

Calculus 1
Math 1512, Section 501, Fall 2020
UNM-Valencia
Fully Online
Remote Scheduled Zoom Lectures
Monday and Wednesday, 1:30 - 3:20 PM

Instructor: Greg Barnett

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Tutoring Hours: T, Th
2:00-7:00 online (Zoom)
or by appointment

1 Overview

Welcome to Math 1512. Here is the UNM course description.

Introduces the intuitive, numerical and theoretical concepts of limits, continuity, differentiation and integration. Includes the study of extrema, curve sketching, and applications involving algebraic, exponential, logarithmic and trigonometric functions. Designed for mathematics, science and engineering majors.

Credit for both this course and MATH 1430 may not be applied toward a degree program.

Meets New Mexico Lower-Division General Education Common Core Curriculum Area II: Mathematics and Statistics.

Prerequisite: (1230 and 1240) or 1250 or ACT Math \Rightarrow 28 or SAT Math Section \Rightarrow 640 or ACCUPLACER Next-Generation Advanced Algebra and Functions \Rightarrow 284.

Note: This syllabus is subject to change, if needed.

2 Student Learning Outcomes (SLOs)

Students that successfully complete the course, will, by the end of the course, be able to

1. State, motivate and interpret the definitions of continuity, the derivative, and the definite integral of a function, including an illustrative figure, and apply the definition to test for continuity and differentiability. In all cases, limits are computed using correct and clear notation. Student is able to interpret the derivative as an instantaneous rate of change, and the definite integral as an averaging process.

2. Use the derivative to graph functions, approximate functions, and solve optimization problems. In all cases, the work, including all necessary algebra, is shown clearly, concisely, in a well-organized fashion. Graphs are neat and well-annotated, clearly indicating limiting behavior. English sentences summarize the main results and appropriate units are used for all dimensional applications.
3. Graph, differentiate, optimize, approximate and integrate functions containing parameters, and functions defined piecewise. Differentiate and approximate functions defined implicitly.
4. Apply tools from pre-calculus and trigonometry correctly in multi-step problems, such as basic geometric formulas, graphs of basic functions, and algebra to solve equations and inequalities.
5. State the main theorems of calculus correctly, including all conditions, and give examples of applications. These include the Intermediate Value Theorem, the Mean Value Theorem, the Extreme Value Theorem, and the Fundamental Theorem of Calculus.
6. Solve simple first and second order differential equations, either initial or boundary value problems, including problems where the derivative is given by a piecewise function, or when the initial value problem is described in words, such as in applications from physics, biology and engineering. Be familiar with the harmonic oscillator and describe period, amplitude, and phase shift of the trigonometric functions that appear.
7. Compute integrals using the method of substitution, including changing the bounds in the case of definite integrals.

3 General Education Core Curriculum Essential Skills

In addition to the course learning objectives listed above, because this class meets a UNM General Education Core Curriculum requirement, activities in each unit (i.e.: discussions, assignments, and assessments) are developed so that you can demonstrate development of these essential skills:

- Critical Thinking
 - Problem Setting: Delineate a problem or question to be considered critically.
 - Evidence Acquisition: Identify and gather the information/data necessary to coherently address the problem or question.
 - Evidence Evaluation: Evaluate the information given by sources for credibility (e.g. bias, reliability, validity) and probably truth.
 - Reasoning/Conclusion: Develop conclusions and outcomes that reflect an informed, well-reasoned argument.
- Communication
 - Genre and Disciplinary Conventions: Use formal and informal rules/registers appropriate for the particular audience, community, purpose, context, and kind of text and/or media at hand; use them to guide formatting, organization, and stylistic choices are present.
 - Strategies for Understanding and Evaluating Messages: Apply strategies such as reading or analyzing for main points or themes; recognizing the variety of rhetorical situations and accompanying strategies that may contextualize messages; locating supportive documentation for arguments to understand and evaluate messages in terms of the rhetorical situation.

- Evaluation and Production of Arguments: Recognize and evaluate the authority of sources in their own arguments and those of others; distinguish among supported claims, unsupported claims, facts, inferences, and opinions.
- Quantitative Reasoning
 - Communication and/or Representation of Quantitative Information: Express quantitative information symbolically, graphically, and in written or oral language
 - Analysis of Quantitative Arguments: Interpret, analyze and critique information or a line of reasoning presented by others
 - Application of Quantitative Models: Apply appropriate quantitative models to real-world or other contextual problems

4 Required Text

- Thomas' Calculus, 14th Edition, by Weir and Heil.
- **MyMathLab (MML)** access is *required* for the course. Course ID: **barnett23836**
 - Once you have access to our course in MML, you will automatically have access to the text electronically (click on "eText" on the left-hand panel).

