

THE UNIVERSITY OF TEXAS AT EL PASO
COLLEGE OF SCIENCE
DEPARTMENT OF MATHEMATICAL SCIENCES

Course #: Math 5329 CRN 10690 / Math 6329 CRN 14019
Course Title: Numerical Analysis
Credit Hrs: 3
Term: Fall 2025

Course Meetings & Location: MW 10:30 am – 11:50 am, Bell Hall 130A

Prerequisite Courses: Math 3323 with a grade of at least C.

Course Fee (if applicable): None

Instructor: Dr. Kenneth Duru
Office Location: Bell Hall 211
Contact Info: Email: kduru@utep.edu
Emergency Contact: (915)747-5761 (Math Department)

Office Hours: MW: 12:00 pm – 1:00 pm, or by appointment

Textbook (s), Materials: *Scientific Computing: An Introductory Survey*, Second edition,
by Michael T. Heath; *Instructor's Lecture Notes*

Other References: math.utep.edu/faculty/sewell/5329/5329d.htm

Course Website: Blackboard
Lecture notes will be posted here. However, please take down your own notes during the lectures.

Course Objectives (Learning Outcomes):

1. Gain a solid understanding of concepts and methodologies of numerical analysis, and scientific computing.
2. Gain experience in implementing and observing the numerical performance of the various numerical methods using Python and Jupyter Notebook.
3. Apply the numerical methods to application problems.

Course Activities/Assignments: **Homework/Lab: Posted weekly on Blackboard**, due 10am on Wednesday.
No late homework/Lab will be accepted.
Your homework should show all necessary work you used to solve problems, the reasoning and logic underlying all arguments should be clearly spelled out.
Assignments involving computer programming must be done in Python and Jupyter Notebooks, and the codes along with the outputs should be attached to the homework.

Assessment of Course Objectives: There will be one midterm exams and a final exam.
They are closed-book exams; hence no books or notes are allowed.
You can use a basic scientific calculator without graphing or programmable functions. More information will be provided as the exam dates approach.

Midterm Exam
Final Exam

Grading Policy: Homework/Labs	45%	Grading Scale: 90-100%	→ A
Midterm Exam	20%	80-89%	→ B
Final Exam	30%	70-79%	→ C
Instructor Assessment	5%	60-69%	→ D
		<60%	→ F

Make-up Policy: **No make-up/alternate exam** will be given. If you have an emergency on the exam day, you must contact me immediately, preferably before the exam.

- Course Topics:
1. Numbers and expression
 - Floating point numbers for humans and computers
 - Rounding errors
 - Conditioning and stability
 2. Equations
 - Linear systems of equations
 - Nonlinear equations
 - Direct and iterative methods
 3. Approximation
 - Polynomial approximations of real functions
 - Numerical differentiation
 - Numerical integration
 4. Ordinary differential equations
 - Application of the methods from the previous chapters
 - Stability and convergence analysis

Schedule: Week 01-04: Chapter 1. Numbers and expression
Week 05-07: Chapter 2. Equations

Midterm Exam (Oct 15)

Week 08-11: Chapter 3. Approximation
Week 11-15: Chapter 4. Ordinary differential equations

Week 16: Final Exam (Dec 12)

Course Drop Policy: The Drop Date for this semester is **October 31, 2025, before 5pm local time.** No drops will be approved after this date.

Attendance Policy: It is student's responsibility to attend every class. Students are expected to arrive for class on time and to remain for the class entire period.

Academic Integrity Policy: Academic dishonesty is prohibited and is considered a violation of the UTEP Handbook of Operating Procedures. It includes, but is not limited to, cheating, plagiarism, and collusion. Cheating may involve copying from or providing information to another student, possessing unauthorized materials during a test, or falsifying research data on laboratory reports. Plagiarism occurs when someone intentionally or knowingly represents the words or ideas of another as ones' own. Collusion involves collaborating with another person to commit any academically dishonest act. Any act of academic dishonesty attempted by a UTEP student is unacceptable and will not be tolerated. All suspected violations of academic integrity at The University of Texas at El Paso must be reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#) for possible disciplinary action. To learn more, please visit [HOOP: Student Conduct and Discipline](#).

AI Policy: Use of AI technologies or automated tools, particularly generative AI such as ChatGPT or DALL-E, is not allowed for assignments in this class. Each student is expected to use critical and creative thinking skills to complete tasks and not rely on computer-generated ideas. Any direct use of AI-generated materials submitted as your own work will be treated as plagiarism and reported to the [Office of Student Conduct and Conflict Resolution \(OSCCR\)](#).

Civility Statement: Please do not use cell phones or laptops during class. Cell phones should be set to silent or vibrate, and any calls should be taken outside of class. Please do not wear headsets or blue tooth devices during class.

Disability Statement: The University is committed to providing reasonable accommodations to students with documented disabilities. Students who become pregnant may also request reasonable accommodations, in accordance with state and federal laws and regulations and University policy. Accommodations that constitute undue hardship are not reasonable. To make a request, please register with the UTEP Center for Accommodations and Support Services (CASS). Contact CASS at 915-747-5148, email them at cass@utep.edu, or apply for accommodations online via the CASS portal.

Military Statement: If you are a military student with the potential of being called to military service and/or training during the semester, please contact me by the end of the first week of class.

Illness Precautions: Please stay home if you have symptoms of a communicable illness, such as COVID-19. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations.