

Math 2531 -501 - Calculus 3
Spring 2026
Live Zoom Sessions
Time: 1:00 pm- 2:45 pm on MW
Instructor: Dr. Saulo Orizaga.
Office: SMLC 230B
Email: sorizaga@unm.edu

Office Hours: TBD, or by appointment.

IMPORTANT: Hours of email communication M-F, 8:00 am to 5:00 pm.
Zoom Office hours - Tuesday 6-7 pm, and Wednesday 4 pm-5pm. See Zoom information below.

Mode of Instruction: We will meet live via Zoom the majority of the time. ***You will be required to have your webcam on for the entire duration of each exam.*** Occasional pre-recorded meetings will take place in the semester.

Course Topics: Multivariable calculus, vector valued functions, volume, line and surface integrals of functions of several variables. *Here are the [student learning outcomes](#).*

Prerequisite: Calculus II (Math 1522). See [here](#) for [review problems](#) and more.

Textbook: Calculus, Stewart, 9th edition. *You need a copy of the book, electronic or hardcopy, as you prefer. No supplementary materials are needed. (eBook on Canvas. Go to modules, eBook, then load eBook on new page)*

UNM Canvas: All course materials, communication, and grades will be posted on our Canvas course site.

Grading: The [course grade](#) will be determined from bi-weekly problem presentations/quizzes, 4 mid-semester exams, and a final exam. Attendance and participation in all aspects of the course is required. *Note that inconsistent attendance and homework can lead to instructor-drop (see [Attendance](#)).*

Homework: Homework will be assigned but not collected. These problems are essential preparation, as they will form the basis of in-class problem presentations and exam questions.

Resources: There are several resources to help you succeed in this class. Visit them during drop-in hours and at the [Tutoring Center](#). Ask questions inside and outside of class, let us know what difficulties you are having. We want to hear from you and we want to help you succeed. Below is a list of all [resources](#).

See below for [Grade Mode Change](#) and [Academic Dishonesty](#).

MATLAB: To download MATLAB go to <http://it.unm.edu/download/>. It is also on the computers in the computer pods.

Useful links:

[Mathworks MATLAB Onramp](#)[Links to an external site.](#)

[Owen's Matlab Tutorial](#)[Links to an external site.](#)

[MATLAB Basics: a Tutorial](#)

[Fundamentals of Matlab](#)

(the schedule below was adapted from a 3 times per week course - make these adjustments when you consider the weekly covered topics)

Schedule:

Week	Reading assignments	Topics	Assignments
1: Jan 20-23	Sec 12.1, 12.2	1. Vectors, Lines, Planes 1. Cartesian coordinates (12.1) 2. Vectors (12.2)	Instructions - all HW HW1 end of week (for day 1)
2: Jan 26-30	Sec 12.3-12.5	3. Dot product (12.3) 4. Cross product (12.4) 5. Lines (12.5)	HW2 due end of week (for days 2,3,4)
3: Feb 2-6	Sec 12.5,12.6,13.1	6. Planes (12.5) 7. Quadric surfaces (12.6) 2. Vector valued functions 8. Vector valued functions (13.1)	HW3 due end of week (for days 5,6,7)
4: Feb 9-13	Sec 13.2,13.4 Review 1 Exam 1	9. Derivatives, tangent vector, unit tangent (13.2) Velocity and acceleration (13.4) 10. Review 11. EXAM 1 (HW 1-4)	HW4 due end of week (for days 8,9)
5: Feb 16-20	Sec 13.3,14.1- 14.3	12. Arclength, Curvature, Normal (13.3) 3. Functions of several variables 13. Functions of several variables (14.1) Limits and cont (14.2) 14. Partial derivatives (14.3)	HW5 due end of week (for days 12,13)
6: Feb 23-27	Sec 14.4-14.6	15. Tangent Planes (14.4) 16. Chain Rule (14.5) 17. Directional derivative, gradient vector (14.6)	HW6 due end of week (for days 14,15,16)

7: Mar 2-6	Sec 14.7,14.8	18. Maxima/Minima on open domains (14.7) 19. Maxima/Minima on closed domains (14.7) 20. Lagrange Multipliers (14.8)	HW7 due end of week (for days 17,18,19)
8: Mar 9-13	Sec 15.1 Exam 2	3. Integrals of functions of several variables 21. Double integrals over rectangles (15.1) 22. Review 23. EXAM 2 (HW 5-8)	HW8 due end of week (for days 20)
Mar 16-20	SPRING BREAK		
9: Mar 23-27	Sec 15.2-15.4	24. Double integrals over general regions (15.2) 25. Double integrals in polar coordinates (15.3) 26. Applications (15.4)	HW9 due end of week (for days 21,24,25)
10: Mar 30 – Apr 3	Sec 15.5-15.6	27. Surface area (15.5) 28. Triple integrals (15.6) 29. Triple integrals in cylindrical coordinates (15.7)	HW10 due end of week (for days 26,27,28)
11: Apr 6-10	Sec 15.8 Exam 3	30. Triple integrals in spherical coordinates (15.8) 31. 32. EXAM 3 (HW 9-11)	HW11 due end of week (for days 29,30)
12: Apr 13-17	Sec 15.9,16.1,16.2	4. Vector Calculus 33. Change of variables (15.9) 34. Vector fields (16.1) 35. Line integrals wrt ds, dx, dy, dz (16.2)	HW12 due end of week (for days 33,34)
13: Apr 20-24	Sec 16.2-16.4	36. Line integrals F.Tds, work/circulation (16.2) 37. Fundamental Theorem for line	HW13 due Sun Apr 23 (for days 35,36,37)

