**MATH 108–006 Introductory Calculus with Business Applications**

**Spring 2021**

**Instructor: Lingxia Alicia Li**
**Email:** lli23@gmu.edu (Please include your section #006 when sending emails to me.)
**Office hours**: Tuesday & Thursday 4:30 pm – 5:30 pm. Or email me to set up an appointment.

**Online Lectures meeting time**:

This course is offered asynchronously. However, the three term tests and the final will be synchronous online with zoom meeting.

**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 ($74.95 online, if not changed) to access the ebook and MyMathLab (this is my recommendation) for *Calculus for Business, Economics, Life Sciences and Social Sciences, 14th edition.*
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 and follow the instructions. (Course ID: li38531)
Important: Please use your official GMU registration name and your GMU email address to register your MML account.

2) A computer/laptop, with the ability of connecting to the internet.

3) Calculator: Not mandatory. No calculators are allowed during tests or quizzes. However, you may use a Scientific or graphing calculator for homework.

**Homework:**

Homework will be assigned on MyMathLab in every Wednesday and Friday, except the test week. The due date is the subsequent Friday. A 20% late penalty is deducted for any late work.

**Quizzes:**

A weekly quiz will be taken on each Friday from 4:00 pm to 6:00 pm start from the second week, if it is not an exam day. The duration is supposed to be 25 minutes, however I give you two hours.

- 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 totally 10 quizzes provided but only 9 will be counted (or one lowest quiz will be dropped.)
- There will be no make-up quizzes for any excuses,

- 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 and a final. They will be synchronous online by zoom.
The final exam will be cumulative/comprehensive.

There are no make-up exams, unless you have a documented excused absence. Decisions about excused absences are solely at the discretion of the instructor.

*** Make up exams are more challenging-----please **avoid** if possible.

- **1st Test: 02/19/2021, Friday, 5:55 pm – 7:10pm, on MML**
- **2nd Test: 03/19/2021, Friday, 5:55 pm – 7:10pm, on MML**
- **3rd Test: 04/16/2021, Friday, 5:55 pm – 7:10pm, on MML**
- **Final: 05/07/2021, Friday, 4:30 pm – 7:10pm, on MML and Blackboard (on Paper)**

**Grading:**

Only 9 quizzes will be counted.

Course Score 100% = Homework (15%) + Quizzes (40%) + 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: https://oai.gmu.edu/mason-honor-code
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.
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
Sed 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 Demond

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 semester 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

**Learning Differences & Special Needs:**

If you have a learning or physical difference that may affect your academic work, please 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.