

University of Tennessee

Math 471 Numerical Analysis

Section: 002; CRN: 43157; Meets: TR 12:40 PM - 1:55 PM

Syllabus Fall 2019

Welcome to Our Numerical Analysis Class

Course Description

Prerequisites: Calculus II, ODEs and Matrix Algebra (Math 200, 251 or 257).

Instructor: Dr. Wenbo Li

Office Hours and Location: Monday 9:40am-11:00am, Tuesday 2:10pm-3:40pm, Thursday 3:50pm-5:00pm in Ayres Hall 207 & by appointment.

Ways to contact: wli50@utk.edu, or messages on canvas.

Course Communications: I will post course materials, grades, and class announcements on Canvas. You are always welcome to contact me through email or canvas, but if you have a question about math, I think a better way is to come to my office hours or make an appointment so we can discuss it face to face.

Student Learning Outcomes: Upon completion of Math 471, students will be able to

- Approximate functions by polynomials based on a variety of methods
- Compute errors for different methods of numerical differentiation and integration
- Develop and investigate algorithms to solve initial value problems for ODEs
- Apply mathematical theorems to analyze numerical algorithms

Materials: The textbook (highly recommended) for this class is: *An Introduction to Numerical Analysis, 1st Edition*, Endre Suli and David Mayers, Cambridge University Press. We will be covering chapters 6, 7, 9, 10, 11, and 12. Another reference (not required) is the book *Numerical Analysis* by Richard L. Burden, J. Douglas Faires and Annette M. Burden. I will also upload my own notes and other supplementary materials for this class on canvas.

Assessment and Evaluations Methods:

Collected homework (15%) + Quizzes (15%) + Midterm exams (40%) + Final (30%)

Homework: Homework problems will be assigned on canvas, and there will be both theoretical and computational problems. **Coding is needed to complete computational assignments, and I highly recommend you to use MATLAB although C or Python or Fortran is also allowed.** I will only collect and grade some problems, but you are required to do all the problems and it helps with the quizzes and exams. I encourage group participation in the solution of exercises, but you have to write down solutions on your own in the end.

Quizzes: there will be 5-6 quizzes in total, and I will announce the date of quizzes in advance.

Midterms: there will be two in class midterm exams on Oct 8 and Nov 19.

Final: a comprehensive exam covering all the materials will be at 12:30 p.m. – 2:30 p.m. Wednesday, December 11.

Letter grades will be based on the following scale:

Grade	A	B+	B	C+	C	D+	D	F
%-Score	90+	87-89	80-86	77-79	70-76	67-69	60-66	0-59

I reserve the right to change this scale, provided the change benefits all students. All grades will be made available online.

Calculators: The use of a calculator as an auxiliary tool is allowed in this class. Devices with Internet capability such as cellphone calculators are prohibited during the quizzes and exams. To obtain credit, all the steps leading to the solution of a problem must be clearly written.

Learning Environment and Classroom Expectations/Etiquette:

Everyone is expected to maintain an atmosphere that fosters a positive learning environment.

- Attendance to every class is mandatory.
- Questions are welcomed
- Reading ahead textbook materials in preparation for each class is highly encouraged
- Eating food in the classroom is not allowed.

Key Dates - Fall 2019: [UT Calendar](#)

Make Up Policies: There will be NO make up for the quizzes. Late homework submission is not acceptable unless for a valid reason. Make ups for the in-class exams and final will be given only if a student can present evidence that an absence was caused by serious illness, a death in the immediate family, religious observance, or participation in University activities at the request of University authorities. For an illness, you must present a signed statement from a doctor that your illness was sufficiently serious to make you miss class. A note saying only that you visited the doctor or the Health Center will not Suffice.

[Campus Syllabus:](#)

STUDENTS WITH DISABILITIES -- <http://sds.utk.edu>

“Any student who feels he or she may need an accommodation based on the impact of a disability should contact the Student Disability Services (SDS) at 865-974-6087 in 100 Dunford Hall to document their eligibility for services. Student Disability Services will work with students and faculty to coordinate reasonable accommodations for students with documented disabilities.”

ACADEMIC INTEGRITY

Each student is responsible for his/her personal integrity in academic life and for adhering to UT’s Honor Statement. The Honor Statement reads: “An essential feature of the University of Tennessee, Knoxville is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the university, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.”

How to be Successful in this Course:

- Show up in class and be on time.
- Listen carefully, take notes, and ask questions during the lecture.
- Think, work smarter and discuss with classmates after class.
- Review and rework problems that you got wrong.
- Start preparing for exams early.

If the instructor finds it necessary to make informational changes (e.g. office hours, schedule adjustments) due to students’ needs or unforeseen circumstances, students will be notified in writing/email of any such changes.

Plan for This Semester (may not be accurate):

Introduction: Aug 22 - Aug 27

Chapter 6: Aug 29 - Sep 10

Chapter 7: Sep 12 - Sep 24

Chapter 9: Sep 26 - Oct 15

Midterm 1: Oct 8

Chapter 10: Oct 22 - Oct 31

Chapter 12: Nov 5 - Nov 26

Midterm 2: Nov 19

Review: Dec 3

Final Exam: Dec 11 (12:30 p.m. – 2:30 p.m.)