		integrals (16.3)	
		38. Green's Theorem (16.4)	
14: Apr 27-May1	Sec 16.5 Exam 4	39. Curl and Divergence (16.5) 40. Review 41. EXAM 4 (HW 12-14)	HW14 due end of week (for days 38,39)
15: May 4-8	Review Week	42. Review: Functions of several variables 43. Review: Integrals 44. Review: Vector fields	
16: May 11	Final Exam	Monday May 11 week, Time:TBA Cumulative Final Exam	

Prerequisites and review: [review problems](#) is posted here so you can review before the semester starts and be well prepared. The goal of mathematics courses at UNM is to build your skills and strengthen them as you go semester after semester. Review is needed, but don't worry if you do not feel 100% confident to start with. We will review as we go and gain skill and confidence throughout. We will assess your preparedness for this course early on and advise correspondingly. If you have any questions about which is the appropriate course for you make sure to talk with your instructor early in the first week of classes.

Grading: Your final course grade will be determined from

Hw Presentations/Quizzes (10%), Test 1-4 (15% each), Final Exam (30%) -

Your current percentage grade will always be visible in your Canvas page. A comprehensive 90%, 80%, or 70% grade will guarantee a passing grade of A,B or C, respectively, in the course. However, a grade below 70% does not mean you will fail the class. While your instructor will give general feedback on grades in class, you should make sure to contact your instructor directly anytime you want to know more closely what your standing in the course is. In particular, you need to contact your instructor before deciding to drop the course.

Attendance: Attendance at UNM is mandatory and engagement in the class (regular homework completion, questions/comments inside and outside class, and in office hours) is necessary to succeed in this course. If you need to miss class, please let your instructor know. *Your Instructor may drop you from the course if you have more than 4 absences, lectures and recitations combined.* Please make sure to stay in touch with your instructor in case of special circumstances that temporarily prevent you from participating as needed.

Homework: Weekly homework sets will be assigned and should be completed by the posted due date to keep pace with the course. Homework will not be formally collected or submitted. Students are nevertheless expected to complete all homework on time, as these problems will serve as the foundation for in-class problem presentations, quizzes, and exams..

One of the main goals of the course is to develop your mathematical writing skills, clearly showing all steps taken using correct algebra and notation. Therefore, your homework will be graded on the clarity and correctness of your mathematical presentation. Please take care to submit neat, legible solutions, with problems listed in order. Solutions that are hard to find or read will receive zero credit. Same standards will be applied to exams.

You are encouraged and welcome to work together on the homework. However, the writeup you hand in must be your own work, in your own words. After you have had all your questions answered, you need to be able to do all problems on your own.

Referral to other sources outside of the material given in class (such as searching the web for answers) is not conducive to learning and does not lead to understanding. To understand the material you must work through it. You learn mathematics, just as you do the violin, or soccer, by practice, practice, practice. And just like playing the scales or doing the dribbling skills, it's not necessarily always fun, but necessary. You will hit roadblocks, that is part of the process. But when you do come to your results after possibly a few detours, then you have really understood. So, please know that struggling is ok. But do not bang your head in frustration! It is perfectly ok to try, think about something for a bit, and then get more insight by asking questions.

Work outside class: Please note that UNM requires a minimum of two hours work outside of class for each credit hour. Only with daily work and good use of your resources will you profit the most and succeed in this class. This is a four credit-hour course, with three lectures and one recitation for fifteen weeks during the semester. Please plan for a minimum of eight hours of out-of-class work each week: 2 hours after each lecture and 2 hours on the weekend to finalize the homework. The homework is set up to make it clear which problems to work on after each lecture.

Exam dates: All exam dates are given in the syllabus at the beginning of the semester. Exams cannot be rescheduled except in documented emergencies. If you need to reschedule because of a documented emergency (eg, surgery), please let your instructor know as soon as you find out. If you miss an exam due to sickness, contact your instructor immediately. Do not schedule a personal trip during exams as you will not be given a makeup. Non-NCAA sporting events are also not university authorized emergencies.

Tutoring Center Hours: will be posted here.

