Math 113 Sections B04 & BP1, Summer 2021

Analytic Geometry and Calculus I: Syllabus

Instructor

Alexander Shumakovitch E-mail: ashumak@gmu.edu

Office Hours (via Blackboard Collaborate): Tuesdays and Thursdays at **3:30pm** – **4:30pm** or by appointment.

Lectures (4 credits)

Sections B04 & BP1: Monday, Tuesday, Wednesday, and Thursday at **1:30pm** – **3:20pm**, held **synchronously** on Blackboard. All class related notes will be posted as PDF documents on Blackboard after each lecture.

Recitations

Sections 3B4 & 3P2: Monday, Tuesday, Wednesday, and Thursday at **4:30pm** – **5:20pm**. Discussions will take place on Mondays and Wednesdays **synchronously** on Blackboard. Tuesdays and Thursdays will be devoted to quizzes.

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** hardcover), available at the George Mason Bookstore.

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

Additional Information about the Course

Available on the Blackboard web page for the course: `https://blackboard.gmu.edu`

Important Dates

Tuesday, June 1: First class meeting
Thursday, June 24: First Midterm Exam
Thursday, July 15: Second Midterm Exam
Monday, July 5: Independence Day (no classes)
Wednesday, July 21: Last class meeting
Thursday, July 22: Final Exam

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 **Tuesdays** and **Thursdays** 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 (if assigned on Tuesday) or Wednesday (if assigned on Thursday), 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 final exam. The quizzes will be administered through MyLab Math every Tuesday and Thursday, starting from **June 8**, with the exception of the days of the two midterm exams. The quizzes will be timed and available for **50 minutes** during the standard recitation time slots from **4:30pm** until **5:20pm**.

The midterms will be given on Thursdays **June 24** and **July 15** through Blackboard. They will be timed at **1.5 hours** and available for **2 hours** from **1:30pm** until **3:30pm**. 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 is comprehensive and cumulative. It will be timed at exactly **2 hours** and take place through Blackboard on Thursday, July 22, at **1:30pm – 4:00pm**.

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 eight** quizzes out of 11, two midterm exams, one final exam, recitation attendance and participation, and homework.

Best 8 Quizzes out of 11	50 points	10%
Two Midterm Exams (100 points each)	200 points	40%
Final Exam	150 points	30%
Recitation Attendance and Participation	50 points	10%
Homework	50 points	10%
Total	**500 points**	**100%**

The final grade for this course will be assigned according to the following grading scale:

Total Score:	< 60	60–70	70–74	74–77	77–80	80–84	84–87	87–90	90–94	94–97	97–100
Final Grade:	**F**	**D**	**C–**	**C**	**C+**	**B–**	**B**	**B+**	**A–**	**A**	**A+**

Recitation Attendance

Recitations meet **synchronously** twice a week on **Mondays** and **Wednesdays** using Blackboard Collaborate. You should not only attend the recitation you signed up for, but also actively participate in it. At the end of the semester, you will receive a Recitation Attendance and Participation score based on the attendance (50%, 2 unexcused absences allowed) and participation (50%), including your contributions to group work and asking questions

Recitations will focus on supervised group work. At each meeting, students will split into predetermined groups to work on assigned problems from a worksheet pertaining to the relevant lectures. The worksheets will be posted on Blackboard before the corresponding recitation. For each recitation, you will be provided with a link to a Miro shared whiteboard on which to record their work. The instructor will visit each group throughout the class time to gauge progress and answer questions.

The main goal of the recitations 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, your 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.

Math 113 Sections B04 & BP1, Summer 2021

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.	06/01–06/03	**1.1** Functions and Their Graphs **1.2** Combining Functions; Shifting and Scaling Graphs **1.3** Trigonometric Functions **1.5** Exponential Functions **1.6** Inverse Functions and Logarithms
2.	06/07–06/10	**2.1** Rates of Change and Tangent Lines to Curves **2.2** Limit of a Function and Limit Laws **2.3** The Precise Definition of a Limit **2.4** One-Sided Limits **2.5** Continuity
	06/08	**Quiz 1:** covers material from Sections 1.1–1.3
	06/10	**Quiz 2:** covers material from Sections 1.5 and 1.6
3.	06/14–06/17	**2.6** Limits Involving Infinity; Asymptotes of Graphs **3.1** Tangent Lines and the Derivative at a Point **3.2** The Derivative as a Function **3.3** Differentiation Rules **3.4** The Derivative as a Rate of Change
	06/15	**Quiz 3:** covers material from Sections 2.1 and 2.2
	06/17	**Quiz 4:** covers material from Sections 2.3–2.5
4.	06/21–06/23	**3.5** Derivatives of Trigonometric Functions **3.6** The Chain Rule **3.7** Implicit Differentiation **3.8** Derivatives of Inverse Functions and Logarithms **3.9** Inverse Trigonometric Functions
	06/22	**Quiz 5:** covers material from Sections 2.6, 3.1, and 3.2
	06/24	**Midterm 1:** covers material from Sections 1.1–1.3, 1.5, 1.6, 2.1–2.6, and 3.1–3.4

Continue to the next page ⟶

Week	Dates	Content
5.	06/28–07/01	**3.10** Related Rates **3.11** Linearization and Differentials **4.1** Extreme Values of Functions on Closed Intervals **4.2** The Mean Value Theorem **4.3** Monotonic Functions and the First Derivative Test
	06/29	**Quiz 6:** covers material from Sections 3.5–3.7
	07/01	**Quiz 7:** covers material from Sections 3.8 and 3.9
6.	07/05	**Independence Day: No Classes**
	07/06–07/08	**4.4** Concavity and Curve Sketching **4.5** Indeterminate Forms and L'Hôpital's Rule **4.6** Applied Optimization
	07/07	**Quiz 8:** covers material from Sections 3.10 and 3.11
	07/08	**Quiz 9:** covers material from Sections 4.1–4.3
7.	07/12–07/14	**4.8** Antiderivatives **5.1** Area and Estimating with Finite Sums **5.2** Sigma Notation and Limits of Finite Sums **5.3** The Definite Integral
	07/13	**Quiz 10:** covers material from Sections 4.4 and 4.5
	07/15	**Midterm 2:** covers material from Sections 3.5–3.11 and 4.1–4.6
8.	07/19–07/21	**5.4** The Fundamental Theorem of Calculus **5.5** Indefinite Integrals and the Substitution Method **5.6** Definite Integral Substitutions and the Area Between Curves
	07/20	**Quiz 11:** covers material from Sections 4.8 and 5.1–5.3
	07/22	**Final Exam:** comprehensive and cumulative