Master Course Syllabus

For additional course information, including prerequisites, corequisites, and course fees, please refer to the Catalog: https://catalog.uvu.edu/

Semester: Spring
Year: 2025
Course Prefix: MATH
Course and Section #: 1210-009
Course Title: Calculus I
Credits: 4

Course Description

Covers limits, continuity, differentiation, applications of differentiation, integration, and applications of integration, including derivatives and integrals of polynomial functions, rational functions, exponential functions, logarithmic functions, trigonometric functions, inverse trigonometric functions, and hyperbolic functions. Is a prerequisite for calculus-based sciences.

Course Attributes

This course has the following attributes:

☐ General Education Requirements
☐ Global/Intercultural Graduation Requirements
☐ Writing Enriched Graduation Requirements
☒ Discipline Core Requirements in Program
☐ Elective Core Requirements in Program
☐ Open Elective

Other: *Click here to enter text.*

Instructor Information

Instructor Name: Dr. Mark A. Abramson

Student Learning Outcomes

1. Compute one- and two-sided limits of functions.
2. Determine if a function is continuous at a number or on an interval
3. Find the derivatives of polynomial, trigonometric, exponential, logarithmic, inverse trigonometric, and hyperbolic functions, and find the derivatives of sums, products, quotients, and compositions of such functions.
4. Perform implicit differentiation and solve problems involving related rates.
5. Apply Newton's method.
6. Apply knowledge of the first and second derivatives of a function to determine where the graph is increasing/decreasing and concave upward or downward.
7. Solve optimization problems by using calculus methods.
8. Apply L'Hospital's Rule to solve limit problems
9. Compute indefinite and definite integrals, find integrals using substitution and the Fundamental Theorem of Calculus, find areas and volumes.

Course Materials and Texts

Access to Lumen Online Homework Management System via Canvas (includes online textbook

Course Requirements

Course Assignments, Assessments, and Grading Policy

Grading: Standard 10-point scale (with adjustments for borderline cases), determined by the following:

20% Homework
50% 3 Exams
30% Final Exam

Exams: There are 3 (midterm) exams, which will be held in class on the days indicated on the schedule. All exams are closed-book, closed-notes, closed electronics (of any kind).

Final Exam: Per UVU policy, the final exam will be held in the classroom on the date indicated in the UVU final exam schedule and cannot be taken early. Failure to take the final exam will result in a failing grade for the course, regardless of other grades.

Midterm Exams: There are 3 in-class midterm exams (see Syllabus for approximate dates). All exams are closed-book, closed-notes, closed electronics (of any kind). Grading of all exams usually incorporates a student-friendly curve.

Homework: Daily homework is the norm for the class. Homework is online through Canvas, with questions and automatic grading coming from Lumen Learning. Their Online Homework Management (OHM) System has a 2-week free trial period but thereafter requires a small fee to activate. To pay for course activation, follow the instructions provided in the document, Pay4Activation.pdf, which you can find inside the Canvas Modules link. Pay attention to due dates and any changes that may get made on Canvas. Prior to each exam, make sure that all assignments that cover exam material have been completed before each exam, so that you are prepared. No homework can be submitted after 11:59 pm on the last day of class. You typically get 4 tries for each homework assignment. The 2 lowest homework scores will be dropped from your final grade.

Required or Recommended Reading Assignments

Relevant textbook sections, as needed

General Description of the Subject Matter of Each Lecture or Discussion

Chapter 1: Review of Some Precalculus Topics

Chapter 2: Limits

2.1-2.5: Limit of a function, limit laws and properties, computing limits, continuity, precise definition of a limit (optional).

Chapter 3: Derivatives

3.1-3.9: The Derivative at a point and as a function, differentiation rules, derivatives as rates of change, derivatives of trig functions, chain rule, derivatives of inverse functions, implicit differentiation, derivatives of exponential and log functions.

Chapter 4: Applications of Derivatives

4.1-4.10: Related rates problems, linear approximations and differentials, maximum and minimum values, mean value theorem, derivatives and graphs, limits at infinity, curve sketching, optimization problems, L'Hospital's Rule, Newton's Method, antiderivatives.

