Introduction to Numerical Computing

Eng 130L-501, Fall 2026

Zoom/Online - live sessions | Time: T-Th 11:00am-12:15pm

Instructor: Dr. Saulo Orizaga

Office: SMLC 208

Email: sorizaga@unm.edu

MECS Division Chair: Andy Taylor; Email: ataylor19@unm.edu

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

Zoom Instructor-Led Help Sessions (Tutoring Hours) - Wednesday 4 pm-5pm or by appointment. See Zoom information at the end of this syllabus.

Mode of Instruction

The lectures will be mainly via Live Zoom Sessions, occasionally we may pre-record lectures. All lecture notes will be posted on Canvas. Instructor may give reading assignments to further the understanding of a topic (re-enforce the material). You will be required to have your webcam on for the entire duration of each exam/quiz.

Credit-Hour Statement

This is a four-credit-hour course. Class meets for two live 75-minute Zoom sessions per week for 15 weeks during the fall 2026 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.

Course Description

An introduction to the use of computing resources to solve engineering problems. Students will learn the fundamentals of computer programming and will also learn to use a numerical computing environment such as MATLAB. Applications to engineering problems in various disciplines will be explored.

Course Objectives

Students will be able to use computing tools to solve engineering problems in advanced courses in their engineering curriculum and will also be prepared to use these tools in the engineering workplace.

Student Learning Outcomes

- Students will be able to write programs at a beginning level in a programming language. Programs will include using predefined functions, conditional statements, control structures, matrix computations, and graphing and plotting.
- Students will be able to create, test, and debug beginning-level computer programs.
- Students will be able to understand the basic features of MATLAB (or other equivalent problem-solving software) including data types, basic mathematical and logical expressions, arrays and vectors, matrices, and file manipulation.
- Students will be able to use computing systems to generate graphs and plots of engineering data.
- Students will be able to compose structured programs using symbolic algebra, equation solving, differentiation and integration.

Student Outcomes Addressed by Course

An ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

UNM Canvas

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

Recommended MATLAB reference: "Matlab Guide" by D.J. Higham and N.J. Higham, SIAM.

Grading

Course score composition:

Component	Weight
Homework	50%
Tests 1 and 2, and Quizzes	50%
Course Evaluation	5%

Quizzes: These will be done in class and will contribute to Homework grades (or class participation - no make up quizzes are allowed).

Course grade scale:

F	D	D+	C–	C	C+	B–	B	B+	A–	A
[0,60)	[60,66)	[66,69)	[69,72)	[72,76)	[76,79)	[79,82)	[82,86)	[86,90)	[90,92)	[92,100]

Auditing: Auditing students must report their auditing status to the instructor immediately.

Homework

- Homework is due during class on the assigned due date. No late homework will be accepted.
- All homework must be done neatly with work shown to receive full credit. Any grading issues should be submitted in writing (online) within a week of the return date. Assigned homework and homework grades will be posted on Canvas.
- You are welcome to work in groups, but individual work is required for all graded assignments.
- Computer codes and write-ups have to be your own (identical or nearly identical solutions will receive zero credit). If information obtained elsewhere is used for a homework problem, you must give due credit in your write-up. Submitting solutions obtained from third parties is strictly prohibited.
- Actual submission: All homework assignments will be submitted as a project/report. You must include two files on Canvas - the actual project.pdf file + a zip folder containing all files (mfiles and functions) used to complete your work. Do not forget a readme.txt file explaining what the code does. The submission should resemble a report that is self-contained and that explores all homework tasks with summaries of your findings (Cover Page, Problem Description, Summary and Findings/Conclusions). You should also provide graphical representation (when possible) to help demonstrate your findings/summaries. This should be a high quality report.
- We have no late homework policy - late homework will not be accepted. Submit at least 2 hours before deadline to avoid submission issues. To be fair with classmates and our grader, always submit on time.

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

Course Materials Access

Your required digital course materials (if any) are available through My Shelf in Canvas. To access them, log in to Canvas on a browser, click Account in the left navigation menu, and select My Shelf. If this course requires physical materials, they can be picked up at the UNM Bookstore on central campus. You are automatically enrolled in the Complete option of the UNM Course Materials Access program at a flat rate of $279 per semester, which will appear on your Bursar account. If you prefer to purchase only selected materials or opt out entirely, you may change your enrollment through My Shelf in Canvas by the Registrar's Last Day to Drop Without a "W" Grade.

