



SIE 270: Mathematical Foundation of SIE Summer 2023

Instructor Contact Information

Dr. Afrooz Jalilzadeh (afrooz@arizona.edu)

Office Hours (via Zoom or in-person): Tuesday and Thursday 11:50am-12:50pm

Office: ENGR 318B Zoom link: TBA

Teaching Assistants Contact Information

Zeinab Alizadeh (zalizadeh@arizona.edu)

Office Hours: Monday and Wednesday 3:00pm – 4:00pm (Zoom only)

Zoom link: TBA

Time and Location



May 15 – June 2

Mo, Tu, We, Th, Fr 9:00 AM-11:50 AM

Location: Engineering building, Room 301

Zoom link for online sections and online classes: TBA

Class Recordings

The class will be recorded using Panopto and will be uploaded on D2L website. If you have any questions or concerns about the recording, please contact the instructor. For lecture recordings, which are used at the discretion of the instructor, students must access content in D2L only. Students may not modify content or re-use content for any purpose other than personal educational reasons. All recordings are subject to government and university regulations. Therefore, students accessing unauthorized recordings or using them in a manner inconsistent with UArizona values and educational policies are subject to suspension or civil action.

Course Format and Course Website:

This course will be delivered in-person for the first two weeks (May 15 – May 26) and online May 29 – June 1 unless otherwise specified. Final exam is on Friday, June 2, in person. You need to check <https://d2l.arizona.edu> at least once per day for lecture notes, homework assignments, supplemental readings, grades, etc.

Course Description

Basics of data structures, transformations, computer methods, their implementation in MATLAB, and their applications in solving engineering problems.

Course Prerequisites

Calculus, differentiation and integration; Ability to write and understand computer programs in a high-level language, such as MATLAB; ECE 175 or CSC 127A, MATH 129, PHYS 141.



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Suggested Textbooks:

- S. Yakowitz & F. Szidarovszky, An Introduction to Numerical Computation (2nd Edition), MacMillan, 1989.
 - James F. Epperson, An Introduction to Numerical Methods and Analysis, (2nd Edition), Wiley, 2013. (The book is available online.)
 - B. Hahn & D. Valentine, Essential MATLAB for Engineers and Scientists, (5th Edition), Elsevier, 2013. (The book is available online.)
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Grading Scale and Policies

Homework (30%): 4 sets of homework

The main purpose of the homework assignments is to help you practice the skills needed to meet the learning outcomes for this course.

- Homework assignments and due time will be posted in the Assignments section on D2L.
- No grade will be given for late submission.

Quizzes and Attendance (10%): 4-6 quizzes; two lowest grades will be dropped.

Main purpose of the quizzes is to encourage attendance.

- Random choice of time. Quizzes will be held during the class time.
- Students in section 01, should take the quiz in person. Online students (sections 10 and 110) should upload their solutions on D2L by 11:59pm the same day that the quiz is taken.

Midterm exam (30%): Wednesday, May 24, 9am-10:30am. Exam is in person and during the class time.

Final exam (30%): Friday, June 2, 9am-11am in our classroom. Final exam is cumulative and in person.

- The exams will be based on the material covered during lectures, homework assignments, and the materials on D2L Content.
- Students in Section 10 (Yuma campus) should take the exams in person, in room 704.
- Online students (section 110) are expected to take the exams at the same time via Zoom (camera should be on). Please contact the instructor if the time doesn't work for you.

Regrading: If you feel that an error has been made in grading your assignment, you may request a regrade in a written form outlining the potential error and submitted to the instructor via email within 48 hours of it being returned (please attach the scanned copy of homework/exam). This timetable will be strictly adhered to. The TA is not going to accept the regrade request.

Final grade: The final letter grade will be distributed as follows: A: 90-100; B: 80-89.9; C: 70-79.9; D: 60-69.9; E: ≤59.9. Requests for incompletes (I) and withdrawal (W) must be made in accordance with university policies which are available at <http://catalog.arizona.edu/policy-type/grade-policies>.



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Scheduled Topics

1. Preliminaries: Computer Number Representation and Roundoff; Survey of Matrix Theory
 2. Linear Equations
 3. Polynomial Interpolation
 4. Numerical Differentiation and Integration
 5. Solutions of Nonlinear Equations
 6. Complex Numbers
 7. MATLAB and Implementation
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Classroom Attendance

- If you must miss the equivalent of more than one week of class (2 days in our course), you should contact the Dean of Students Office DOS-deanofstudents@email.arizona.edu to share documentation about the challenges you are facing.
- Non-attendance for any reason does **not** guarantee an automatic extension of due date or rescheduling of examinations/assessments.
 - Please communicate and coordinate any request directly with your instructor.
- Visit the [UArizona COVID-19](#) page for regular updates about COVID-19.

Academic advising

If you have questions about your academic progress this semester, please reach out to your academic advisor (<https://advising.arizona.edu/advisors/major>). Contact the Advising Resource Center (<https://advising.arizona.edu/>) for all general advising questions and referral assistance. Call 520-626-8667 or email to advising@.arizona.edu

Life challenges

If you are experiencing unexpected barriers to your success in your courses, please note the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office can be reached at 520-621-2057 or DOS-deanofstudents@email.arizona.edu.

