

Numerical Analysis-Math4329

Instructor: Dr. Asante

Time and Place: Class is Asynchronous Online

Lecture notes and/or videos will be posted on Blackboard.

Zoom link: included on Blackboard.

Office hours: By Appointment

Prerequisite: Calculus I,II,III and MATH 3323.

E-mail address: Blackboard e-mail.

Communication: via blackboard e-mail and blackboard announcements; check blackboard daily for news and new information.

Textbook: [Elementary Numerical Analysis 3rd Edition](#)

Open-Source Materials: [AN INTRODUCTION TO NUMERICAL METHODS AND ANALYSIS](#)

Technology: Blackboard for assignments, grade posting, communication. Microsoft Word for typing responses or other tech tools to scan or take pictures of your work as jpeg and a video recording device (zoom, blackboard ultra...your phone), and an online storage site (cloud, dropbox, UTEP onedrive...). All class-works/assignments including exams are to be submitted to blackboard. No paperwork is collected as pdf or a jpeg file. Make sure to have either a laptop or a smart phone to be able to submit your work to blackboard.

Download Matlab: visit <https://www.mathworks.com/academia/tah-portal/university-of-texas-at-el-paso-40735445.html> and follow the prompts to download and install Matlab.

Course Description:

In this course, we study approximate solutions to mathematical problems that cannot be solved or are difficult to solve analytically. We will look at algorithms for solving basic problems and

analyze the errors that are introduced. We will also look at the structure of computers and the implications of using them in numerical calculations.

There are three main objectives of this course for students as outlined in the text.

1. Students should obtain an intuitive and working understanding of some numerical methods for the basic problems of numerical analysis.
 2. Students should gain some appreciation of the concept of error and of the need to analyze and predict it.
 3. Students should develop some experience in the implementation of numerical methods by using a computer. This includes an appreciation of computer arithmetic and its effects.
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Course Requirements

Outline of Class Activities including some or all listed below (not necessarily in the order listed):

NOTE: COURSE TOOLS AND ASSIGNMENTS ARE ORGANIZED WITHIN WEEKLY FOLDERS ON BLACKBOARD. You will find lecture notes, assignments, exam folders and other documents in these folders.

Course tools mentioned below can be found on homepage, blackboard.

1. **Recorded Lectures posted on Fridays and class time on Tuesdays to be used to watch the lecture recordings and work on the questions embedded in the recordings. During this time you can join me on zoom classroom to ask your course related questions.**

They are posted on blackboard under each week's folder. *IF IT IS DIFFICULT TO LISTEN DIRECTLY FROM THE HOST SITE, DOWNLOAD THEM TO YOUR COMPUTER AND THEN LISTEN.*

2. **Homework based on sections covered in the week- Due Friday by 11:59 pm.**

Make-up: No Make-up allowed: No Exception!!!

3. MATLAB-based Investigations:

There will be a few Investigations where you will be asked to modify given algorithms (you are not required to know MATLAB full; algorithms will be self explanatory) and asked to observe and conjecture on computational behaviours. They are online and will have about a week to complete them. You are asked to submit MATLAB files of your work so that we can run your commands.

Software:

You will need access to MATLAB either at UTEP (you can use computers at Bell Hall Computer room) or have a copy of MATLAB on your computer. UTEP provides the download of MATLAB free of charge to its Students. For that, you will need to follow instructions at the link below. Process takes time, make sure to start the process right away.

Students should navigate to <https://www.mathworks.com/academia/tah-portal/university-of-texas-at-el-paso-40735445.htm> |

4. **Midterm Exam-on Blackboard:** There will be two Midterm Exams, one in October and the other before Thanksgiving. For the Midterm, you will be required to use Respondus lockdown browser so make sure you have it installed. Respondus lockdown browser is a virtual proctoring tool with video recording capability. The mode of transmission for the midterm exams will either be via uploading your solutions or using the Blackboard editor to type in your solution.

Make-up: You are allowed to make up **only one exam provided that the exam is missed due to an emergency and a document describing the nature of the emergency is provided in advanced** NO EXCEPTION! Make-up has to be done before the next exam scheduled time.

7- Final Exam-online-due on the day of the final exam date set by UTEP.

