

MATH 113 SECTION 008, FALL 2020

ANALYTIC GEOMETRY AND CALCULUS I: SYLLABUS

INSTRUCTOR

Alexander Shumakovitch

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Office Hours (via Blackboard Collaborate): Mondays and Wednesdays at **2:00pm – 3:00pm**,
Tuesdays and Thursdays at **6:00pm – 7:00pm**, or by appointment.

LECTURES (4 CREDITS)

Section 008: Tuesday and Thursday **7:20pm – 9:10pm**, held **synchronously** on Blackboard.

All class related notes will be posted as PDF documents on Blackboard after each lecture.

TEACHING ASSISTANT

Matthew South

E-mail: msouth2@gmu.edu

Office Hours (via Zoom): Wednesdays at **10:00am – 12:00pm**

RECITATIONS

Section 315: Monday **6:20pm – 7:10pm**, held **synchronously** on Blackboard.

Section 316: Monday **7:20pm – 8:10pm**, held **synchronously** on Blackboard.

PREREQUISITES

A minimum score of **07** in the Math Placement Transcendentals test **or** a minimum grade of ‘C’ in MATH 104 or MATH 105.

COURSE DESCRIPTION

This is the first semester of a standard year-long sequence in single-variable calculus. The main topics are limits and continuity, differentiation and integration of algebraic, trigonometric, exponential, and logarithmic functions, as well as applications of these techniques.

TEXTBOOK FOR THE COURSE

“*Thomas’ Calculus: Early Transcendentals (14th edition)*” by Joel Hass, Christopher Heil, and Maurice Weir; Pearson (2017) with **MyLab Math** (also known as **MyMathLab**) access code.

Acceptable ISBN-13 numbers: 978-0134764528 (eTextbook **only**), 978-0134768519 (eTextbook **and** paperback, Single-Variable Calculus **only**), and 978-0134665573 (eTextbook **and** hard-cover), available at the [George Mason Bookstore](https://www.gmu.edu/bookstore/).

The eTextbook will be linked from the Blackboard web page for the course.

ADDITIONAL INFORMATION ABOUT THE COURSE

Available on the [Blackboard](https://blackboard.gmu.edu) web page for the course: <https://blackboard.gmu.edu>

IMPORTANT DATES

August 25: First class meeting

September 15: Last date to drop a course without a ‘W’ on the transcript

September 28: Last date to drop a course with a ‘W’ on the transcript

November 3: Election Day (no classes)

November 26: Thanksgiving Recess (no classes)

December 3: Last class meeting

December 9–16: Final examinations

LEARNING OUTCOMES

By the end of the course, you should be able to

- Calculate limits of functions and use the concept of limit to determine continuity;
- Compute derivatives of algebraic, trigonometric, and transcendental functions using the definition of the derivative and the differentiation rules;
- Formulate and solve optimization and related rates word problems;
- Apply the Fundamental Theorem of Calculus and the change of variables method to find definite and indefinite integrals.

HOMEWORK

Homework for each week will be assigned on Monday of that week on Blackboard. Every assignment will list sections from the textbook that have to be studied, online homework to be completed using **MyLab Math**, and practice problems.

Important:

- Online homework will be due by **11:59pm** on Monday one week after it is assigned;
- After the due time is reached, the correct answers are revealed and the assignment can not be worked on anymore;
- Late homework **will not be accepted**.

You are strongly advised to start working on the homework as soon as the corresponding material is covered in class, while your knowledge of this material is still fresh. This will also help you avoid missing the deadlines.

Besides usual online assignments, additional practice problems will be listed. You are strongly encouraged to solve these problems, since they can help you better prepare for the exams.

QUIZZES AND EXAMS

There will be **eleven** 15-minute quizzes as well as **two** midterm exams and one comprehensive final exam. The quizzes will be administered through MyLab Math every Thursday, starting from **September 3**, with the exception of the days of the two midterm exams and Thanksgiving. The quizzes will be timed and available for **45 minutes** from **9:15pm** until **10:00pm**.

