

MATH 113-002: Analytic Geometry and Calculus I

Syllabus, Fall 2022

Course Goals and Outcomes. This course satisfies GMU's Quantitative Reasoning Foundation Requirement (see <https://chss.gmu.edu/general-education/all-requirements>) and intends to provide a basic and firm understanding of concepts of functions, limits, the derivative, maximum and minimum problems, the integral, and transcendental functions.

The course itself seeks to satisfy the following goals:

1. Students improve and solidify their computational 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 calculus applications.
4. Students understand and compute integrals and their relationship to derivatives.

The learning outcomes to be achieved is to meet the following requirements:

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

Prerequisite. Math Placement Transcendentals 07 or Undergraduate level MATH 105 Minimum Grade of C or Undergraduate level MATH 105 Minimum Grade of XS or Undergraduate level MATH 104 Minimum Grade of C.

Textbook required. *Thomas' Calculus. Early Transcendentals*, 14th ed., by M. Weir, J. Hass, Ch. Heil, M. Weir, Pearson Education, 2018.

Material to be covered. Chapters 1-5 (with some sections omitted).

Lectures. TR, 1:30 pm-3:20 pm, Planetary Hall, Room 129.

Recitation. W, 4:30 pm-5:20 pm and 5:25 pm-6:15 pm. Horizon Hall, Room 2016. Instructor: Aman D'Souza. During recitation you will have short quizzes and hand-on experience in solving calculus problems.

Instructor. Dr. Valeriu Soltan. Office: Exploratory Hall 4202. Email: vsoltan@gmu.edu

Office hours. Exploratory Hall 4202, TR, 11 am – 1 pm, or by an appointment.

Tutoring. Free tutoring is available at Math Tutoring Center (Johnson Center, Room 344); for hours of operation, visit <https://science.gmu.edu/academics/departments-units/mathematical-sciences/math-tutoring>

Homework. Problems for the homework are given in the course outline (see below). Although these will not be collected and graded, success in tests and final exam strongly depends on their completing and understanding.

Math Software. Wolfram Alpha online app (<http://www.wolframalpha.com>) will be occasionally used in class.

Exams. There will be some quizzes, three tests, and final exam. All tests and the final are closed-notes and closed-book, with simple four-function calculators allowed (not on cellular phones).

Attendance and make-ups. Each student is expected to attend classes regularly. No make-ups for tests and exam are allowed unless you provide a serious written excuse. An excused test should be taken within a timely fashion before the next test.

Grading. Quizzes are 20% in total, tests are 20% each, and final exam is 20% of the grade. Your grade for the course is the sum of grades for the quizzes, tests, and final exam. There will be no curving, extra crediting, etc. Equivalence between scores and letter grades, recommended by GMU, is given in the table below.

<i>A+</i>	<i>A</i>	<i>A-</i>	<i>B+</i>	<i>B</i>	<i>B-</i>	<i>C+</i>	<i>C</i>	<i>C-</i>	<i>D</i>	<i>F</i>
100-98	97-93	92-90	89-87	86-83	82-80	79-77	76-73	72-70	69-60	59-0

GMU policies on final exams. The final exam may not be given during the last week of classes. If you need to change the date of your final exam for unusual circumstances, you have to obtain professor's approval at least a week prior to the last day of classes. Retaking tests and final exam are not permitted. Absence from the final exam will not be excused except for sickness on the day of the exam confirmed by physician's note or for other causes approved by the student's academic dean or director. If a student missed the final exam due to illness or a family emergency, an incomplete grade (IN) may be assigned provided the student took all four tests. If absence from the final exam is unexcused, the grade for the course is F.

Academic integrity and university policies. Mason is an Honor Code university. See for other policies at <http://universitypolicy.gmu.edu/>. Students are responsible for knowing and following established policies.

ODS. If you are a student with a disability and you need academic accommodations, please see me and contact the Office of Disability Services. All academic accommodations must be arranged through this office.

Religious holydays. If you observe upcoming religious holidays (see <https://ulife.gmu.edu/religious-holiday-calendar/>), please inform me one week in advance about a possible overlap with a day of quiz, test, or final exam.

COURSE OUTLINE

Class Date	Sections	Homework Problems
08/23	1.1, 1.2	1.1: 1-7, 15-31, 37-57 (odd). 1.2: 1-29 (odd).
08/25	1.3, 1.5	1.3: 7-21, 31-53 (odd), 1.5: 1-23 (odd).
8/30	Practice	
09/01	1.6, 2.1	1.6: 1-35, 45-67 (odd), 2.1: 7-17 (odd).
09/06	2.2, 2.3	2.2: 1-49 (odd), 2.3: 1-5, 15-25 (odd).

09/08	Practice	
09/13	Test 1	<i>Covers Sections 1.1-1.3, 1.5, 1.6, 2.1-2.3.</i>
09/15	2.4, 2.5	2.4: 1-27 (odd), 2.5: 1-9, 13-31 (odd).
09/20	2.6, 3.1	2.6: 3-47 (odd), 3.1: 1-21 (odd).
09/22	Practice	
09/27	3.2, 3.3	3.2: 1-21 (odd), 3.3: 1-49 (odd).
09/29	3.5, 3.6	3.5: 1-31 (odd), 3.6: 1-59 (odd).
10/04	Practice	
10/06	Test 2	<i>Covers Sections 2.4-2.6, 3.1-3.3, 3.5, 3.6.</i>
10/11	<i>Fall Break</i>	
10/13	3.7, 3.8	3.7: 1-37 (odd), 3.8: 11-39 (odd).
10/18	4.1, 4.2	4.1: 15-55 (odd), 4.2: 1-35 (odd).
10/20	Practice	
10/25	4.3, 4.4	4.3: 1-45 (odd), 4.4: 1-57 (odd).
11/27	4.5, 4.6	4.5: 1-61 (odd), 4.6: 1-15 (odd).
11/01	Practice	
11/03	Test 3	<i>Covers Sections 3.7, 3.8, 4.1--4.6.</i>
11/08	4.8, 5.2	4.8: 1-85 (odd), 5.2: 1-21 (odd),
11/10	5.3, 5.4	5.3: 1-61 (odd), 5.4: 1-55 (odd)
11/15	Practice	
11/17	5.5, 5.6	5.5: 1-51 (odd), 5.6: 1-41, 65-73
11/22	Practice	
11/24	<i>Thanksgiving</i>	

12/01	Practice	
12/08	Final exam	1:30pm-4:15pm, Planetary Hall, Room 129.