Physical and mental-health challenges

If you are facing physical or mental health challenges this semester, please note that Campus Health provides quality medical and mental health care. For medical appointments, call 520-621-9202. For After Hours care, call (520) 570-7898. For the Counseling & Psych Services (CAPS) 24/7 hotline, (520) 621-3334.

Absence and Class Participation Policy

Participating in the course and attending lectures and other course events are vital to the learning process. As such, attendance is required at all lectures and discussion section meetings. Absences may affect a student's final course grade. If you anticipate being absent, are unexpectedly absent, or are

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unable to participate in class online activities, please contact me as soon as possible. To request a disability-related accommodation to this attendance policy, please contact the Disability Resource Center at (520) 621-3268 or drc-info@email.arizona.edu. If you are experiencing unexpected barriers to your success in your courses, the Dean of Students Office is a central support resource for all students and may be helpful. The Dean of Students Office is located in the Robert L. Nugent Building, room 100, or call 520-621-7057.

The UA's policy concerning Class Attendance, Participation, and Administrative Drops is available at: <http://catalog.arizona.edu/policy/class-attendance-participation-and-administrative-drop>. The UA policy regarding absences for any sincerely held religious belief, observance or practice will be accommodated where reasonable, <http://policy.arizona.edu/human-resources/religious-accommodation-policy>. Absences pre-approved by the UA Dean of Students (or Dean Designee) will be honored. See: <https://deanofstudents.arizona.edu/absences>

Classroom Behavior Policy

To foster a positive learning environment, students and instructors have a shared responsibility. We want a safe, welcoming and inclusive environment where all of us feel comfortable with each other and where we can challenge ourselves to succeed. To that end, our focus is on the tasks at hand and not on extraneous activities (i.e. texting, chatting, reading a newspaper, making phone calls, web surfing, etc.). Students are asked to refrain from disruptive conversations with people sitting around them during lecture. Students observed engaging in disruptive activity will be asked to cease this behavior. Those who continue to disrupt the class will be asked to leave lecture or discussion and may be reported to the Dean of Students.

Threatening Behavior Policy

The UA Threatening Behavior by Students Policy prohibits threats of physical harm to any member of the University community, including to one's self. See: <http://policy.arizona.edu/education-and-student-affairs/threatening-behavior-students>.

Accessibility and Accommodations

Our goal in this classroom is that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on disability, please let me know immediately so that we can discuss options. You are also welcomed to contact Disability Resources (520-621-3268) to establish reasonable accommodations. For additional information on Disability Resources and reasonable accommodations, please visit <http://drc.arizona.edu/>. If you have reasonable accommodations, please plan to meet with me by appointment or during office hours to discuss accommodations and how my course requirements and activities may impact your ability to fully participate.

Code of Academic Integrity

Students are encouraged to share intellectual views and discuss freely the principles and applications of course materials. However, graded work/exercises must be the product of independent effort unless



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otherwise instructed. Students are expected to adhere to the UA Code of Academic Integrity as described in the UA General Catalog. See: <http://deanofstudents.arizona.edu/academic-integrity/students/academic-integrity>.

The University Libraries have some excellent tips for avoiding plagiarism available at:

<http://new.library.arizona.edu/research/citing/plagiarism>

Selling class notes and/or other course materials to other students or to a third party for resale is not permitted without the instructor's express written consent. Violations to this and other course rules are subject to the Code of Academic Integrity and may result in course sanctions. Additionally, students who use D2L or UA email to sell or buy these copyrighted materials are subject to Code of Conduct Violations for misuse of student email addresses. This conduct may also constitute copyright infringement.

UA Nondiscrimination and Anti-harassment Policy

The University is committed to creating and maintaining an environment free of discrimination, <http://policy.arizona.edu/human-resources/nondiscrimination-and-anti-harassment-policy>

Our classroom is a place where everyone is encouraged to express well-formed opinions and their reasons for those opinions. We also want to create a tolerant and open environment where such opinions can be expressed without resorting to bullying or discrimination of others.

Name and pronoun usage statement. This course supports elective gender pronoun use and self-identification; rosters indicating such choices will be updated throughout the semester, upon student request. As the course includes group work and in-class discussion, it is vitally important for us to create an educational environment of inclusion and mutual respect.

Inclusive Excellence is a fundamental part of the University of Arizona's strategic plan and culture. As part of this initiative, the institution embraces and practices diversity and inclusiveness. These values are expected, respected and welcomed in this course.

Additional Resources for Students

UA Academic policies and procedures: <http://catalog.arizona.edu/2015-16/policies/aaindex.html>

Student Assistance and Advocacy information: <http://deanofstudents.arizona.edu/student-assistance/students/student-assistance>

Office of Diversity: : <http://diversity.arizona.edu>

Campus Health: <http://www.health.arizona.edu/counseling-and-psych-services>

Subject to Change Statement

Information contained in the course syllabus, other than the grade and absence policy, may be subject to change with advance notice, as deemed appropriate by the instructor.