The midterms will be given on Thursdays **October 1** and **November 12** online (the exact method will be determined later). They will be timed at **1.5 hours** and available for **3 hours** from **7:00pm** until **10:00pm**. All times are **local Virginia time**, that is, US Eastern Time (ET). There will be no regular lectures on the days of the midterm exams.

The final exam will be scheduled by the Registrar Office during the final examination period of **December 9–16**.

Important:

- You are expected to **work alone** on all the tests;
- You are **allowed** to use our textbook or class notes while working on the tests;
- Performing Internet searches and communicating with one another is **strictly prohibited**;
- Use of calculators is **not permitted**.

Any deviation from these policies will be considered a **violation of the Mason Honor Code** and will be dealt with appropriately.

- **No** makeup exams or quizzes will be given;
- If you miss a test because of an illness, you **must** get a note from your doctor;
- If you have a legitimate conflict with the test dates and times, please contact the instructor as soon as possible, **do not wait until shortly before the test**;
- Unexplained missed exams and quizzes will **not be excused**.

GRADES

The course grade will be based upon the scores on the **best ten** quizzes out of 11, two midterm exams, one final exam, and homework.

Best 10 quizzes out of 11 (10 points each)	100 points	20%
Two Midterm Exams (100 points each)	200 points	40%
Final Exam	150 points	30%
Homework	50 points	10%
Total	500 points	100%

The final grade for this course will be assigned according to the usual 90% – 80% – 70% – 60% grading system.

RECITATION ATTENDANCE

Recitations meet weekly **synchronously** using Blackboard Collaborate. Attendance is **highly** recommended. You should not only attend the recitation you signed up for, but also actively participate in it. The main goal of the recitation is to detect any troubles you might have with the course and to help you resolve them. It is your **responsibility** to ask all the questions you have during the recitation.

OVERVIEW OF MYLAB MATH (PREVIOUSLY KNOWN AS MYMATHLAB)

All the homework and quizzes will be done **electronically** using [MyLab Math](#), an online interactive and educational system that accompanies the course textbook. All problems will be graded automatically. MyLab Math will be linked from the Blackboard web page for the course.

For homework assignments, you will have at most **five tries** to answer each question by clicking the “Check Answer” button. At the same time, you will get an instant feedback on whether your solution is right or wrong. The correct answers will be revealed after you use up all of your five tries or the due date of the assignment.

On quizzes, you will have exactly **one attempt** to answer all the questions. You will be able to review your answers only **after** the due date of the quiz.

TUTORING CENTER

The [Math Tutoring Center](#) will be offering online tutoring services to students currently enrolled in undergraduate Math courses at GMU. To access the Math Tutoring Center online you need to login to Blackboard, click on the Organizations tab, locate the Math Tutoring Center Organization and self-enroll in this organization.

Students should post their questions in Piazza in the folder corresponding to their course. Please state your questions clearly, consider uploading a PDF file that contains your questions. Tutors will be answering your questions as soon as possible, expect to receive an answer by the following business day, although there might be delays. If you received answers for your questions and need further clarifications, you can join an active Blackboard Collaborate session.

The Blackboard Collaborate sessions will be running during the weekdays.

IN-CLASS RULES

Please **mute** your microphone during the class, unless you are ready to ask a question. If you have questions to ask, use the chat function of the Blackboard Collaborate or click the “Raise hand” button at the bottom of your screen.

ACADEMIC INTEGRITY AND HONOR CODE

On Quizzes and Exams: No help given or received. All the exams are open notes and open books. On the other hand, performing Internet searches and communicating with one another is **not** allowed.

On Homework: You may work together on homework assignments, but NO COPYING. Each student must complete his or her assignments individually and independently. Your solutions must demonstrate your own level of understanding of the problems.