There will be a **comprehensive final exam**- Take home, assigned on the last class meeting of the semester and due by 11:59 pm on the day of the final exam scheduled for this course. Final exam will be a take home exam and will have a MATLAB programming component.

OTHERS

8. *Announcements:*

Announcements option of blackboard may be used to post class announcements. They will also be emailed as reminders. Check blackboard daily.

9. *Blackboard Calendar*

Blackboard calendar can be checked regularly for upcoming assignments, meetings, and other course related activities.

Grading Policy

It is your responsibility to maintain the grade average required by a scholarship, other financial supports or any other requirements.

Course grade will be assigned strictly based on class average obtained using the grade calculation formula given below using only the grades posted on blackboard. Your scholarship, financial support requirements or any other personal requirements will not be under consideration when assigning final grades.

Class Average will be calculated strictly based on the formula:

Grade Distribution:

Homework: 50%

Midterm: 30%

Final Exam: 20%

NOTE: Total column values given on blackboard is NOT considered in class-average calculation.

UTEP Letter Grade Distribution

(Letter grades are assigned strictly based on UTEP grade distribution. NO EXCEPTION!)

90-100 A

80-89 B

70-79 C

60- 69 D

<60 F

Drop Deadline: The last day to drop the course without a “W” is **11/03/2023**. It is the policy of the University and the College of Science that **after the drop date, there is absolutely no drop with a “W”**. Instructor will automatically assign an “F” for course drops.

Addressing Concerns

All course related concerns must be addressed before the end of the semester that this course is offered **BY THE END OF THE FINAL EXAM SCHEDULE DATE**. After this date, there will not be any course related considerations or changes. No Exception!

In addressing concerns, follow the steps below:

1. First, refer to the syllabus regarding your concerns about course related tasks. If syllabus does not address your concerns, then send an email request for an online meeting.
2. Concerns about the exams (about the final exam, within a week after the release of the final exam score) and other graded assignments must **be addressed within a week of receiving the grades**. They must be addressed during an online meeting or via email (through blackboard email). They can only be addressed, if actual graded work is presented. After a week of the posting of an assignment, there will be no further consideration of the assignment. No EXCEPTION!

Make sure to stay on top of all your recorded grades and incase of any issue, have them addressed within a week of them posted on blackboard.

FREQUENTLY ASKED Q &A and SUGGESTIONS

1. SUBMIT WORK AT LEAST 30 MINUTES BEFORE THE DUE-TIME TO HAVE ENOUGH TIME TO ADDRESS TECHNOLOGY RELATED ISSUES.
 2. INCASE OF DIFFICULTIES SUBMITTING, TRY USING A DIFFERENT WEBSERVER; A DIFFERENT COMPUTER, OR A PHONE.
 3. WORKS STAMPED AS LATE BY THE SYSTEM WILL BE COUNTED LATE AND YOUR WORK WILL RECEIVE A PENALTY. NO EXCEPTION!
 4. SUBMIT WORK USING WORD, JPEG OR PDF. IF YOU SUBMIT A DIFFERENT FILE FORMAT AND WE CANNOT OPEN YOUR FILE, YOU WILL RECIEVE ZERO FOR THE ASSIGNMENT! NO EXCEPTION!
 5. **AFTER SUBMITTING YOUR WORK ON BLACKBORAD, CHECK BACK THAT YOUR FILE IS NOT CURRUPTED AND YOU ARE ABLE TO OPEN THE FILE. IF YOU ARE NOT ABLE TO, WE WONT BE ABLE TO EITHER.**
- IF WE CANNOT OPEN YOUR FILE THEN YOU WILL RECIEVE ZERO FOR THE ASSIGNMENT! NO EXCEPTION!**
6. **NO LATE SUBMISSIONS ACCEPTED! NO EXCEPTION!!!!**
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ADDITIONAL CLASS RULES

1. All grades are posted on blackboard, and they can be accessed by you until about two to three days after the final exam dates.
 2. **ALL CHANGES, CORRECTIONS, SUBMISSIONS, AND CONCERNS SHOULD BE FINALIZED BY THE FINAL EXAM DATE SET BY UTEP FOR THIS CLASS. NO CONCERNS WILL BE CONSIDERED AFTER THIS DATE (Check myutep.edu site for the final exam date).**
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Disability Accommodation: *If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East, Room 106. For additional*

information, please visit the CASS website at www.sa.utep.edu/cass. The student is responsible for presenting to the instructor any DSS accommodation letters and instructions.

