

MATH 1007 B / BIT 1200 [0.5 Credit] Elementary Calculus I

Basic Information:

Course Instructor: Gennady Shaikhet
Email: gennady@math.carleton.ca
Course Webpage: All course material will be made available through CuLearn.
Class Schedule: Asynchronous Lectures to be posted in CuLearn
Office Hour Schedule: Via Zoom and/or BigBlueButton

TAs will hold office hours:

Mondays 10:00 – 11:30
Mondays 14:30 – 15:30
These office hours will start on Sept 21.

I will hold additional office hours:

Wednesdays 11:00 – 12:00
or by appointment
These office hours will start on Sept 16.

Course Information:

Description: Limits. Differentiation of the elementary functions, including trigonometric functions. Rules of differentiation. Applications of differentiation: max-min problems, curve sketching, approximations. Introduction to integration: definite and indefinite integrals, areas under curves, fundamental theorem of calculus.

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

If you do not have the prerequisite, you will likely have a very difficult time in this course! It is suggested to drop the course and take MATH 0005 + MATH 0006 before taking this course if you did not do Grade 12 Advanced Functions (or equivalent)!

Textbook: J. Hass, M.D. Weir, G.B. Thomas, *Single Variable University Calculus, Early Transcendentals*, 4th ed., available through the Campus Bookstore.

Required Resources: **This course will be using Pearson's MyLab Math for weekly homework assignments, quizzes, and (likely) the final exam. You will be required to purchase MyLab Math** in one of three options outlined below:

MyLab Math Access Only (Least Expensive)

This is a good option if you do not want the textbook, already have the textbook, or find a cheap copy/older version of the textbook elsewhere.

MyLab Math Access and eText Access (Middle Expensive)

This is a good option if you are uninterested in a paper copy of the textbook, but still want access to the textbook in an online format (Note that you require internet access to be able to access the eText every time you use the eText).

MyLab Math Access, Loose-Leaf Textbook, and eText Access (Most Expensive)

This is the above option, but also comes with a Loose-Leaf version of the book.

14 days trial period: The Bookstore is currently negotiating prices with the Publisher. In the meantime, MyLab Math does have a free 14 day trial period, and it **is highly recommended** to first use this possibility, before the pricing is finalized.

If you are repeating the course:

If you already had access to MyLab Math from the last time you took the course, you may be eligible for free access to allow you to repeat the course. Please contact

Jeremy.Guimond@pearsoned.com to see if he can give you access. He will require: your Pearson account email/username, the section of your current course, and the email of your instructor

Classes

Lecture videos are broken down into smaller lessons. It is recommended to keep up with the lessons in preparation for that week's assignments and the following weeks quiz. CuLearn will outline which lessons will be relevant for each assignment/quiz.

Assessment:

Online Assignments (20%):

There will be weekly online assignments for this course due each Friday at 11:59 pm. **There are no extensions in the online assignments**, so be sure to manage your time. All assignments are posted in advance in MyLab Math so that you can get a head start and go as far as you like right from the beginning of the class. **The best 10 out of 11 assignments will be counted towards your final grade.**

| <u>Assignment Number</u> | <u>Due Date</u> |
|--------------------------|-----------------|
| 1 | Sep 25 |
| 2 | Oct 2 |
| 3 | Oct 9 |
| 4 | Oct 16 |
| 5 | Oct 23 |
| 6 | Nov 6 |
| 7 | Nov 13 |
| 8 | Nov 20 |
| 9 | Nov 27 |
| 10 | Dec 4 |
| 11 | Dec 11 |

Online Quizzes (40%):

During the "Lecture Timeslot" on **Wednesdays 10:05 – 10:35**, there will be a weekly quiz. The quiz will be 30 mins in length. The quiz will be found in MyLab Math. The quiz questions will be taken from the "Additional Practice" found in MyLab Math, so it will be very helpful to work on the additional practice questions to prepare for the quiz. **The best 8 out of 10 quizzes will be counted towards your final grade.**

| <u>Quiz Number</u> | <u>Quiz Date</u> |
|--------------------|------------------|
| 1 | Sep 30 |
| 2 | Oct 7 |
| 3 | Oct 14 |
| 4 | Oct 21 |
| 5 | Nov 4 |
| 6 | Nov 11 |
| 7 | Nov 18 |
| 8 | Nov 25 |
| 9 | Dec 2 |
| 10 | Dec 9 |

Quizzes will be open book, and you are permitted to use a calculator.

You are not permitted to discuss the quiz questions with anyone during the quiz (other students, tutors, web-forums, etc...).

Final Exam (40%): The final exam will be a three-hour exam to be held during the exam period set by Carleton University. The final exam will be held online. The questions will be similar to those seen on the assignments, quizzes, and additional practice.

The final exam will be open book, and you are permitted to use a calculator. You are **not permitted to discuss the final exam questions with anyone during the final exam (other students, tutors, web-forums, etc...).**

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:

<https://carleton.ca/registrar/academic-integrity/>

Deferrals, Petitions and Appeals: Students are expected to be available for the duration of a course including the examination period. Dates and deadlines are made available to students in the Carleton University Undergraduate Calendar well in advance of registration. For more information, please consult:

<https://carleton.ca/registrar/special-requests/deferral/>

Pregnancy or Religious Obligation: Contact the 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. For more details see

<https://carleton.ca/edc/teachingresources/administrative-pedagogy/academic-accommodations/>

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. For more information, see: <https://carleton.ca/pmc/>

Extra Help Options:

Tutorial Centre: The tutorial centre is a drop in centre where you can work with a TA to answer your questions/work on problems. This term, the Tutorial Centre will be online and found in CuLearn. <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/>

Course Schedule:

Below is a list of topics that will be covered over the course of the semester.

Review of Basic Concepts

Function Notation

Parent Functions and Transformations

Domain and Range

Trigonometry

Inverse Trigonometric Functions

Log Laws

Piecewise Functions

Odd and Even Functions

Limit Notation & Graphical Representations

Evaluating Limit Expressions Using Limit Laws

Continuity and Intermediate Value Theorem

Limits Involving Squeeze Theorem

Limits Involving Infinity

Instantaneous Rates of Change & Average Rate of Change

Derivative Definition

Derivatives Rules using Constant Rule, Power Rule, and Sum Rule

Derivatives Rules using Product Rule, Quotient Rule, and Chain Rule

Derivatives of Trigonometric Functions, Exponential Functions, and Inverse Functions

Implicit Differentiation

Logarithmic Differentiation

Linearization

Critical Points

Absolute and Local Extrema

First Derivative Test

Concavity & Inflection Points

Second Derivative Test

Curve Sketching

L'Hopitals Rule ($\frac{0}{0}$ and $\frac{\infty}{\infty}$)

L'Hopitals Rule (1^∞ and $(\infty)^0$ and 0^0)

Antiderivatives

Definite and Indefinite Integrals

Fundamental Theorem of Calculus

Area Under Curves & Area Contained Between Curves