



Math 1512: Calculus 1
MTWR, 10:00-11:50am
Remote-Scheduled Course

Instructor: Andy Taylor

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1 Office and Contact Information:

Office: A-123B
Office Phone: 505-925-8607
Email: ataylor19@unm.edu

Please note that email is the best way to contact me. Office/tutoring hours will be held virtually through Zoom.

2 Office Hours:

These will be held via Zoom, with the link to be posted in Canvas under 'Office Hours'. Office hours will be accessible during these times:

12:00pm-1:00pm Monday-Thursday, or by appointment

Please plan to regularly check into my office hours (tutoring hours). The purpose of this is to increase your accountability for the course, and for me to give you more immediate feedback on questions you may have, as well as your current status in the course. Students should be aware that the secret phrase is '*I can do this*'.

3 Overview

Welcome to Math 1512! Here is the UNM course description:

Limits. Continuity. Derivative: definition, rules, geometric interpretation and as rate-of-change, applications to graphing, linearization and optimization. Integral: definition, fundamental theorem of calculus, substitution, applications such as areas, volumes, work, averages. (I)

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

Meets New Mexico General Education Curriculum Area 2: Mathematics and Statistics.

Prerequisites/placement: 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.

Please note: This syllabus is subject to change, if needed.

4 Student Learning Outcomes (SLOs)

At the completion of this course students will be able to:

1. *Limits and Continuity*

- (a) Estimate a limit using a numerical or graphical approach.
- (b) Evaluate a limit using properties of limits, the dividing out technique, the rationalizing technique and the Squeeze Theorem.
- (c) Determine continuity at a point and continuity on an open interval.
- (d) Determine one-sided limits and continuity on a closed interval.
- (e) Use properties of continuity.
- (f) Understand and use the Intermediate Value Theorem.
- (g) Determine infinite limits from the left and right.
- (h) Find and sketch vertical asymptotes of the graph of a function.

2. *Differentiation*

- (a) Find the slope of the tangent line to a curve at a point.
- (b) Use the limit definition to find the derivative of a function.
- (c) Understand the relationship between differentiability and continuity.
- (d) Find the derivative of a function using the Constant Rule, Power Rule, Constant Multiple Rule, Sum and Difference Rules, Product Rule, Quotient Rule, and Chain Rule.
- (e) Use derivatives to find rates of change.
- (f) Find the derivative of a trigonometric function.
- (g) Find a higher-order derivative of a function.
- (h) Distinguish between functions written in implicit form and explicit form.
- (i) Use implicit differentiation to find the derivative of a function.
- (j) Use related rates to solve application problems.

3. *Applications of Differentiation*

- (a) Understand the definition of extrema of a function on an interval.
- (b) Understand the definition of relative extrema on an open interval.
- (c) Find extrema on a closed interval.
- (d) Use Rolle's Theorem and the Mean Value Theorem.
- (e) Determine intervals on which a function is increasing or decreasing.
- (f) Apply the First Derivative Test to find relative extrema of a function.
- (g) Determine intervals of concavity.
- (h) Find any points of inflection of the graph of a function.
- (i) Apply the Second Derivative Test to find relative extrema of a function.
- (j) Determine finite and infinite limits at infinity.
- (k) Determine the horizontal asymptotes, if any, of the graph of a function.

- (l) Analyze and sketch the graph of a function.
- (m) Solve applied minimum and maximum problems.
- (n) Approximate a zero of a function using Newton's Method.
- (o) Understand the concept of a tangent line approximation.
- (p) Estimate a propagated error using a differential.

4. *Integration*

- (a) Use indefinite integral notation for antiderivatives.
- (b) Use basic integration rules to find antiderivatives.
- (c) Find a particular solution of a differential equation.
- (d) Use sigma notation to write and evaluate a sum.
- (e) Understand the concept of area, and approximate the area of a plane region.
- (f) Find the area of a plane region using limits.
- (g) Understand the definition of a Riemann sum.
- (h) Evaluate a definite integral using limits and geometric formulas, as well as properties of definite integrals, and the Fundamental Theorem of Calculus.
- (i) Use the Mean Value Theorem for Integrals.
- (j) Find the average value of a function over a closed interval.
- (k) Understand and use the Second Fundamental Theorem of Calculus, as well as the Net Change Theorem.
- (l) Use a change of variables, General Power Rule for Integration to find an indefinite integral and evaluate a definite integral.
- (m) Evaluate a definite integral involving an even or odd function.
- (n) Find the area of a region between two curves (intersecting or not) using integration.
- (o) Describe integration as an accumulation process
- (p) Find the volume of a solid of revolution using the disk/washer/shell method, and compare the uses of the disk method and the shell method.

