

Syllabus

MATH 5339 NUMERICAL ANALYSIS (II)

Spring 2018

Instructor: Dr. Chaoqun Liu
Office: PKH 456
Phone: 272-5151
Email: cliu@uta.edu
Web: <http://www.uta.edu/math/pages/faculty/cliu.htm>
Office Hours: 2:00-3:0 PM, TTH or by appointment
Section Information: Math 5339-001
Class Number: 26836
Classroom: PKH 109
Meeting Time: 12:30-1:50 PM, Tuesday & Thursday

1. Description of Course Content:

- Direct methods for solving linear systems
- Iterative techniques in matrix algebra
- Approximation theory
- Approximation eigenvalues
- Numerical solutions of nonlinear systems of equations
- Introduction to numerical solutions for PDEs

2. Student Learning Outcome:

- Capability to write short program to solve linear systems by direct methods
- Capability to write short program to solve linear systems by iterative methods
- Capability to write short program for solving non-linear systems of equations
- Capability to write short program for function approximation
- Capability to write short program to find approximation of eigenvalues
- Capability to write short program to solve PDEs
- Capability to conduct some error analysis for numerical method and proof of theories

3. Required Textbooks and Other Course Materials:

- TEXTBOOK: Numerical Analysis by R.L.Burden and J.D.Faires (8th Edition) published by Thomson/Books/Cole, ISBN: 0-534-39200-8
- REFERENCE BOOK: Numerical Analysis by David Kincaid and Ward Cheney (3rd Edition), Published by Brooks/Cole, 2002, ISBN: 0-534-38905-8

4. Descriptions of major assignments and examinations:

Homework problems will be assigned from the sections covered and will be collected on Tuesday each week. Late home work in general is not acceptable. There are two exams in addition to the final.

5. Attendance: Not required, but extra credit may be given for perfect attendance

6. Grading: tests: 25% x 2, homework: 15%, final 35%

7. **Make-up Exams:** Notify me immediately, no later than the day of exam. A make-up test may be given if and only if the absence is excused.

8. **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://www.uta.edu/ao/fao/>).

9. **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)**. 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.

Counseling and Psychological Services, (CAPS) www.uta.edu/caps/ or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability or by calling the Office for Students with Disabilities at (817) 272-3364.

10. **Title IX:** *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. For information regarding Title IX, visit www.uta.edu/titleIX.*

11. **Academic Integrity:** Students enrolled all UT Arlington courses 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. Violation to the academic integrity policy will lead to failure of the course.

12. **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>.
13. **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>.
14. **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.
15. **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 in the both side end with stairs. 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.

16. COURSE OUTLINE:

MATH 5339
COURSE OUTLINE (subject to change)
Numerical Analysis by R.L.Burden and J.D.Faires (8th Edition)

Section	Lesson	Date
6.1	1	1/16
6.2	2	1/18
6.3-6.4	3	1/23
6.5-6.6	4	1/25
7.1	5	1/30
7.2	6	2/1
7.3	7	2/6
7.4-7.5	8	2/8
Test 1 (6.1-7.5)		2/13
8.1	9	2/15
8.2	10	2/20
8.3	11	2/22
8.4-8.5	12	2/27
8.6	13	3/1
9.1	14	3/6
9.2	15	3/8
9.3	16	3/20
9.4	17	3/22
Test 2 (8.1-9.4)		3/27
10,1-10.2	18	3/29
10.3	19	4/3
10.4	20	4/5
11.1-11.2	21	4/10
11.3-11.4	22	4/12
11.5	23	4/17
12.1	24	4/19
12.2	25	4/24
12.3	26	4/26
12.4	27	5/1
Review		5/3

Final (comprehensive)