Chapter 5-6: Integrals
5.1-5.7: Areas and Distances, definite integrals, Fundamental Theorem of Calculus, indefinite integrals, substitution, integrals with exponential and log functions, integrals with inverse trig functions.
6.7-6.9: Integrals, exponentials, and logarithms, exponential growth and decay, calculus of hyperbolic functions

Required Course Syllabus Statements

Generative AI
The use of AI in this course is *strongly* discouraged. The homework is there specifically to aid in the learning process. Failure to do and understand your own work will almost always lead to poor performance on exams.

Using Remote Testing Software
☒ This course does not use remote testing software.

☐ This course uses remote testing software. Remote test-takers may choose their remote testing locations. Please note, however, that the testing software used for this may conduct a brief scan of remote test-takers' immediate surroundings, may require use of a webcam while taking an exam, may require the microphone be on while taking an exam, or may require other practices to confirm academic honesty. Test-takers therefore shall have no expectation of privacy in their test-taking location during, or immediately preceding, remote testing. If a student strongly objects to using test-taking software, the student should contact the instructor at the beginning of the semester to determine whether alternative testing arrangements are feasible. Alternatives are not guaranteed.

Required University Syllabus Statements

Accommodations/Students with Disabilities
Students needing accommodations due to a permanent or temporary disability, pregnancy or pregnancy-related conditions may contact UVU Accessibility Services at accessibilityservices@uvu.edu or 801-863-8747.

Accessibility Services is located on the Orem Campus in BA 110.

Deaf/Hard of Hearing students requesting ASL interpreters or transcribers can contact Accessibility Services to set up accommodations. Deaf/Hard of Hearing services can be contacted at DHHservices@uvu.edu

DHH is located on the Orem Campus in BA 112.

Academic Integrity
At Utah Valley University, faculty and students operate in an atmosphere of mutual trust. Maintaining an atmosphere of academic integrity allows for free exchange of ideas and enables all members of the community to achieve their highest potential. Our goal is to foster an intellectual atmosphere that produces scholars of integrity and imaginative thought. In all academic work, the ideas and contributions

of others must be appropriately acknowledged and UVU students are expected to produce their own original academic work.

Faculty and students share the responsibility of ensuring the honesty and fairness of the intellectual environment at UVU. Students have a responsibility to promote academic integrity at the university by not participating in or facilitating others' participation in any act of academic dishonesty. As members of the academic community, students must become familiar with their rights and responsibilities. In each course, they are responsible for knowing the requirements and restrictions regarding research and writing, assessments, collaborative work, the use of study aids, the appropriateness of assistance, and other issues. Likewise, instructors are responsible to clearly state expectations and model best practices.

Further information on what constitutes academic dishonesty is detailed in UVU Policy 541: *Student Code of Conduct*.

Equity and Title IX

Utah Valley University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation, gender identity, gender expression, age (40 and over), disability, veteran status, pregnancy, childbirth, or pregnancy-related conditions, citizenship, genetic information, or other basis protected by applicable law, including Title IX and 34 C.F.R. Part 106, in employment, treatment, admission, access to educational programs and activities, or other University benefits or services. Inquiries about nondiscrimination at UVU may be directed to the U.S. Department of Education's Office for Civil Rights or UVU's Title IX Coordinator at 801-863-7999 – TitleIX@uvu.edu – 800 W University Pkwy, Orem, 84058, Suite BA 203.

Religious Accommodation

UVU values and acknowledges the array of worldviews, faiths, and religions represented in our student body, and as such provides supportive accommodations for students. Religious belief or conscience broadly includes religious, non-religious, theistic, or non-theistic moral or ethical beliefs as well as participation in religious holidays, observances, or activities. Accommodations may include scheduling or due-date modifications or make-up assignments for missed class work.
To seek a religious accommodation, a student must provide written notice to the instructor and the Director of Accessibility Services at accessibilityservices@uvu.edu. If the accommodation relates to a scheduling conflict, the notice should include the date, time, and brief description of the difficulty posed by the conflict. Such requests should be made as soon as the student is aware of the prospective scheduling conflict.

While religious expression is welcome throughout campus, UVU also has a specially dedicated space for meditation, prayer, reflection, or other forms of religious expression.