Policies

- Read your textbooks (you have several). You are responsible for all material in the course content whether it is discussed or not. You are also responsible for the material presented in class.
- It is your responsibility to attend class, be current with homework and topics.
- Students are strongly encouraged to attend classes on time. Students are responsible for any class announcements. Attendance and participation will be included in your final grade.
- Respect your classmates and the instructor!
- Contribute for a great/wonderful class atmosphere and learning environment.

Disruptive Behavior

Disruptive behavior will result in a student being asked to leave a class meeting (or Zoom session), which will be recorded as an unexcused absence. Per the attendance policy for this class, a student will be dropped after 4 unexcused absences.

MATLAB

To download MATLAB go to (UNM software support). It is also on the computers in the computer pods.

Useful links: Mathworks MATLAB Onramp | Owen's Matlab Tutorial | MATLAB Basics: a Tutorial | Fundamentals of Matlab

Grades and Standing

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. Please make sure to stay in touch with your instructor in case of special circumstances that temporarily prevent you from participating as needed.

Homework Submission Details

Weekly or bi-weekly homework sets are due on the posted due date, by 11:59pm, to be submitted through Canvas. You will need a scanning app for your mobile device to scan your solutions as a pdf file. You are encouraged and welcome to work together on the homework. However, the write-up 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.

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.

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, 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.

AI in the Classroom

In this course, I will provide you with course-level and/or assignment-level guidance for how and when to use generative AI (AI) tools for submitted work. In general, AI use is okay in this course, provided that you are able to verify and explain every step of the work it helps you produce, and that you are using it as a tool for actual learning rather than as a substitute for doing the work yourself. Submitting AI-generated content that you cannot explain, verify, or reproduce on your own is not consistent with the goals of this course and may be treated as academic dishonesty under UNM's Dishonesty in Academic Matters policy (FH D100). If you use AI in a submitted assignment, briefly acknowledge how you used it (a sentence is sufficient, e.g., "I used AI to help debug a MATLAB error, then rewrote the fix myself and verified it worked"). If you are unsure whether a specific use is acceptable, please ask before submitting.

Responsible Learning and Academic Honesty

Cheating and plagiarism (academic dishonesty) are often driven by lack of time, desperation, or lack of knowledge about how to identify a source. Communicate with me and ask for help, even at the last minute, rather than risking your academic career by committing academic dishonesty. Academic dishonesty involves claiming that work created by another source (including AI) is your own original work. It is a Student Code of Conduct violation that can lead to a disciplinary procedure. When you use a resource in work submitted for this class, document how you used it and distinguish clearly between your original work and the material taken from the resource.

Thriving and Finding Support

Students are especially successful at UNM when they take advantage of support and get involved in campus and academic life. The Student Life tab on the student and instructor MyUNM login page provides direct links to well-being resources, including financial capability, mental health, food, jobs, and resource centers. The Student Life tab on MyUNM will also help you identify academic resources like peer tutoring and opportunities like study abroad. You can contact academic advisors and resource advisors for information and guidance via Student Hub on MyUNM. I look forward to providing you with information about academic opportunities related to our class and to helping you find support resources.

Academic Dishonesty

Academic dishonesty will be reported to the Dean of Students.

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.

Support: Student Health and Counseling (SHAC) at (505) 277-3136. LoboRESPECT Advocacy Center (505) 277-2911 can offer help with contacting faculty and managing challenges that impact your UNM experience.

Accommodation Statement

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.

Respectful Campus (UAP 2720 and 2740)

Our classroom and university should foster mutual respect, kindness, and support. If you have concerns about discrimination, harassment, or violence, please seek support and report incidents. Find confidential services at LoboRESPECT Advocacy Center, the Women's Resource Center, and the Arcoiris Center. UNM prohibits discrimination on the basis of sex (including gender, sex stereotyping, gender expression, and gender identity). All instructors are "responsible employees" who must communicate reports of sexual harassment, sexual misconduct and sexual violence to Compliance, Ethics and Equal Opportunity. For more information, please see UAP 2720 and UAP 2740.

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.

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.

Class Disturbances

Disturbances will NOT be tolerated. A student that disturbs the class will be required to leave the class. Campus police will escort the student out of the class if necessary.

Important Notice

The instructor keeps the right to make necessary changes to the syllabus for this course during the whole semester.

Zoom Meeting Information

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