There is no need to ask for accommodations requiring lecture notes and/or longer time on assessments due to the online nature of the course and assignments, lecture recordings are provided online and longer time for assignments given for everyone enrolled in this course.

NOTE: Only for midterm exams, if you need them to be administered at CASS center, talk to CASS and once CASS sends me an email, make sure to talk to me and inform CASS at least a week before the exam time to send me a request for me to fill out an exam proctoring request. If it is not done a week in advanced, I am not able to have you take the exam at CASS. You will need to take the exam in class.

The Career Center can offer a wide-array of presentations to meet career development goals, which can be incorporated into the classroom. The workshops we offer include Crafting an Effective Résumé, Mastering the Interview, Securing an internship, working for the Federal Government, Applying to Graduate School, and much more. A complete list is available here: <https://www.utep.edu/student-affairs/careers/events/career-education-workshops.html>

In addition to our presentations, we provide one-on-one assistance to students with résumé reviews, letters of intent, CV review, grad school preparation, etc. If you would like to have your students submit their résumé for review prior to the fall CAREER EXPO, we will be partnering with the El Paso Society for Human Resource Management (EPSHRM) and UTEP Alumni to host a résumé clinic for Tuesday, September 17 through Thursday, September 19 at the Career Center.

Academic dishonesty: It is UTEP's policy, and mine, for all suspected cases or acts of alleged dishonesty to be referred to the Office of Student Conduct and Conflict Resolution for hmw and appropriate disposition. See Section II.1.2.2 of the Handbook of Operating Procedures.

Additionally, any actions/behaviors/comments that cause disturbance in class/affect class performance adversely are against the UTEP rules and regulations, and may result in complete drop (by the Instructor/university officials) with either a grade of F from the class. You are responsible with the course material covered/presented in class, on quizzes, and on homework and course related tasks.

COVID-19 PRECAUTION STATEMENT

Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office

can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.

The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.

LAST but not LEAST, WORDS OF ADVISE:

DO NOT WAIT TILL THE LAST WEEK OF CLASSES TO DISCUSS YOUR OVERALL seek help IN THE COURSE. If you come early in the semester, you may get guidance and help both from the instructor and the Teaching Assistant. This will not be the case if you come towards the end of the semester.

This syllabus is subject to changes when necessary.

Visit the UTEP Academic Calendar for Important Dates: <https://www.utep.edu/student-affairs/registrar/Academic%20Calendars/academic-calendar.html>

Week 1	08/28 – 09/01	Section 1.1,1.2	Taylor Polynomials
Week 2	09/04 - 09/08	Section 2.1,2.2	
Week 3	09/11 – 09/15	Section 3.1,3.2	Error and Computer Arithmetic
Week 4	09/18 – 09/22	Section 3.3,3.4	
Week 5	09/25 – 09/29	Section 3.5,4.1	RootFinding/Interpolation and Approximation
Week 6	10/02 – 10/06	Section 4.2,4.3/ Midterm 1(Chapter 1,2,3,4)	Interpolation and Approximation
Week 7	10/09 – 10/13	Section 5.1,5.2	Numerical integration and Differentiation
Week 8	10/16 – 10/20	Section 5.3,5.4	
Week 9	10/23 – 10/27	Section 6.1,6.3	Solutions of Systems of Linear Equations
Week 10	10/30 – 11/03	Section 6.6, 7.2	

Week 11	11/06 – 11/10	Section 7.3, 8.2	Ordinary Differential Equations
Week 12	11/13 – 11/17	Section 8.5	
Week 13	11/20 – 11/24	Section 8.6	
Week 14	11/27 – 12/01	Section 8.7/ Midterm 2 (Chapter 5,6,7,8)	
Week 15	12/04 – 12/08		
Week 16	12/11 – 12/15	Final Exams Week	Final Exams Week