Math 1512: Calculus 1

Tuesdays & Thursdays, 3pm-4:45pm
UNM Valencia Learning Resource Center, Rm. 119
MECS Division Chair: Ariel Ramirez, aramirez8@unm.edu

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

Office and Contact Information:

Office: A-123B
Email: ataylor19@unm.edu (this is the absolute best way to get in touch with me, quickly!)

Student Hours (Instructor-Led Help Sessions):

- ***Mondays & Wednesdays:***
  - 4:15pm-5:15pm in Zoom room indicated, below: https://unm.zoom.us/j/98190874379 (Opened by email request, no passcode, authenticated UNM Zoom account required)
- ***Tuesdays & Thursdays:*** 12:15 pm-1:30pm in Math Tutoring Center (Learning Resource Center, near PASOS)
- **OR BY APPOINTMENT!**

UNM Course Description:

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 =>28 or SAT Math Section =>640 or ACCUPLACER Next-Generation Advanced Algebra and Functions =>284.

Student Learning Outcomes (SLOs):

After 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.

Technical Requirements:

- A Laptop/tablet/personal computer (if you don't have one, they are available to rent for free in the UNM Valencia Library: http://valencia.unm.edu/library/index.html)
- High-Speed Internet Connection (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: http://it.unm.edu/software/index.html

Please update your contact information in LoboWeb: http://my.unm.edu/home
When you log into MyUNM, Enter LoboWeb. Click on the Personal Information link to make sure your contact information is up to date.

Web Conferencing

Web conferencing may be used in this course if needed for office hour appointments. If you are utilizing web conferencing:

- 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 (mistakes happen -- please be properly clothed).
- To create a UNM supported Zoom account, visit https://unm.zoom.us

Class 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:

Please note that you will gain access to theWebAssign course and e-book using **the RedShelf course materials** link in Canvas (this is an inclusive access course).

Attendance Policy:

Attendance is **highly** recommended, but not required (though there are graded activities in class that if you miss, will hurt your grade). I do understand that sometimes life circumstances can prevent students from coming to every class. This is your class, you're paying for it, you can decide whether or not you show up. That being said, coming to class is one of the best ways to help ensure your success in passing. Being present, participating, and staying on top of the material are great contributors to success.

HOWEVER: if you miss class, it is your responsibility to find out what you missed and get the notes from a classmate.

Submitting Assignments (VERY IMPORTANT – READ CAREFULLY):

You will submit all written assignments (quiz/project/exam) in class by the due date. All assignments and work therein should be neat, legible, appropriately organized, and include detailed and well-justified work. ***Any work that is illegible, or that lacks proper substance/explanation/justification will not receive credit. Please make sure to show ALL your work so that partial credit can be awarded for simple mistakes.*** Remember, you can use words to explain your thinking alongside your mathematics. Conveying your thought process to me is the most important element in your written work; if you understand the process and the idea, and mess up on arithmetic somewhere, you will earn the vast majority of the credit for a given problem. However, if you just have an answer (which is the result of an arithmetic error), and you haven't explained your thought process, I have nothing to award credit for without evidence of your understanding.

Written Assignments/Assessments:
All written assignments/assessments must be submitted in class, unless otherwise indicated (i.e. Projects may be submitted via Canvas dropbox).

Late Passes:
You have 4 late passes for the semester. Using a late pass grants you up to 5 additional days to submit an assignment. You may use them on **any homework or project, but NOT assessments such as quizzes and exams.** In order to use a late pass, you must let me know *in advance* of the due date. You do not need to present me with a doctor's note, or provide any reason for using a late pass (it doesn't matter whether you're sick or going to a concert – that's up to you). However, I'd highly recommend saving them until you really **need** them. Once you've used your passes, that's all you get. If you have incredibly emergent circumstances (long-term stay in hospital, etc.), just let me know, and I will examine those circumstances on a case-by-case basis. In those cases, if approved, you may be asked to provide evidence of that circumstance.

Submitting Projects:
Projects should be submitted with neat, legible, well-organized work. This may take the creation of a ``final draft'' of your solutions. These can be submitted through Canvas, or in class. Please note that you may find computers, printers, and anything else you may need in order to submit a report in the UNM Valencia Library.

Quizzes and Exams:
We will take handwritten quizzes (6-8) and exams (2) in this class. No calculators, notes, textbooks, or internet-connected devices will be allowed to be used during the exam.

If you must miss a quiz or exam, it is your responsibility to let me know in advance, so that you have adequate time to set an appointment to make it up ***before*** the assessment, during my office hours, or at a university/college testing center with a proctor. If you must use a university testing center, and there isn't a proctor, you will not be able to make up the assessment, and it will be counted as a 0. The proctor must reach out to me and confirm they are able to proctor your assessment.

