MATH 113 – A03: Analytic Geometry and Calculus I
Summer 2023

COURSE INFORMATION:

Instructor: Jingya Yan

Lectures: MTWRF 10:30 am – 12:50 pm, Horizon Hall 5018

Recitations: TR 1:30 pm – 2:45 pm, Horizon Hall 5018

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Office Hours: TR 3:00 pm—4:30 pm or online by appointment

Office: Exploratory Hall 4405

COURSE DESCRIPTION:

Understanding functions (polynomial, rational, exponential, logarithmic, and trigonometric) and knowing how to derive their limits, derivatives, and integrals.

RECITATION INFORMATION:

You will work with groups of 4-6 to solve certain problems on the whiteboard. Your recitation grade will be a combination of attendance, participation, and your score on the worksheets.

PREREQUISITES:

C or better in Math 105 or a pass the Math Placement Test.

COURSE MATERIALS:

Chapter 1 – 5 of Thomas' Calculus (Early Transcendentals) by Hass, Heil and Weir (fourteenth edition, Pearson publisher).

An access code for MyMathLab is required for this course. To register: Click the link MyMathLab in Blackboard – Course Content and follow the instructions.

Please use your official GMU registration name and your GMU email address to register your MML account.

TENTATIVE SCHEDULE (SUBJECT TO CHANGE):

Week 1:

May 22: 1.1 Functions and graphs

May 23: 1.1, 1.2 Functions; Combining Functions; Shifting and Scaling Graphs

May 24: 1.3 Trigonometric Functions

May 25: 1.5, 1.6 Exponential Functions; Inverse Functions and Logarithms

May 26: 2.1, 2.2 Rates of Change and Tangent Lines to Curves; Limits

Week 2:

May 29: Memorial Day, no classes

May 30: 2.2, 2.4, 2.5 Limits; One-sided Limits; Continuity, **written assignment due**

May 31: 2.5, 2.6 Continuity; Limits Involving Infinity

Jul 1: 3.1, 3.2, 3.3 Tangent Lines and the Derivative at a Point; Derivatives; Differentiation Rule

Jul 2: **Test 1 (Section 1.1 – 2.6)**

Week 3:

Jun 5: 3.4, 3.5 The Derivative as rate of Change; Derivatives of Trigonometric Functions

Jun 6: 3.6, 3.7 Chain Rule; Implicit Differentiation

Jun 7: 3.8, 3.9 Derivatives of Inverse Functions and Logarithms, Inverse Trigonometric Functions

Jun 8: 3.10, 3.11 Related Rates, Linearization and Differentials

Jun 9: 4.1 Extreme Values of Functions on Closed Intervals

Week 4:

Jun 12: 4.2, 4.3 Mean Value Theorem, Monotonic Functions; First Derivative Test,

Jun 13: 4.4, 4.5 Concavity and Curve Sketching, **written assignment due**

Jun 14: 4.5 L'Hopital's Rule

Jun 15: 4.6, 4.7 Optimization; Newton's Method

Jun 16: **Test 2 (Section 3.1 – 4.5)**

Week 5:

Jun 19: 5.1, 5.2 Area and Estimating with Finite Sums; Sigma Notation and Limits of Finite Sums;

Jun 20: 5.3, 4.8 Definite Integral; Antiderivatives;

Jun 21: 5.4, 5.5 Fundamental Theorem of Calculus; Indefinite Integrals and the Substitution Method

Jun 22: 5.6 Definite Integral Substitutions and the Area Between Curves, Review

Jun 23: **Final Exam (Cumulative)**

GRADING:

Two Tests: 20% each

MyMathLab Homework and Quizzes: (10% + 5%)

Bi-weekly Written Assignments: 5%

Recitation Grade: 15%

Final Exam: 25%

Grade Breakdowns:

A+	A	A-	B+	B	B-
≥98%	92% - 98%	90% - 92%	88% - 90%	82% - 88%	80% - 82%
C+	C	C-	D	F	
78% - 80%	72% - 78%	70% - 72%	60% - 70%	<60%	

You will find homework and quizzes on MyMathLab. Late homework and quizzes are accepted with 20% penalty within **three days** after the original deadline; after penalty deadline you will get zero. Usually, there will be homework and quizzes **every day**. You will have infinite number of attempts for your homework and **5 attempts** for quizzes. The lowest homework score and lowest quiz score will be dropped.

Written Problems will be assigned on Tuesdays of Week 1 and Week 3 and **collected in class on Tuesdays of Week 2 and Week 4** to help you improve your solution written skills. Solutions will be posted on the same day. **Late submission will not be accepted**.

There are two tests and one comprehensive final exam. All exams will be taken in class. No make-up exams will be scheduled unless you have a documented excused absence. Calculators are **not allowed**.

RECITATION GRADING:

You will work on problem sets in groups of four people during recitations. Recitation grade will be based on attendance and solution quality (50%/50%). Recitation worksheets must be submitted by the end of each recitation. Late submissions will not be accepted. Lowest recitation score will be dropped.

DISABILITY SERVICES:

https://ds.gmu.edu/

MATH TUTORING CENTER:

https://science.gmu.edu/academics/departments-units/mathematical-sciences/math-tutoring/tutoring-center-hours-and

HONOR CODE:

Please see the Office for Academic Integrity (https://oai.gmu.edu/) for a full description of the code and the honor committee process, and the Honor Code Policies of the Department of Computer Science (https://cs.gmu.edu/resources/honor-code/) regarding the course project. GMU is an Honor Code university. The principle of academic integrity is taken seriously and violations are treated gravely. If you rely on someone else's work in an aspect of the course project, you should give full credit in the proper, accepted form. Another aspect of academic integrity is the free play of ideas. Vigorous discussion and debate are encouraged in this course, with the firm expectation that all aspects of the class will be conducted with civility and respect for differing ideas, perspectives, and traditions. When in doubt (of any kind) please ask for guidance and clarification.