Definitions, policies, and procedures relating to the Mason Honor Code can be found on the [Office of Academic Integrity](#) web page. If you are not sure whether your activities constitute an Honor Code violation, please consult the instructor **immediately**.

DISABILITIES

Students with disabilities who will be taking this course and may need disability-related academic accommodations should contact the [Office of Disability Services](#) **as soon as possible** to register for support services: <https://ds.gmu.edu> or at 703-993-2474.

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ANALYTIC GEOMETRY AND CALCULUS I: TENTATIVE SCHEDULE OF LECTURES

This schedule is based on the **14th edition** of “*Thomas’ Calculus: Early Transcendentals*”.

Week	Dates	Content
1.	08/25, 08/27	1.1 Functions and Their Graphs 1.2 Combining Functions; Shifting and Scaling Graphs 1.3 Trigonometric Functions 1.5 Exponential Functions
2.	09/01, 09/03	1.6 Inverse Functions and Logarithms 2.1 Rates of Change and Tangent Lines to Curves 2.2 Limit of a Function and Limit Laws
	09/03	Quiz 1: covers material from Sections 1.1–1.3 and 1.5
3.	09/08, 09/10	2.3 The Precise Definition of a Limit 2.4 One-Sided Limits 2.5 Continuity
	09/10	Quiz 2: covers material from Sections 1.6, 2.1, and 2.2
4.	09/15, 09/17	2.6 Limits Involving Infinity; Asymptotes of Graphs 3.1 Tangent Lines and the Derivative at a Point
	09/17	Quiz 3: covers material from Sections 2.3–2.5
5.	09/22, 09/24	3.2 The Derivative as a Function 3.3 Differentiation Rules 3.4 The Derivative as a Rate of Change
	09/24	Quiz 4: covers material from Sections 2.6 and 3.1
6.	09/29	3.5 Derivatives of Trigonometric Functions 3.6 The Chain Rule
	10/01	Midterm 1: covers material from Sections 1.1–1.3, 1.5, 1.6, 2.1–2.6, and 3.1–3.4
7.	10/06, 10/08	3.7 Implicit Differentiation 3.8 Derivatives of Inverse Functions and Logarithms 3.9 Inverse Trigonometric Functions
	10/08	Quiz 5: covers material from Sections 3.5 and 3.6
8.	10/13, 10/15	3.10 Related Rates 3.11 Linearization and Differentials
	10/15	Quiz 6: covers material from Sections 3.7–3.9

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Week	Dates	Content
9.	10/20, 10/22	4.1 Extreme Values of Functions on Closed Intervals 4.2 The Mean Value Theorem 4.3 Monotonic Functions and the First Derivative Test
	10/22	Quiz 7: covers material from Sections 3.10 and 3.11
10.	10/27, 10/29	4.4 Concavity and Curve Sketching 4.5 Indeterminate Forms and L'Hôpital's Rule
	10/29	Quiz 8: covers material from Sections 4.1–4.3
11.	11/03	Election Day: No Classes
	11/05	4.6 Applied Optimization
	11/05	Quiz 9: covers material from Sections 4.4 and 4.5
12.	11/10	4.8 Antiderivatives
	11/12	Midterm 2: covers material from Sections 3.5–3.11 and 4.1–4.6
13.	11/17, 11/19	5.1 Area and Estimating with Finite Sums 5.2 Sigma Notation and Limits of Finite Sums 5.3 The Definite Integral
	11/19	Quiz 10: covers material from Sections 4.6 and 4.8
14.	11/24	5.4 The Fundamental Theorem of Calculus
	11/26	Thanksgiving Recess
15.	12/01, 12/03	5.5 Indefinite Integrals and the Substitution Method 5.6 Definite Integral Substitutions and the Area Between Curves
	12/03	Quiz 11: covers material from Sections 5.1–5.4
	12/09 – 12/16	Final Exam: comprehensive and cumulative