Communication with Instructor:

The absolute MOST RELIABLE way to communicate with me as quickly as possible is to **send me an email**. If you ask a question via the homework platform, or via Canvas messages, I won't see it as quickly as if you send me an email. 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!

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 **minimum** amount of time you should be spending in this course, each week.

Homework: 4-6 hours/week
Student Hours: 30 min to 1 hour per week.
General Studying: 1-3 hours/week outside of homework and office hours. Can include looking over notes from class, reading the textbook and making your own notes, watching online videos and practicing any additional quiz-prep problems, provided.

I'd highly recommend taking notes over things that stand out to you in class: examples, impactful things that are said that make sense to you, or interesting questions posed by students and discussed in class. There will be a fair amount of discussion of problems from the text.

Course Structure:

This course will consist of the following graded components:

• **Homework (20%)**
Expect ~2 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 20% of your final grade.

• **Quizzes (10%)**
Expect 6-8 timed quizzes where you will have a short time period (avg 45 min-1.25hr) to submit your handwritten work to a quiz released in Canvas at the beginning of class. Your handwritten work will be submitted and graded via Canvas. For this, you may find a free phone document scanner such as 'Adobe Scan' useful to save you some time if you don't have immediate access to a scanner. Quiz solutions will be discussed in class, immediately following the quiz. Because of this, no quizzes can be made-up after they have been given to the class. 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 10% of your final grade. These quizzes will be a great reflection of what the upcoming exams will look like.

• **Projects (20%)**
– You will complete 2 projects during this course.
– Each project will count for 10% of your final grade.

• **Midterm Exam (20%)**
The midterm exam will be held on Thursday, March 7, 2024 at 3pm in our classroom.

• **Final Exam (30%)**
The comprehensive final exam will be held on Tuesday, May 7, 2024 from 3pm-5pm in our classroom.

For written assessment submissions such as exams/projects, you should typically expect your grades within one week. Assignments through Achieve should offer immediate grading upon submission.

Grading Policy:

Cumulative Average at End-of-Course	Final Grade in Class
$96.5 \leq Avg \leq 100+$	A+
$93 \leq Avg < 96.5$	A
$89.5 \leq Avg < 93$	A-
$86.5 \leq Avg < 89.5$	B+
$83 \leq Avg < 86.5$	B
$79.5 \leq Avg < 83$	B-
$76.5 \leq Avg < 79.5$	C+
$69.5 \leq Avg < 76.5$	C
$66.5 \leq Avg < 69.5$	D+
$63.5 \leq Avg < 66.5$	D
$59.5 \leq Avg < 63.5$	D-
$Avg < 59.5$	F

Important Semester Deadlines:

Spring 2024: 16-week classes (deadlines will be different for first and second 8-week classes)

- Tuesday, January 15: First day of class, class available in Canvas.
- Friday, January 26, by 5:00 PM: Last day to add a class or to change credit hours or grade mode in LoboWEB.
- Friday, February 2, 5:00pm: Last day to drop without "W" grade and with 100% refund on LoboWEB
- March 10-March 17: Spring Break: No class!
- Friday, April 12th: Last day to drop without Dean's permission on LoboWEB. Will receive "W" grade and will be responsible for tuition for the course.
- Thursday, May 2nd: Last day to drop with Dean's permission. Will receive "W" grade and will be responsible for tuition for the course.
- May 6-May 11: Final Exams Week

UNM Valencia Resources & Support:

Support:

PASOS Resource Center (505) 925-8546, mailto:pasos@unm.edu. The Resource Center is an on-campus center that serves as a "one-stop" for all non-academic needs of UNM-Valencia students.

Student Health and Counseling (SHAC) at (505) 277-3136. If you are having active respiratory symptoms (e.g., fever, cough, sore throat, etc.) AND need testing for COVID-19; OR If you recently tested positive and may need oral treatment, call SHAC.

LoboRESPECT Advocacy Center (505) 277-2911 can offer help with contacting faculty and managing challenges that impact your UNM experience.

Accommodations:

UNM is committed to providing equitable access to learning opportunities for students with documented disabilities. As your instructor, it is my objective to facilitate an inclusive classroom setting, in which students have full access and opportunity to participate. To engage in a confidential conversation about the process for requesting reasonable accommodations for this class and/or program, please contact Accessibility Resource Center at arcsrvs@unm.edu or by phone at 505-277-3506. The UNM-Valencia Equal Access Services (Sarah Clawson, Coordinator), at (505) 925-8840 or by email at sjclawson@unm.edu.

Support: Contact me in student hours, or at my email, and contact The UNM-Valencia Equal Access Services (Sarah Clawson, Coordinator), at (505) 925-8840 or by email at sjclawson@unm.edu., Or Accessibility Resource Center (https://arc.unm.edu/) at mailto:arcsrvs@unm.edu (505) 277-3506.

