

MATH 4380.001 – Modeling & Numerical Analysis Syllabus

Instructor Contact Information:

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Office Hours: MWF 9:00-10:00

Required Text: *Numerical Analysis* by Timothy Sauer

Prerequisites

MATH 3380. May be taken for graduate credit with consent of advisor.

Catalog Description of Course

Study of the development of mathematical models focusing on the numerical analysis which forms the basis for the models.

Course Format

This is a course on mathematical modeling and numerical analysis. This will be a project based course for the most part. Homework assignments will be given to help in preparation for the projects. Mini-Tests will be given to test conceptual components covered in the course. The format will be as follows.

1. Discussion and development of a mathematical model.
2. Learning of numerical techniques needed to solve the problem.
3. Project based on the implementation of techniques learned to solve the mathematical model developed.

It is very important that you read the book as we go along, preferably before a topic is covered. This is a senior level course. Projects are to be submitted in a professional format. Write-ups of results and problems will be graded on content as well as grammar. Any code used in the process must be attached as an appendix as well as in electronic form so I can confirm that it runs properly.

Course Outline

My current plan is to cover Chapters 1-4, 7, and 12. Chapter 0 will be discussed briefly. It will be understood that the student will read and be familiar with the concepts of Chapter 0 as well as those concepts covered in MATH 3380 at the start of the course.

Mini-Tests (30%)

There will be three mini-tests given throughout the semester. Test dates will be announced at least one week in advance.

Homework and Projects (70%)

There will be homework (10%) along with a number of projects (60%) assigned throughout the course.

Make-up Policy

Make-ups for **documented** absences that are **required** as part of a UT Tyler obligation (e.g. athletes participating in an event, participating in a debate contest, etc.) or for religious observation will be granted. For all make-ups of this type, prior notification of **at least one week** and documentation are required.

Student Learning Outcomes

At the conclusion of the course, the student should be able to:

1. Demonstrate an understanding of methods and techniques used in mathematical modeling and be able to apply those techniques to model a real world situation.
2. Compare and contrast different numerical techniques and assess which is appropriate for a particular situation and why.
3. Implement numerical methods to solve mathematical models of real world problems and interpret results.

University Policies

Disability Statement

If you have a disability, including a learning disability, for which you request disability support services and/or accommodation(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting disability support services and/or accommodation(s) must provide appropriate documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may also be obtained at the following UT Tyler Web address: <http://www.uttyler.edu/disabilityservices>.

Social Security Statement

It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number.

Note Regarding Student Absence due to Religious Observance

Students who anticipate being absent from class due to a religious observance are requested to inform the instructor by the second class meeting of such absences.

Grade Replacement

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated grade being used to calculate your overall grade point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-08 Catalog, p. 35)