Resources: There are several resources to help you succeed in this class. Please consider your instructor your primary resource. Visit them during drop-in hours help hours, ask questions inside and outside of class, let us know what difficulties you are having. We want to hear from you and we want to help you succeed. The recitations are another resource for you to ask any questions you may have. A list of all resources:

- Instructor's drop-in hours, availability in and outside of class
- Teaching assistants/recitations: TAs will lead the recitations and are available for help at the Tutoring Center.
- Tutoring Table, staffed by appropriate instructors throughout the week (see posted schedule)
- CAPS: Center for Academic Program Support. Located on the 3rd floor of Zimmerman Library, (505) 277-7205
- ESS Center: Engineering Student Success Center, (505) 277-4354
- 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.

Most importantly: Ask questions!! In class, in recitations, at CAPS, to your instructor, to each other. You learn the most when you figure out what questions you have, formulate them, and find the answers to them. This is not the same as asking "how do you do this problem?" A better question would be "I tried this and got stuck, I don't see alternatives, can you help?" or, in class, "I don't see how that follows, can you explain?"

Grade Mode Change and Withdrawals: Deadlines to make changes to your registration status are published by the Office of the Registrar in the schedule of classes: <http://registrar.unm.edu>. To change grade mode or to withdraw after the deadlines posted therein, you need to (1) talk to your instructor to fully understand your standing in the class, and (2) meet with your advisor and discuss the best path for you to proceed, as well as all consequences for your studies. Please ask your advisor to email your instructor, with copy to you, of the final decision. For grade mode changes you may also be required to have your instructor sign a grade mode change form: <http://www.unm.edu/~unmreg/images/Forms/EnrIAuth-GradeMode.pdf>, and your instructor will accommodate the change. Please note that you cannot request a withdrawal from the course after 5 pm on the Friday before final exams week.

Academic dishonesty:

Academic dishonesty will be reported to the Dean of Students. This includes copying answers from other sources to complete your homework, using external sources (other

than pencil and paper) to complete exams, and copying or looking at another student's exam or quiz while it is given.

COVID-19 - Vaccination and Indoor Masking: COVID-19 Health and Awareness. UNM is a mask friendly, but not a mask required, community. To be registered or employed at UNM, Students, faculty, and staff must all meet UNM's Administrative Mandate on Required COVID-19 vaccination. If you are experiencing COVID-19 symptoms, please do not come to class. If you have a positive COVID-19 test, please stay home for five days and isolate yourself from others, per the Centers for Disease Control (CDC) guidelines. **If you do need to stay home, please communicate with your instructor;** your instructor can work with you to provide alternatives for course participation and completion. UNM faculty and staff know that these are challenging times. Please let us know that you need support so that we can connect you to the right resources and please be aware that UNM will publish information on websites and email about any changes to our public health status and community response. Support: 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.

Accomodation Statement: 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.

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" by the Department of Education, 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, please see: <https://policy.unm.edu/university-policies/2000/2740.html>.

Support: LoboRESPECT Advocacy Center and the support services listed on its website, the Women's Resource Center and the LGBTQ Resource Center all offer confidential services and reporting.

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/>.

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. Faculty Resource: Information provided by UNM's Division for Equity and Inclusion can support building an inclusive classroom, <https://diverse.unm.edu/education-and-resources/programs/index.html>

IMPORTANT NOTICE: The instructor keeps the right to make necessary changes for this course during the whole semester!

- **Hours of communication M-F, 8:00 am to 5:00 pm.**

Academic Integrity Plan

The primary objective of the Calculus 3 course is for students to develop a deep understanding and mastery of the material. To uphold this goal and ensure fairness, the following academic integrity guidelines apply:

1. **Independent Work**
While students are encouraged to discuss mathematical ideas with classmates and consult external resources, all submitted work must be written individually, clearly showing all steps. Only work completed independently will be eligible for full credit.
2. **Use of External Sources**
Solutions derived from AI tools, solution manuals, or similar sources must not be copied. If a similar problem is encountered from an external source, students are expected to use it solely for guidance. The emphasis should be on understanding and internalizing the problem-solving process—not replicating it.
3. **Homework Presentations**
Students will periodically present homework problems to the class. This collaborative exercise not only reinforces personal learning but also helps the instructor identify common challenges and adapt teaching strategies accordingly.
4. **Exam Procedures**
For academic transparency, all exams will require cameras to remain on for the entire duration of the exam, including the submission process.

Note: Students are expected to dedicate sufficient time outside of class to thoroughly engage with and master the course content.

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Saulo Orizaga is inviting you to a scheduled Zoom meeting.

Topic: Saulo Orizaga's Personal Meeting Room

Join Zoom Meeting

<https://unm.zoom.us/j/8166580386>

Meeting ID: 816 658 0386

One tap mobile

+13017158592,,8166580386# US (Washington DC)

+13052241968,,8166580386# US

Join by SIP

• 8166580386@zoomcrc.com

Join instructions

https://unm.zoom.us/join/8166580386/invitations?signature=CJiwVAjX-H_rAFSr4Lzschtaz7TU8rdwSdPyIPqLLt0

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