Tutoring:

Resources to support study skill and time management are available through
UNM-Valencia Learning Commons (Tutoring).

Tutoring is available to you in math, science, writing, and other subjects through the Learning Commons: Learning and STEM Centers and Writing Center. In person tutoring is in these centers in the LRC (the building that also has the library). Tutoring in Zoom and, for writing, through email, is also available.
Making use of tutoring is a fantastic way to use your resources and set yourself up to learn deeply and well in your courses.
To schedule an appointment, please go to: Learning Commons Bookings

If you are making an email appointment with the Writing Center, email your draft to tutor@unm.edu after you fill out the form above.
If you have difficulty with the scheduling link above, would like an appointment in a subject not listed at that link, or have a question, email tutor@unm.edu. You'll get answers during business hours Monday through Friday.
The webpage, with more details about available hours, is here: Learning Commons: Tutoring Services webpage.

At UNM Main Campus, you may contact: Center for Academic Program Support (CAPS). Many students have found that time management workshops can help them meet their goals (consult (CAPS) website under "services").

Support: Many students have found that time management workshops or work with peer tutors can help them meet their goals. These and are other resources are available through PASOS (Pathways to Articulation and Sustainable Opportunities for Students), TRIO Student Support Services, and Student Learning Support at the Center for Teaching and Learning.

Connecting to Campus and Finding Support: UNM has many resources and centers to help you thrive, including opportunities to get involved, mental health resources, academic support including tutoring, resource centers for people like you, free food at Valencia Campus Food Pantry, and jobs on campus. Your advisor, staff at the resource centers and Academic Affairs Office, and I can help you find the right opportunities for you.

UNM Statements & Policies:

Land Acknowledgement:
Founded in 1889, the University of New Mexico sits on the traditional homelands of the Pueblo of Sandia. The original peoples of New Mexico Pueblo, Navajo, and Apache since time immemorial, have deep connections to the land and have made significant contributions to the broader community statewide. We honor the land itself and those who remain stewards of this land throughout the generations and also acknowledge our committed relationship to Indigenous peoples. We gratefully recognize our history.

Citizenship and/or Immigration Status:
All students are welcome in this class regardless of citizenship, residency, or immigration status. Your professor will respect your privacy if you choose to disclose your status. As for all students in the class, family emergency-related absences are normally excused with reasonable notice to the professor, as noted in the attendance guidelines above. UNM as an institution has made a core commitment to the success of all our students, including members of our undocumented community. The Administration's welcome is found on our website: http://undocumented.unm.edu/.

COVID-19 Health and Awareness. UNM is a mask friendly, but not a mask required, community. If you are experiencing COVID-19 symptoms, please do not come to class. If you do need to stay home, please communicate with me at [ ]; I can work with you to provide alternatives for course participation and completion. Let me, an advisor, or another UNM staff member know that you need support so that we can connect you to the right resources. Please be aware that UNM will publish information on websites and email about any changes to our public health status and community response.

Credit-hour statement:
This is a three credit-hour course. Class meets for two 75-minute sessions of direct instruction for fifteen weeks during the Fall 2023 semester.

Title IX:
Our classroom and our university should always be spaces of mutual respect, kindness, and support, without fear of discrimination, harassment, or violence. Should you ever need assistance or have concerns about incidents that violate this principle, please access the resources available to you on campus. Please note that, because UNM faculty, TAs, and GAs are considered "responsible employees" any disclosure of gender discrimination (including sexual harassment, sexual misconduct, and sexual violence) made to a faculty member, TA, or GA must be reported by that faculty member, TA, or GA to the university's Title IX coordinator. For more information on the campus policy regarding sexual misconduct and reporting, please see: https://policy.unm.edu/university-policies/2000/2740.html.

Support: LoboRESPECT Advocacy Center, the Women's Resource Center, and the LGBTQ Resource Center all offer confidential services.

Respectful and Responsible Learning:
We all have shared responsibility for ensuring that learning occurs safely, honestly, and equitably. Submitting material as your own work that has been generated on a website, in a publication, by an artificial intelligence algorithm, by another person, or by breaking the rules of an assignment constitutes academic dishonesty. It is a student code of conduct violation that can lead to a disciplinary procedure. *Please ask me for help in finding the resources you need to be successful in this course. I can help you use study resources responsibly and effectively.* Off-campus paper writing services, problem-checkers and services, websites, and AIs can be incorrect or misleading. Learning the course material

depends on completing and submitting your own work. UNM preserves and protects the integrity of the academic community through multiple policies including policies on student grievances (Faculty Handbook D175 and D176), academic dishonesty (FH D100), and respectful campus (FH CO9). These are in the *Student Pathfinder* (https://pathfinder.unm.edu) and the *Faculty Handbook* (https://handbook.unm.edu).

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 is defined as:

"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.