from the students asking about the possibilities of make-up tests**. In case when a student misses more than one test due to illness (supported by a doctor note) jury duty or extreme personal misfortune, the term mark may be pro-rated.

Final Examination: This will be a 2- hour "open book" exam scheduled by the University. The exam is taking place during the period of December 11 to 23 (including Saturdays and Sundays). It is each student's responsibility to be available at the time of the examination. It is each student's responsibility to find out the correct date and time of the exam. To pass this course, a student must obtain at least 50% of total and at least 30% of the final exam mark. Students who missed the examination may be eligible for a deferred exam, provided that they present a doctor note or another supporting document to the Registrar's Office. It is the Registrar's Office (not the course Instructor!) which makes the decision of granting a deferred examination. After the deferred exam is written, all questions should be directed to the School of Mathematics and Statistics and not to the Instructor.

Calculators: Calculators are allowed for tests and the exam.

Homework: Students are expected to do every exercise from the textbook. These exercises are not to be handed in and will not be graded. However, in order to succeed in the course, it is absolutely essential to do the exercises on a regular basis.

Academic Accommodation: You may need special arrangements to meet your academic obligations during the term because of disability, pregnancy or religious obligations. Please see **Additional Information** below for details.

List of topics:

Review of Numbers (Ch 1)
1.1. Natural, Integral and Rational Numbers.
1.2. Decimals. Percentages. 1.3. Irrational and Real Numbers.

Review of Basic Algebra (Ch 2)
2.1. Algebraic Expressions. Order of Operations.
2.2. Algebraic Operations with Polynomials.
2.3. Factoring.
2.4. Roots and Radicals.
2.5. Complex Numbers.

Linear Equations and Inequalities (Ch 3)
3.1. Linear Equations and Inequalities in one variable.
3.2. Linear Equations in Two Variables and Their Graphs.
3.3. Systems of Linear Equations in Two and Three Variables.
3.4. Linear Inequalities in Three Variables and Their Graphs. Systems of Linear Inequalities.

Quadratic and Rational Expressions (Ch 4)
4.1. Solving Quadratic Equations by the Square Root Property.
4.2. Solving Quadratic Equations by Completing the Square.
4.3. Quadratic Formula. Factoring Quadratic Polynomials.
4.4. Algebraic Operations on Rational Expressions.

Functions (Ch 5)
5.1. Definition of a Function. Domain, Range, Graph.
5.2. Algebra of Functions.
5.3. Polynomial and Rational Functions.
5.4. Power Functions. Transformation of Graphs.
5.5. Exponential and Logarithmic Functions. Inverse Relations.
5.6. Applications: Simple and Compound Interest.

Introduction to Limits and Derivatives (Ch 6)
6.1 The Limit of a Function at a Point.
6.2 Properties of Limits. Limits at Infinity.
6.3 The Derivative.
6.4 Basic Rules of Differentiation.

Sequences and Series (Ch 7)
7.1. Sequences. Arithmetic Sequences.
7.2. Series. Arithmetic Series.
7.3. Geometric Sequences and Series. Application: Annuities

ADDITIONAL INFORMATION

I. **Plagiarism**

The University Academic Integrity Policy defines plagiarism as "*presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own."* This includes reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to: books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, art works, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/software, material on the internet and/or conversations.

Examples of plagiarism include, but are not limited to:

- any submission prepared in whole or in part, by someone else;

- using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;

- using another's data or research findings without appropriate acknowledgement;

- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one's own; and

- failing to acknowledge sources through the use of proper citations when using another's work and/or failing to use quotations marks.

Plagiarism is a serious offence that cannot be resolved directly by the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course or even suspension or expulsion from the University.

- **NOTE:** Standing in a course is determined by the course instructor subject to the approval of the Faculty Dean. This means that grades submitted by the instructor may be subject to revision. No grades are final until they have been approved by the Dean.

II.   **Academic Accommodation**

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

Pregnancy 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 accommodation regarding a formally-scheduled final exam, you must complete the Pregnancy Accommodation Form.

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 click here.

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 613-520-6608 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).

Survivors of Sexual Violence

As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: https://carleton.ca/equity/sexual-assault-support-services

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 will be provided to students who compete or perform at the national or international level. 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. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

III.   **Special Information Regarding Fall 2021 Pandemic Measures**

All members of the Carleton community are required to follow COVID-19 prevention measures and all mandatory public health requirements (e.g. wearing a mask, physical distancing, hand hygiene, respiratory and cough etiquette) and mandatory self-screening prior to coming to campus daily.
If you feel ill or exhibit COVID-19 symptoms while on campus or in class, please leave campus immediately, self-isolate, and complete the mandatory symptom reporting tool. For purposes of contact tracing, attendance will be recorded in all classes and labs. Participants can check in using posted QR codes through the cuScreen platform where provided. Students who do not have a smartphone will be required to complete a paper process as indicated on the COVID-19 website.

All members of the Carleton community are required to follow guidelines regarding safe movement and seating on campus (e.g. directional arrows, designated entrances and exits, designated seats that maintain physical distancing). In order to avoid congestion, allow all previous occupants to fully vacate a classroom before entering. No food or drinks are permitted in any classrooms or labs.
For the most recent information about Carleton's COVID-19 response and required measures, please see the University's COVID-19 webpage and review the Frequently Asked Questions (FAQs). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca
Please note that failure to comply with University policies and mandatory public health requirements, and endangering the safety of others are considered misconduct under the Student Rights and Responsibilities Policy. Failure to comply with Carleton's COVID-19 procedures may lead to supplementary action involving Campus Safety and/or Student Affairs.