Course Syllabus

Fall 2016 **Math/CS 4334** **Numerical Analysis**

84316/81953	Math/CS 4334.001	MW 2:30-3:45pm	JSOM 2.106

Instructor Information

Instructor: Dr. Bentley Garrett
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Office hours: MW 5:30-7:00pm, or by appointment

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

Prerequisites: (MATH 2370 or CS 1324 or CS 1325 or CE 1337 or CS 1337 or TE 1337) and (MATH 2418 and MATH 2451).

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.

Student Learning Objectives/Outcomes

1) Students are able to describe fundamental concepts and procedures in mathematics and their applications. (Basic Concepts).
2) Apply formal mathematical arguments in analysis, model creation, justification of computational procedures (Advanced Concepts).
3) Application of mathematics in other fields and working knowledge of computational packages such as matlab.

Required Textbooks and Materials

Text: *Numerical Analysis, Second Edition*, by Timothy Sauer, Pearson, ISBN: 978-0-321-78367-7

MATLAB software: You will be required to use MATLAB for any programming assignments. Free access to MATLAB is available to UTD students in the campus computer labs. See http://www.utdallas.edu/ir/labs/#locations for details. You can also purchase your own copy, if you wish.

eLearning: http://elearning.utdallas.edu You must enter your NETID username and password to logon to eLearning. You will need to access the course: **MATH 4334.001- F16** or **CS 4334.001- F16.** Here, you will find the syllabus, assignments, handouts, etc., as well as a record of your grades. Any messages/emails concerning the class will also appear on eLearning (and you r UTD email account).

Calculators: On occasion, a scientific calculator may be needed. Graphing calculators, programmable calculators, calculators with non-numeric displays, or any calculators that perform calculus operations are not allowed on quizzes or exams.

Suggested Course Materials/Additional Resources

A Student Solutions Manual for the textbook is also available from the publisher, and may be available through the UTD Bookstore.

Assignments & Academic Calendar **(subject to change)**

Section 1: Computer Arithmetic and Error Analysis
Section 2: Roots of Nonlinear Equations
Section 3: Solution of Linear Equations
Section 4: Interpolation and Approximation
Section 5: Numerical Differentiation and Integration
Section 6: Solution of Ordinary Differential Equations

Week	M		W	
1	8/22	Introduction, Sec. 1	8/24	Sec.1
2	8/29	Sec.1	8/31	Sec.1
3	9/5	**Labor Day**	9/7	Sec.2
4	9/12	Sec.2	9/14	Sec.2
5	9/19	Sec.2	9/21	Sec.3
6	9/26	Sec.3	9/28	Sec.3
7	10/3	Sec.3	10/5	Sec.3
8	10/10	Sec.4	10/12	**Exam 1**
9	10/17	Sec.4	10/19	Sec.4
10	10/24	Sec.4	10/26	Sec.4
11	10/31	Sec.5	12/2	Sec.5
12	11/7	Sec.5	11/9	Sec.5
13	11/14	Sec.6	11/16	Sec.6
14	11/21	**Fall Break**	11/23	**Fall Break**
15	11/28	Sec.6	11/30	**Exam 2**
16	12/5	Sec.6	12/7	**TBA**
		Final Exam: Monday, Dec. 12, 2:00-4:45p		

Homework Assignments

Homework will consist of a mixture of theoretical and computational problems using MATLAB. Assignments will be posted at least every two weeks, and due dates will be shown on the assignment. You will be notified by UTD email and eLearning announcements when an assignment is posted. Problems on each assignment may be randomly graded. The lowest assignment grade will be dropped and the remaining grades will be averaged to compute the homework average referenced below. . Late HW will NOT be accepted – just turn in what you have completed on the due date.

Please double-check these withdrawal dates on www.utdallas.edu:

8/22-9/7	Students may withdraw from a class without record.
9/8-10/3	Students may withdraw from a class with signatures and receive a W.
10/4-10/27	Students may withdraw from a class with signatures of instructor and advisor receiving a WL.
10/28–EOT	Students may withdraw from a class for non-academic reasons only.

Grading Policy

Homework Average	30%
Exam 1	20%
Exam 2	20%
Final Exam	30%
(**Monday, Dec 12, 2:00-4:45pm**)	

Grade Scale [96.6,100]…A+ [93.3,96.6).….A [90,93.3).….A-
[86.6,90)…..B+ [83.3,86.6)…..B [80,83.3).….B-
[76.6,80).….C+ [73.3,76.6).….C [70,73.3),….C-
[66.6,70).….D+ [63.3,66.6).….D [60,63.3).….D-
[0 ,60)…...F

Course & Instructor Policies

Exams/assignments:
(a) You will be notified of the due dates when the assignments are given. Late HW will NOT be accepted – just turn in what you have completed on the due date.
(b) I will accept handwritten assignments as long as they are neat and well-organized with problems in the correct order.
(c) Any programs must be well-documented - you must be able to explain your code.
(d) You must provide hard copies for all code and output from the MATLAB command window, along with the handwritten portions.
(e) There will be no make-up exams.
(f) Exams are closed book and with only scientific calculators. I may allow you to bring one 8 1/2 X 11 sheet of notes, written on one side.
(g) SHOW ALL WORK on exams and assignments. Unsupported answers are considered miracles and, while inspirational, will receive little or no credit. Midterm exams and assignments will be returned to you as soon as possible. Any document not picked up by the end of finals week will be destroyed.
(h) Final exams are not returned to the student but are held for review for one year.
(i) It is essential that you attend all lectures to be successful in this class.
(j) There will be **no** extra credit

Citizenship:
Any action that disturbs your classmates or interrupts the lecture is unacceptable. Examples of such actions are:
(a) Entering the classroom late - be as punctual as possible.
(b) Leaving the classroom before break or before the end of lecture.
(c) Cell phones, ringers, buzzers, beepers, alarms, raspberries, blackberries - turn them off! - unless you are a member of an emergency response team.
(d) Student participation in class is desired, however, please raise your hand to speak and avoid having side conversations with your classmates.

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.