5 Attendance Policy

Each student is required to log in for Zoom lectures each week, and students should use this opportunity to get real-time feedback from me and the rest of the class. If a student does not appear in Zoom lectures for two weeks in a row, I reserve the right (but not the obligation) to drop the student from the class. If you stop submitting your coursework for any reason, it is your responsibility to drop the class, or risk getting a failing grade.

Notification: Zoom lectures will be automatically recorded. I will post them to UNM Learn.

6 Technology

Students are expected to be able to

- Sign in and navigate **UNM Learn**
- Sign in and navigate MyMathLab
- Capture and submit hand-written work digitally, using a smartphone, tablet, digital camera, or other device.

7 Course Structure

The course content includes the following.

- Homework (300 points)
 - 13 Homework Assignments **in MyMathLab** (30 points each)
 - Lowest three scores are dropped.
 - Some problems require you to show your work.
- Midterm Exam (100 points)
 - Timed Exam (2 hours)
 - Available Monday, October 12 **in UNM Learn**
 - Due **Friday, October 16** at 11:59 PM
 - All Problems require you to show your work.
- Final Exam (150 points)
 - Timed Exam (3 hours)
 - Available Monday, December 7 **in UNM Learn**
 - Due **Friday, December 11** at 11:59 PM
 - All problems require you to show your work.
- Total (550 points)

8 Grading Policy

Your grade will be calculated as follows.

Point Total	Grade
[539,550]	A+
[506, 539)	A
[495,506)	A-
[484,495)	B+
[451,484)	B
[440,451)	B-
[429,440)	C+
[385,429)	C
[374,385)	D+
[341,374)	D
[330,341)	D-
[0,330)	F

9 Make-up Policy

Late homework assignments will not be accepted, unless there is a valid reason. Exams may be made up in the event of emergency or extenuating circumstance only.

10 Netiquette

One of the overriding principles in online conversations is to “craft your responses effectively.” It is sometimes difficult to remember that there are real people reading posted messages. This is especially true of online communication where others do not have the opportunity to see body language or hear tone of voice; therefore, misunderstandings are more likely.

Please, follow these guidelines in all of your online responses and discussion postings.

- Honor everyone’s right to an opinion.
- Respect the right of each person to disagree with others.
- Respond honestly but thoughtfully and respectfully; use language which others will not consider foul or abusive. You may also use emoticons to convey a lighter tone.
- Respect your own privacy and the privacy of others by not revealing information which you deem private and which you feel might embarrass you or others
- Be prepared to clarify statements which might be misunderstood or misinterpreted by others.

A Special Note About Anger

- Do not send messages that you have written when you are angry, even anonymous ones. In the online world, angry messages are known as “flaming” and are considered bad behavior. Venting and flaming are two different things. It is possible to vent without becoming “ugly.” Stick to the facts of what is causing you frustration.
- Do not send messages that are written all in upper case; this is the visual equivalent of SHOUTING. It is considered aggressive and is considered bad behavior. If you ever feel like shouting a message, take a deep breath and wait until you have calmed down before responding. Then, respond in a calm and factual manner.

[UNM Netiquette Document](#)

11 Academic Integrity

We will follow university policy on academic integrity.

Having academic integrity is paramount to your success in any class. Plagiarism or cheating is not tolerated. Any instance of this will result in a grade of zero for that assignment. Here is the link to the UNM Academic Dishonesty Policy: <https://policy.unm.edu/regents-policies/section-4/4-8.html>. The policy states:

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or who otherwise fails to meet the expected standards. Any student judged to have engaged in academic dishonesty in course work may receive a reduced or failing grade for the work in question and/or for the course.

"Academic dishonesty" includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of

other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

12 Students with Disabilities

If you have a documented disability, please provide me with a copy of your letter from Equal Access Services as soon as possible to ensure that accommodations are provided in a timely manner.

13 EQUAL OPPORTUNITY AND NON-DISCRIMINATION:

In an effort to meet obligations under Title IX, UNM faculty, Teaching Assistants, and Graduate Assistants are considered “responsible employees” by the Department of Education (see page 15 of this [link](#)). This designation requires that any report of gender discrimination which includes sexual harassment, sexual misconduct and sexual violence made to a faculty member, TA, or GA must be reported to the Title IX Coordinator at the Office of Equal Opportunity (oeo.unm.edu). For more information on the campus policy regarding sexual misconduct, see: <https://policy.unm.edu/university-policies/2000/2740.html>.