5 Technical Requirements

5.1 Computer

- A high-speed Internet connection is highly recommended.
- Any computer capable of running a recently updated web browser should be sufficient to access your online course. However, bear in mind that processor speed, amount of RAM and Internet connection speed can greatly affect performance. Be aware, some programs that use mathematics will not work well on mobile devices such as smart phones or tablets.
- Microsoft Office products are available free for all UNM students:
[UNM IT Software Distribution and Downloads page](#)

- Please update your contact information in LoboWeb: [MyUNM](#). When you log into MyUNM, Enter LoboWeb. Click on the Personal Information link to make sure your contact information (email in particular) is up to date.
- Laptops may be available for checkout for the semester from the [UNM-Valencia Library](#) . Contact [UNM-Valencia Student Services](#) for more information.

5.2 Printer/Scanner

You will need access to a printer/scanner in order to print out written assessments such as projects or exams, and scan them in order to submit via Canvas. You may download an app such as ‘Adobe Scan’ on your device in order to scan your work and convert to a PDF for submission.

5.3 Web Conferencing

Web conferencing will be used in this course, particularly during office hours and study sessions. For the online sessions, you will need:

- A USB headset with microphone is recommended. Headsets are widely available at stores that sell electronics, at the UNM Bookstore or online.
- A high-speed internet connection is highly recommended for these sessions. A wireless Internet connection may be used if successfully tested for audio quality prior to web conferencing.
- You should also dress as you would when attending an in-person class, even if you do not turn on your video camera.
- To create a UNM supported Zoom account, visit the [UNM Zoom log in page](#).

6 Netiquette

NOTE: For links to online PDF formatted documents, you may need to give permission for the document to open. Look for a pop-up window asking for your permission.

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.

6.1 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.
- For more information on netiquette, please refer to [UNM Netiquette document](#).

7 Notes to students about participation in course using UNM Canvas:

7.1 Tracking Course Activity

Canvas automatically records all students’ activities including: your first and last access to the course, the pages you have accessed, the number of discussion messages you have read and sent, web conferencing, discussion text, and posted discussion topics. This data can be accessed by the instructor to evaluate class participation and to identify students having difficulty.

7.2 Submitting Assignments

When you submit an assignment (project/exam) via Canvas, please do so by submitting as an attachment in the appropriate dropbox.

8 Coursework and Participation

8.1 Communication with Instructor

I routinely check for student emails, Monday through Friday, at various times throughout the morning, afternoon and evening, as well as occasionally on weekends. Expect a response no later than 24-48 hours. If I haven’t responded within 48 hours, please resend your email, as it may have (accidentally) been overlooked!

8.2 Late or Missing Work

- Homework may be accepted late up to 3 times for the semester, for any reason. Please let me know at least in advance of the due date via UNM email if you have some extenuating circumstance limiting your ability to submit an assignment. The quizzes, projects, midterm and final exams must be submitted on time to receive credit.
- All written work needs to be submitted online. If you have a difficulty using a tool to complete work, use the "Create a Tech Support Ticket" link in the Course Menu immediately and notify your instructor, as well.
- If you are ill and are not able to complete work on time, please let me know as soon as possible. I will work with you to shift deadlines but be aware that all assignments must be complete by the end of the semester. This may mean that when you are feeling better you will need to spend a lot of extra time to catch up. Also, if you are behind, the posted lectures or class session recordings may not be as helpful to your learning until you are ready to learn that material.

8.3 Expectations for Students

Please note that in order to be successful in this course, and in mathematics courses in general, you will need to spend a fair amount of time each week working on this course.

Here are my recommendations for the amount of time you should be spending in this course *each week*:

- Homework: 8-12 hours/week
- Office Hours: 30 min to 2 hours/week
- General Studying: 2-6 hours/week outside of homework and office hours

A more detailed schedule for assignments, projects, exams and their due dates can be found on Canvas, and may be subject to change.

9 Required Text and Program

The required text (or eText) for this course is:

- *Calculus, 11th edition*, by Ron Larson and Bruce Edwards.
- WebAssign access will be required to complete the homework portion of this course, and a digital copy of the textbook will be included with access. Register for our class using our class key: **unm 3531 2638**. If you are unsure how to gain access, please refer to the instructions below.

9.1 Instructions for Registering a WebAssign Account

- *Here* is a link to instructions on how to register for our WebAssign course.
- **Need assistance?** The Cengage technical support team can be reached via their *website* or by phone at (800) 354-9706.

10 Attendance Policy

Attendance in the course is **required**. If a student misses two or more classes in the first two weeks of the semester, three consecutive class periods or five total, I reserve the right (but not the obligation) to drop the student from the class. If you stop attending class for any reason, it is your responsibility to make sure you drop the class, or risk getting a failing grade. If you have extenuating circumstances that prevent you from being in class regularly, please contact me so we can discuss this within the first two weeks of the semester.

