

COURSE SYLLABUS

COSC 3312

Numerical Methods

Dr. Tim McGuire

3 Semester Hours

Fall Semester 2017

Section 01 – AB1-204, 12:30 – 1:50 p.m. TTh

Office: AB1-212G

Office Hours: 10:00 – 11:50 a.m. TTh; 11:00 – 11:50 a.m. MWF, 2:00 -2:50 MW; other times by arrangement

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Catalog Description: This course develops the concepts underlying the use of the computer for interpolation, approximations, solutions of equations and the solution of both linear and nonlinear systems equations. Mathematical software and/or user written programs are utilized. Also offered as MATH 3394. Credit 3.

Prerequisite: MATH 1430, and the ability to program in a high-level language such as C or Ada.

Methodology: Lecture with outside laboratory assignments. The examinations will cover the material in the lectures, and will require that the student understand, apply, and extend that knowledge.

Objectives: This course is an introduction to numerical analysis with an emphasis on practical applications, implementation, and algorithm design. The primary objective of this course is to gain an understanding of the algorithms and pitfalls encountered when performing numerical operations on computational systems. A secondary objective is the understanding of how to obtain superior performance through the use of platforms and APIs designed for high-performance computing. These include, but are not limited to OpenMP, MPI, and OpenACC.

Required Textbook and Supplies:

- R.W. Hamming, *Numerical Methods for Scientists and Engineers*, Dover Publications, 1987. (available from various on-line booksellers for \approx \$15 - \$20)
- Other material available online

Grading: There will be 2 major exams during the course of the semester. Each of these will count as 20% of the total grade. Makeup exams must be scheduled with the professor within a week of the missed exam. A makeup exam will not necessarily cover identical material to the missed exam, and may be of a different format and difficulty level. There will be a final exam which will count as 25% of the grade. There will be several homework and lab assignments which will count as 35% of the grade.

Grading Scale: The following grade scale is used:

$90 \leq A \leq 100$

$80 \leq B < 90$

$70 \leq C < 80$

$60 \leq D < 70$

$0 \leq F < 60$

Absences: See <http://www.shsu.edu/syllabus/>. In accordance with University Policy, regular attendance is required, however, no point will be awarded or subtracted based on your attendance. You are responsible for all material covered in every class, regardless of whether you attended or not. It is your responsibility to obtain notes, assignments, etc., from fellow class members if you miss a class. Absences for religious holy days must be scheduled in accordance with University Policy.

Academic Integrity: See <http://www.shsu.edu/syllabus/>. The Student Handbook states that the University expects all students to engage in all academic pursuits in a manner that is above reproach. Students are expected to maintain complete honesty and integrity both in and out of the classroom. Any student found guilty of dishonesty in any phase of academic work will be subject to disciplinary action. Furthermore, the University and its official representatives may initiate disciplinary proceedings against a student accused of any form of academic dishonesty including, but not limited to cheating on an examinations or other academic work which is to be submitted, plagiarism, unauthorized collusion, and the abuse of resource materials. All students must fully develop their own solutions. You are not allowed to work together on any assignment. Do not copy anyone else's assignment and do not allow your assignments to be copied. Cheating on any portion of an assignment will result in a grade of zero for the entire assignment.

Proper Classroom Demeanor: See <http://www.shsu.edu/syllabus/>. Students will refrain from behavior in the classroom that intentionally or unintentionally disrupts the learning process and, thus, impedes the mission of the university. Please turn off or mute your cellular phone and/or pager before class begins. Students are prohibited from eating in class, using tobacco products, making offensive remarks, using inappropriate language, reading newspapers, sleeping, talking among each other at inappropriate times, wearing inappropriate clothing, or engaging in any other form of distraction. Inappropriate behavior in the classroom shall result in, minimally, a directive to leave class or being reported to the Dean of Students for disciplinary action in accordance with university policy.

Americans with Disabilities Act: See <http://www.shsu.edu/syllabus/>. According to University Policy, request for accommodations must be initiated by the student. A student seeking accommodation should go to the Counseling Center in a timely manner.

Visitors in the Classroom: See <http://www.shsu.edu/syllabus/>. Occasional visiting of classes by responsible persons is allowed with prior arrangement with the instructor, as long as it does not interfere with the registered members of the class or the educational process.