

MAE 2360-005/006 NUMERICAL ANALYSIS AND PROGRAMMING, SPRING 2017
Department of Mechanical and Aerospace Engineering
University of Texas at Arlington

COURSE SYLLABUS

Instructor: Dr. Adrian Rodriguez
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Office Hours: MWF 10:00 – 11:00 a.m. (or by appointment)

Course Info:	MAE 2360-005 (Lecture)	MAE 2360-006 (Lab)
	Class location: NH 111	Class location: WH 406
	Class times: MW 8:00 – 8:50 a.m.	Class times: Th 2:00 – 4:50 p.m.

Course Website: Blackboard (primary); omega.uta.edu/~adrian/mae2360.html (secondary)

Description: Utilization of digital computers in mechanical and aerospace engineering. Computational algorithms and their representation in FORTRAN, C, and Matlab. Introduction to linear algebra and numerical methods.

Learning Outcomes: **Student** This course is intended to help students develop basic programming skills and be able to apply them to solve algebraic equations using numerical methods.

Textbook: None required.

References:

- “C Programming Language (ANSI C)” by B. W. Kernighan and D.M. Ritchie, Prentice Hall, 2nd ed. (1998).
- “Introduction to Engineering Programming: In C, MATLAB, JAVA” by M. Austin and D. Chancogne, John Wiley & Sons, Inc. (1999).
- “Applied Numerical Methods with MATLAB for Engineers and Scientists” by S. Chapra, McGraw-Hill (2012).

Prerequisites: C or better in MATH/HONR-SC 2425 (or concurrent enrollment).

Attendance/Grading:

1. Class attendance for lecture is not required but strongly encouraged. I will periodically take attendance during lab lecture and will count as 5% of your overall grade.
2. Homework will be posted on the course website and is due before the beginning of lecture via Blackboard (do not submit hard copy in class, it will not be accepted). Submission file should be in PDF format and include: copy of code and example run result. Late homework will be penalized 10% per day that it is late (max 3 days – after that it will not be accepted).
3. All exams will be open notes.

- Any makeup exam will be given only under extenuating circumstances. Please notify me at least one week in advance via email if you anticipate an excused absence.
- This course requires that students submit designated assignment(s) in order to assess specific the course objectives – referred to as “key assignments”. The last homework assignment will be designated as a key assignment. All students must submit the key assignment.

GRADING POLICY

Attendance/Participation	5%
Homework/Lab Reports	20%
Exams (2)	25%
Final Exam	25%
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Total	100%

GRADING SCALE

A	90 or above
B	80 – 89
C	70 – 79
D	60 – 69
F	59 or below

Woolf Hall 406 – Computer Teaching Lab Policies (**Extremely Important**):

- WH 406 must be officially reserved for all events including classroom instructions due to the limited space equipped with computers and scheduling logistics. Please see Lanie or Janet for reservation.
- WH 406 is a computer teaching lab. Faculty and Instructors must be present while students occupy this room. When an instructor leaves the room, students are to leave WH 406 as well. Instructors should encourage students to use WH 320 if needed after class is over, is available for MAE student access 24/7.
- WH 406 doors are not to be propped open. Propped doors are considered a security breach by the UTA Police Department and a hazard violation by the Fire Inspector.
- Food, drink, and tobacco products are prohibited in WH 406.

Drop Policy: Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://web.uta.edu/aao/fao/>).

Disability Accommodations: UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a **letter certified** by the Office for Students with Disabilities (OSD). Only those students who have officially documented a need for an accommodation will have their request honored. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting:

The Office for Students with Disabilities, (OSD)

www.uta.edu/disability or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services, (CAPS)

www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy: *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit uta.edu/eos.*

Title IX Policy: The University of Texas at Arlington (“University”) is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.*

Academic Integrity: Students enrolled in this course are expected to adhere to the UT Arlington Honor Code:

I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.

I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University (<https://www.uta.edu/conduct/>).

Any act of academic dishonesty will result in an F for this course.

Electronic Communication: UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit <http://www.uta.edu/news/info/campus-carry/>.

Student Feedback Survey: At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish

student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

Final Review Week: A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

Emergency Exit Procedures: Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, which is located to the right toward the building's central stairwell. When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Student Support Services: UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include [tutoring](#), [major-based learning centers](#), developmental education, [advising and mentoring](#), personal counseling, and [federally funded programs](#). For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, view information at www.uta.edu/universitycollege/resources/index.php, or send email to resources@uta.edu.

The IDEAS Center (2nd Floor of Central Library) offers **free** tutoring to all students with a focus on transfer students, sophomores, veterans and others undergoing a transition to UT Arlington. To schedule an appointment with a peer tutor or mentor email IDEAS@uta.edu or call (817) 272-6593.

Course Schedule** (Updated: 04/16/2017)

Important dates: Census Date (02/01), Spring Break (03/13-03/18), Drop Date (03/31), Last Class Day (05/05)

	Monday	Wednesday	Thursday	
JANUARY	16	18	19	P A R T I - P R O G R A M M I N G
	MARTIN LUTHER KING DAY	Syllabus, Course Objectives	No Lab	
	University Closed			
	23	25	26	
	Lecture 01	Lecture 02	Lab Lecture 01	
FEBRUARY		Assign Homework 1	Assign Lab 1	
	30	1	2	
	Lecture 03	Lectures 03-04	Open Lab (no lecture)	
		HW 1 Due; Assign HW 2		
	6	8	9	
	Lecture 04-05	Lecture 05-06	Lab Lecture 02	
			Lab 1 Due; Assign Lab 2	
	13	15	16	
	Lecture 06	Exam 1 Review	Exam 1 (Lab); Lectures 01-06	
	HW 2 Due; Assign HW 3			
MARCH	20	22	23	P A R T I I - N U M E R I C A L A N N A L Y S I S
	Lecture 07	Lecture 08	Open Lab (no lecture)	
	HW 3 Due	Assign HW 4	Lab 2 Due	
	27	1	2	
	Class Cancelled (no lecture)	Lecture 09	Open Lab (no lecture)	
		HW 4 Due; Assign HW 5		
	6	8	9	
	Lecture 09	Lecture 10	Open Lab (no lecture)	
	13	15	16	
	SPRING	HOLIDAY	HOLIDAY	
APRIL	HW 5 Due; Assign HW 6			
	20	22	23	
	Lecture 11	Lecture 12	Lab Lecture 03	
			Assign Lab 3	
	27	29	30	
	Lecture 13	Exam 2 Review	Exam 2 (Lab); Lectures 07-12	
	HW 6 Due; Assign HW 7			
	3	5	6	
	Lecture 14	Lecture 15	Lab Lecture 04	
	HW 7 Due; Assign HW 8		Lab 3 Due; Assign Lab 4	
MAY	10	12	13	
	Lecture 16	Lecture 17	Open Lab (no lecture)	
		HW 8 Due; Assign HW 9		
	17	19	20	
	Lecture 18	Lecture 19	Open Lab (no lecture)	
		HW 9 Due	Lab 4 Due	
	24	26	27	
	Lecture 20, Assign HW 10*	Lecture 21	Open Lab (no lecture)	
	1	3	4	
	Final Exam Review	No Lecture; Homework 10* Due	Final Exam (Lab)	

**As the instructor, I reserve the right to adjust the course schedule to serve the educational needs of the students in this course.