11 Course Structure

This course will consist of the following graded components:

- Homework (15%)
 - Expect 2-3 homework assignments per week, to be completed via WebAssign. Please note that this average may not be posted and accurate throughout the semester in the Canvas gradebook, as our course is not integrated with WebAssign. At the end of the semester, your lowest 2 homework grades will be dropped, and that average will be imported into Canvas gradebook representing 15% of your final grade.
- Quizzes (15%)
 - Expect a weekly quiz where your handwritten work will be submitted and graded via Canvas. These grades will be posted throughout the semester in Canvas. At the end of the semester, your lowest quiz grade will be dropped, and the resulting average will represent 15% of your final grade.
- Projects (30%)
 - You will complete 2 projects during this course.
 - Each project will count for 15% of your final grade.
- Midterm Exam (15%)
 - The midterm exam will be given Wednesday, June 29, 2022.
 - You will print this exam, complete and submit it to the appropriate dropbox in Canvas.
- Final Exam (25%)
 - The comprehensive final exam will be held on Monday, August 1, 2022.
 - You will need to print this exam, complete and submit it in the appropriate dropbox in Canvas.

For written assessment submissions such as quizzes, exams, and projects you should generally expect your grades within 2-5 days. Assignments through WebAssign offer immediate grading upon submission.

12 A Note About Plagiarism/Cheating

Cheating is any behavior that short circuits your learning. This can range from mindlessly mimicking what you see in the readings or examples, to simply copying someone else's solution, to paying someone to complete the assignment or course for you. **The use of any program or app like Chegg, Wolfram Alpha, PhotoMath and others on your computer or phone to copy down solutions for homework, quiz, or exam questions constitutes plagiarism.** *The penalties for plagiarism may include being given a '0' on the plagiarized assignment/exam, which could result in a significantly lowered/failing grade in the course.* If you ask for help from someone other than the instructor or a tutor and then just copy down what they tell you, that is also cheating. In all of your assignments you should demonstrate what you understand. If you do not understand, ask for help from your instructor!

13 Grading Policy

Please note: Your average listed in the 'Grades' section in Canvas may not include the final homework average until the end of the semester; your homework grade will be computed in WebAssign (dropping the two lowest scores) and weighted into the final average at the end of the course. Grades for all written assignments can be found in the 'Grades' section in Canvas throughout the semester.

Final grades will be assigned as shown below:

<u>Cumulative Average</u>	<u>Final Grade</u>
[96.5%, 100%]	A+
[93%, 96.5%)	A
[89.5%, 93%)	A-
[86.5%, 89.5%)	B+
[83%, 86.5%)	B
[79.5%, 83%)	B-
[76.5%, 79.5%)	C+
[69.5%, 76.5%)	C
[66.5%, 69.5%)	D+
[59.5%, 66.5%)	D
[0%, 59.5%)	F

14 Semester Deadlines

Summer 2021: 8-week classes (Full term)

- **Monday, June 6th:** First day of class, classes available in Canvas.
- **Friday, June 10th:** Last day to add a class or to change credit hours or grade mode in LoboWEB.
- **Friday, June 17th:** Last day to drop without "W" grade and with 100% refund on LoboWEB.

- **Friday, July 15th:** Last day to drop without Dean’s permission on LoboWEB. Will receive “W” grade and will be responsible for tuition for the course.
- **Monday, August 1st:** Last day to drop with Dean’s permission. Will receive “W” grade and will be responsible for tuition for the course.

15 UNM Policies

15.1 UNM Covid Policy

COVID-19 Requirements: The University of New Mexico requires that all faculty, staff, and students accessing University facilities, housing, programs, services, and activities in person be fully vaccinated for COVID-19, subject to limited exemptions. Proof of vaccination and booster, or a medical, religious, or on-line remote exemption, must be uploaded to the UNM vaccination verification site. At present, UNM is not requiring masking on UNM campuses for Summer 2022 classes, with the exception of health care facilities with specific COVID-19 regulations.

If you have a positive test for COVID-19 or symptoms of COVID-19, please do not attend class in person. Communicate with me about your absence and possible make-up assignments or work. Please follow the latest guidance from the Center for Disease Control (CDC) and the New Mexico Department of Health (NMDOH) on quarantining or isolating following a positive test for COVID. The current guidance requires a quarantine or isolation period of five days after a positive test or appearance of symptoms.

UNM COVID-19 requirements are subject to change relative to guidance from the New Mexico Department of Health. Thank you for keeping the Lobo community safe!

15.2 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>.

15.3 Copyright

All materials in this course fall under copyright laws and should not be downloaded, distributed, or used by students for any purpose outside this course. The [UNM Copyright Guide](#) has additional helpful information on this topic.

15.4 Accessibility and Accommodations

The American with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodations of their disabilities. If you have a disability requiring accommodation, please contact:

- UNM-Valencia Student Services if you are a Valencia campus student. The phone number is 505-925-8560.
- The UNM Accessibility Resource Center in 2021 Mesa Vista Hall if you are a main campus student. The phone number is 505-277-3506.

15.5 Academic Integrity

You should be familiar with UNM's Policy on Academic Dishonesty and the Student Code of Conduct which outline academic misconduct defined as plagiarism, cheating, fabrication, or facilitating any such act.

16 UNM Resources

- UNM Valencia Campus Tutoring Services
- UNM Main Campus CAPS Tutoring Services
- UNM-Valencia Library
- UNM Libraries
- "Life" Resources available to UNM-Valencia Students
- Student Health Counseling (SHAC) Online Services

17 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:

17.1 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.

17.2 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/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.

17.3 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