

MATH 108–006 Introductory Calculus with Business Applications (3 credits)

Fall 2020

Instructor: Lingxia Alicia Li

Email: lli23@gmu.edu (Please include your section #005 when sending emails to me.)

Office hours: By appointment. Please email me to set up an appointment.

Online Lectures meeting time: Monday & Wednesday 3:00 pm – 4:15 pm

This course is offered entirely online with synchronous meeting time via zoom

Goals:

Quantitative Reasoning: This course satisfies GMU's Quantitative Reasoning Foundation Requirement.

The learning outcomes that we will achieve to meet that requirement are:

1. Students are able to interpret quantitative information (i.e., formulas, graphs, tables, models, and schematics) and draw inferences from them.
2. Given a quantitative problem, students are able to formulate the problem quantitatively and use appropriate arithmetic, algebraic, and/or statistical methods to solve the problem.
3. Students are able to evaluate logical arguments using quantitative reasoning.
4. Students are able to communicate and present quantitative results effectively.

Course Goals: The course itself seeks to satisfy the following goals:

1. Students improve and solidify their algebraic skills.
2. Students understand and apply derivatives as a tool to analyze change in quantified models.
3. Students analyze and interpret results in the context of Business and IT applications.
4. Students understand and compute integrals and their relationship to derivatives.

Required Items:

- 1) MyMathLab Code/Account:

All students are required to get a MyMathLab account. Once you have one, the e-book is within it.

Buying Options:

Access Code only (\$90 online) to access the ebook and MyMathLab (this is my recommendation) for *Calculus for Business, Economics, Life Sciences and Social Sciences, 14th edition*. At the bookstore, this is listed as *Required*. See blackboard for more information about MyMathLab.

OR

Calculus for Business, Economics, Life Sciences and Social Sciences Plus NEW MyMathLab (\$150 new) - at the bookstore website this says "CALCULUS F/BUS., ECON...(LOOSE) – W/ACCESS"

If you buy a used book, please be sure you have an access code. It is required for this course.

To register: Click the link MyMathLab in Blackboard, use the Course ID: **li76383**

Important: Please use your official **GMU registration name** and your GMU email address to register in your MML account.

- 2) A computer/laptop, with the ability of connecting to the internet.
- 3) You may use a Scientific or graphing calculator in this course. Please be aware that you are required to show evidence for graphing in this course. No credit is given for just drawing the graph that you see on your calculator.

Homework:

Homework will be assigned on MyMathLab in every lecture. The due date is next Wednesday.

A 10% late penalty is deducted for any late work you turn in

Quizzes:

A weekly quiz will be on each Wednesday start from the second week, if it is not an exam day. Quizzes will be taken by paper during class meeting times, and each takes about 15 to 30 minutes.

- All work is handwritten. No typed work is accepted. No computer generated graphs are accepted.
- You will need to convert your submission to pdf file and submit it to Blackboard. Submissions are not accepted in any other format.
- Work is submitted in a professional, screen-readable way (right-side up, legible. Not sideways or upside down)
- There will be no make up quizzes for any excuses, as one lowest score will be dropped.
- Viewing your graded work: Please click on “My Grades” in Blackboard, and then on the assignment you want to view. The grader will make comments and notes on your work.

Exams:

There will be three midterm exams. Each will cover the material taught after the previous midterm.

The final exam will be cumulative/comprehensive.

There are no make-up exams, unless you have a documented excused absence (that is an absence that I consider excused). Decisions about excused absences are solely at the discretion of the instructor.

*** Make up exams may be more challenging-----please **avoid** them if possible.

1st Test: 09/23/2020, Wednesday, 3:00 pm – 4:15pm, on MML

2nd Test: 10/21/2020, Wednesday, 3:00 pm – 4:15pm, on MML

3rd Test: 11/18/2020, Wednesday, 3:00 pm – 4:15pm, on MML

Final: 12/14/2020, Monday, 1:30 pm – 4:15 pm, on MML and Blackboard (Written on Paper)

Grading:

The lowest quiz score will be dropped.

Course Score 100% = Home work (10%) + Quizzes (45%) + Three Midterms (30%) + Final (15%)

A+: 100 – 98, A: 97 – 92, A-: 91 – 90

B+: 89 – 88, B: 87 – 82, B-: 81 – 80

C+: 79 – 78, C: 77 – 72, C-: 71 – 70

D: 69 – 60, F: 59 – 0

Academic dishonesty and the GMU Honor Code:

You are expected to follow the GMU Honor Code <http://academicintegrity.gmu.edu/honorcode/>

No collaboration is allowed on quizzes or tests.

Any indication that you have worked together, copied or allowed fellow student to copy your work is a violation of the GMU Honor Code.

Any indication that you have done internet searching for helps with solutions on quizzes or tests is a violation of the GMU Honor Code.

You may use your own notes and problems you have recorded by hand. No other resources may be used on quizzes and tests.

However, collaborative discussion about the homework is allowed and encouraged! Be sure though, to understand them and write your own solutions.

Course Topics to be Covered:

Sec 1.1 Functions

Sec 1.2 Elementary Functions

Sec 1.3 Linear and Quadratic Functions
Sec 1.4 Polynomial and Rational Functions
Sec 1.5 Exponential Functions
Sec 1.6 Logarithmic Functions
Sec 2.1 Introduction to Limits
Sec 2.2 Infinite Limits and Limits at Infinity
Sec 2.3 Continuity
Sec 2.4 The Derivative
Sec 2.5 Basic Differentiation Properties
Sec 2.7 Marginal Analysis in Business and Economics
Sec 3.1 The Constant e and Continuous Compound Interest
Sec 3.2 Derivative of Exponential and Logarithmic Functions
Sec 3.3 Derivative of Products and Quotients
Sec 3.4 The Chain Rule
Sec 3.5 Implicit Differentiation
Sec 3.7 Elasticity of Demand
Sec 4.1 First Derivative and Graphs
Sec 4.2 Second Derivative and Graphs
Sec 4.4 Curve Sketching Techniques
Sec 4.5 Absolute Maxima and Minima
Sec 4.6 Optimization
Sec 5.1 Antiderivatives and Indefinite Integral (optional)
Sec 5.4 Definite Integral (optional)
Sec 6.1 Area Between Curves (optional)

Help and Resources

Tutoring:

The Math Tutoring Center is operating during this Fall online. For hours of operation see <http://math.gmu.edu/tutorcenter.htm>

Withdraw & Audit See the GMU website for important add/drop deadlines:

<https://registrar.gmu.edu/calendars/summer-2020/>

Learning Differences & Special Needs:

If you have a learning or physical difference that may affect your academic work, please see me and contact the Office of Disability Services (ODS) at 993-2474, <http://ods.gmu.edu> . All academic accommodations must be arranged through the ODS.

Efforts have been made to make this course accessible for students with learning and physical differences. If you find you have additional needs beyond those that have been provided, again, please contact me and ODS so I can be sure that the course is meeting your needs.

Counseling and Psychological Services:

Counseling and Psychological Services are available for GMU students. <http://caps.gmu.edu> 703-993-2380

Student Support and Advocacy Center:

SSAC provides guidance to students experiencing hardship or trauma, or otherwise encountering barriers to success.

<https://ssac.gmu.edu/> 703-993-3686

University Policies

The University Catalog, <http://catalog.gmu.edu>, is the central resource for university policies affecting students, faculty and staff conduct in university academic affairs. Other policies are available at <http://universitypolicy.gmu.edu/>. All members of the university community are responsible for knowing and following established policies.