MATH157: CALCULUS I FOR THE SOCIAL SCIENCES

SEMESTER: Summer 2022 (202202)
INSTRUCTOR: Dr. Nessim Tariq
EMAIL: tarn@learning.fraseric.ca

CLASS TIME: MATH157 Sec 1 Thursday 9:00am-1:00pm Room TBA

NOTE: The Room Number may change. Please double check your Timetable on the Student Portal.

OFFICE HOURS: They will be held in person on Tuesdays and Thursdays from 1PM-2PM in RM3001 starting from May 17th.

PREREQUISITES

Pre-Calculus 12 (or equivalent) with a grade of at least B, or MATH100 with a grade of at least C. Students with credit for either MATH150, MATH151, or MATH154 may not take MATH157 for further credit.

LEARNING OBJECTIVES AND OUTCOMES:

This course is designed for students specializing in business or the social sciences. Topics include: limits, growth rate and the derivative; logarithmic, exponential and trigonometric functions and their application to business, economics, optimization and approximation methods; introduction to functions of several variables with emphasis on partial derivatives and extrema.

By the end of this course, students should have a solid familiarity and facility with the algebra and differential calculus of elementary functions of one variable (polynomials, rational functions, exponential, logarithmic and trigonometric functions and their inverses, and their compositions); be able to work with them using formulas, sketch and interpret them graphically, and use them in the formulation and interpretation of mathematical models; and extend the concept of derivative and optimization to elementary multivariable functions.

REQUIRED READING AND CALCULATORS

Course Notes: CALCULUS Early Transcendentals – Differential & Multi-Variable Calculus for Social Sciences adapted by Petra Menz and Nicola Mulberry; the notes are available on the MATH157 Course Moodle Page as downloadable pdf files in their entirety, section by section.

For **all** MATH157 assessments (quizzes, midterms, and final exam), you are **only allowed** to use one of the following calculator models listed below:

1) Sharp EL-510 RNB or other models that being with EL-510
2) Sharp EL-531 XGB-WH or other models that begin with EL-531
3) Casio FX-300MS or Casio FX-500MS
4) Texas Instruments TI-30XIIS

The above models cost approximately $20.

Your calculators will be checked before the start of each assessment. Failure to have the appropriate calculator will result in completing the assessment without one and losing marks. Sharing calculators is strictly prohibited.

COURSE ASSESSMENT

Assignments (10 x 1% each)	10%
Quizzes (4 x 5% each)	20%
Midterm 1	15%
Midterm 2	15%
Final Exam	40%

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Homework Assignments: These will be tested through quizzes and will be assigned every week. Due to the current pandemic, the first Homework Assignment will be held later than usual in the event of late-arrivals to this course. The questions will be given in class weekly.

Quizzes: There will be 4 quizzes, starting from Week 4. All 4 quizzes will count towards your mark and they will be done in class.

GRADE DISTRIBUTION

Letter grades are based on the overall course mark as determined by the weighted average of quizzes, assignments, two midterm tests, and the final exam. **The final grade boundaries will be determined at the end of the semester.**

ASSIGNMENTS

Homework questions will be assigned each week and checked in class in the following week. They will consist of textbook questions and additional questions. Please make sure that the questions are done in the correct order and that the solutions are complete and neatly handwritten.

QUIZZES

There will be 4 quizzes given during the semester. Each quiz will consist of some randomly selected questions taken directly from or similar to the weekly homework questions.

CLASS PARTICIPATION

Changing class times is not allowed. If you attend a class that is different from yours without a doctor's note or having my approval before class, you will be marked absent for that day.

MID-TERM EXAMS

There will be two midterm exams held during Weeks 5/6 and 9/10. The exact dates and times of each midterm will be announced in class and posted on the Course Moodle Page. You **MUST** have your FIC ID when you write the midterm, otherwise you will receive a zero for the midterm.

FINAL EXAM

The final exam will be cumulative (it will cover all topics in the course) and will be worth 40% of your mark. It will be held during the Final Exam Period. The Final Exam schedule will be available on Moodle later in the semester. It is **MANDATORY** to have your FIC ID when you write the final exam, otherwise you will receive an N grade for the course.

COMMUNICATION

Online Course Information:
You will find basic information about this course and instructor on the Portal, including solutions to all homework questions and tests as well as sample exams.
Contact: The best time to see me is during Office Hours. I will normally respond to emails within **48 hours** from the time that it was sent. In the subject line, please write down MATH157, your section number and your name, otherwise I will not respond.

MAKE-UP EXAMS

There are no make-ups for missed quizzes, mid-terms, or the final exam. However, the missed homework assignments must be completed and shown to the instructor. Students who miss the mid-term for medical reasons or other approved extenuating circumstances will have the weight of the mid-term transferred to the final exam. However, the instructor has the option of scheduling a mid-term rewrite. A Declaration of Illness form is required for all requests. If you miss the final exam, you will be given an N grade.

