Course Syllabus (UPDATED)

Course Information

CS/MATH 4334.001
Numerical Analysis
Fall 2022

Professor Contact Information

Instructor:	Dr. Yifei Lou
E-mail:	yifei.lou@utdallas.edu
Phone:	972-883-6445
Office:	FO 2.408E
Office Hours:	M 10–11am and W 1:30-2:30pm in office or on Teams

Course Pre-requisites, Co-requisites, and/or Other Restrictions

Pre-requisites: (MATH 2370 or CS 1324 or CS 1325 or CE 1337 or CS 1337) and (MATH 2418 and MATH 2451 or MATH 3351). Matlab familiarity for homeworks and projects.

Course Description

Solution of linear equations, roots of polynomial equations, interpolation and approximation, numerical differentiation and integration, solution of ordinary differential equations, computer arithmetic, and error analysis.

Required Textbook

Numerical Mathematics and Computing, 7th Edition, by Cheney and Kincaid. Publisher: Brooks/Cole, 2013.

The course will cover selected sections from Chapters 1-8 of Cheney and Kincaid.

Grading Policy

Grade is based on homework scores (36%), a midterm exam (24%) and a final exam (40%). No late homework will be accepted except for emergency. Only complete, correct, and neatly written solutions will be given a full score. **Homework is due roughly every two weeks but I highly recommend you work on it well in advance!** You are encouraged to work together on these problems, but you must turn in your own work. Both midterm and final exams will be closed-note closed book. The final exam is comprehensive.

Guideline for Letter Grades: A: 90%+, B: 80%+, C: 70%+. A curve may be used if appropriate.

Tentative schedule

Wk	Mon	Lecture	Wed	Lecture	Notes
1	8/22	Overview	8/24	Taylor (1.2)	
2	8/29	Number rep. (1.3)	8/31	Significance (1.4)	
3	9/5	**Holiday**	9/7	Bisection (3.1)	
4	9/12	Matlab	9/14	Newton (3.2)	**HW1**
5	9/19	Secant (3.3)	9/21	Polynomial (4.1)	
6	9/26	Newton form (4.1)	9/28	Error analysis (4.2)	**HW2**
7	10/3	Trapezoid (5.1)	10/5	Simpson (5.3)	
8	10/10	Gaussian (5.4)	10/12	Gaussian (5.4)	**HW3**
9	10/17	Midterm review	10/19	**Midterm**	
10	10/24	Gaussian elimination (2.1)	10/26	Structured system (2.3)	**HW4**
11	10/31	Pivoting (2.2)	11/2	Pivoting (2.2)	
12	11/7	Factorization (8.1)	11/9	Eigenvalue (8.2)	
13	11/14	Power method (8.3)	11/16	Iterative (8.4)	**HW5**
14	11/21	**Fall break**	11/23	**Fall break**	
15	11/28	Taylor (7.1)	11/30	RK method (7.2)	
16	12/5	variants (7.3)	12/8	Review	**HW6**
	12/12	**2:00-4:45pm Final Exam**			

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

"As a Comet, I pledge honesty, integrity, and service in all that I do."

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to http://go.utdallas.edu/syllabus-policies for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.