ACADEMIC INTEGRITY POLICY

Academic Integrity refers the values on which good academic work must be founded: honesty, trust, fairness, respect and responsibility. Academic integrity includes a commitment not to engage in or tolerate acts of falsification, misrepresentation or deception. Such acts of dishonesty violate the fundamental ethical principles of the College community and compromise the worth of work completed by others.

Students found to have breached the regulations related to any form of academic misconduct including but not limited to plagiarism and cheating will be subject to the following measures:

- First Offence: Awarded "0" for the assessment and given a permanent record on their file
- Second Offence: Awarded "0" for the course, regardless whether the offence was committed in the same course or another course
- Third Offence: Risk expulsion from FIC and the cancellation of Study Permit

It is solely the student's responsibility to be aware of Academic Integrity Policy and consequences of violating it. The policy is available at: http://85401dc13f6ba5867f46-aacfababc729cd49a24606938417f53d.r33.cf6.rackcdn.com/FIC_Academic_Integrity_Policy.pdf

HOW CAN YOU DO WELL IN THIS COURSE?

1. Do the homework. Practice, practice, practice. Start in the first week, don't wait until exam time.
2. Take smart notes. I will give you notes in class but I will expect that you prepare your own notes with the help of my notes and from reading the assigned textbook.
3. Understand ... don't memorize. Most of you are just out of high school. You've done a lot of memorizing. Now it's time to start understanding. Understanding means you have to think about a concept. It is a skill that takes practice. You'll know you understand an idea when you can apply it to a context that is different from the one used to learn it.
4. Come to class. The ideas in this class are sequential. If you miss lecture 4, you'll have a hard time understanding the rest of the course. The course follows the book, but the lecture is full of material not in the book (and vice versa).
5. Read the course notes ahead of time. This is a must. If you read the relevant material before the lecture, and then read it again after, you'll learn a lot more in this course.

Some Recommendations to Succeed in MATH157

1. Regular attendance of classes
2. Read the pages of the course notes that will be covered in the next class
3. Read my lecture notes on FIC Portal
4. Review prerequisites for the new topic
5. Regular completion of assignments
6. Ready for evaluations

ADDITIONAL INFORMATION

Attendance and Classroom Etiquette

Due to the current COVID-19 protocols, masks are mandatory in classrooms.
BY FIC regulations, attendance is required for all lectures and a record will be kept. All students are expected to maintain 80% attendance. Missed classes require a Declaration of Illness Form to be filled out and it must be signed by the student and the instructor. Students who arrive late or leave early will be marked under the category of "half attendance". Attending the first class is **mandatory** in all subjects at FIC, and failure to do so may result in academic penalties, or, in some cases, withdrawal from MATH157.

SCHEDULE OF TOPICS (MAY BE SUBJECT TO CHANGE)

NUMBER OF WEEKS	SECTIONS	LECTURE TOPICS
NOTE	REVIEW (done before first class, 1.1-1,3, 2,1-2.6, **Skip Section 1.2.3**) **MUST BE READ BEORE THE FIRST CLASS**	Sets and Number Systems, Exponent Laws, Quadratic Formula, Inequalities, Intervals, Absolute Value Properties, Lines, Distance between Two Points, Review of Trigonometric, Logarithmic, Inverse, and Exponential Functions
THREE	2.7 3.1, 3.3-3.7 4.1-4.4 **Skip Section 3.2 & Squeeze Theorem**	Economic Models, Definition of Limit, Computing Limits Graphically and Algebraically, Limits at Infinity, Infinite Limits and Asymptotes, Special Limits, Continuity and Intermediate Value Theorem, Derivatives and Their Rules, Chain Rule
THREE	5.1-5.4	Elasticity of Demand, Related Rates, Linear & Higher Order Approximations, L'Hôpital's Rule, Newton's Method (also called Newton-Raphson's Method), Review for MIDTERM 1
NOTE	MIDTERM 1 in Week 5/6 (Date and Time TBA)	Exact length and time of exam will be announced in class and posted on Moodle Page. The date and time may be subject to change.
TWO	4.5-4.8	Derivatives of Exponential, Logarithmic, Trigonometric and Inverse Functions, Implicit and Logarithmic Differentiation, Exponential Growth and Decay
THREE	5.5, 5.7, 5.8 **Skip Section 5.6**	First and Second Derivative Applications, Extrema of a Function, Curve Sketching, Optimization Problems, Review for MIDTERM 2
NOTE	MIDTERM 2 in Week 9/10 (Date and Time TBA)	Exact length and time of exam will be announced in class and posted on Moodle Page. The date and time may be subject to change.
TWO	7.1, 7.3, 7.6	Graphing Functions of Several Variables, First and Second Order Partial Derivatives, Local Maxima and Minima of Functions of Several Variables, Review for Final Exam
NOTE	FINAL EXAM DATE TO BE ANNOUNCED	Date and Time TBA, will be posted on Moodle Page

Note: the instructor reserves the right to make changes to this course outline.