Loyola University Maryland
Department of Mathematics and Statistics
MATH 428 (Computational Mathematics) – FALL 2019
MWF 11:00AM-11:50AM, Sellinger 221

Instructor: Dr. Prince Chidyagwai
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Office Hours: MW 1:00 - 2:00 PM, Th 12 - 1:00PM or by appointment


Prerequisites: MA 304 (Ordinary Differential Equations), MA 351 (Calculus III) and MA 302 (Matlab)

Course Description: This course will emphasize the development of computational techniques that provide stable and efficient solutions to various mathematical problems in science and engineering.

Course Objectives:

1. Provide an overview of various computational tools and increase the ability to use proper tools for a given situation.

2. Improve the ability to work independently to formulate algorithms and implement them using MATLAB.

3. Provide computational experiences that can be utilized in other courses and beyond the classroom.

Topics: We will cover the following topics (Chapters 9,10,11,13,14):

1. Numerical Differentiation and Integration
2. Initial Value Problems of Ordinary Differential Equations (ODEs)
3. Two-Point Boundary Value Problems
4. Partial Differential Equations

Exams: There will be two in-class exams and a final exam.

Grading: Homework - 35%, Semester Exams - 40%, Final Exam - 25% Final grades will be determined according to the following scale:
Class participation and improving performance on the exams will be considered when assigning borderline grades.

**Homework:** Homework will be assigned almost weekly in class and posted also posted on the course website. Answers without any justifications are not acceptable. All work must include a detailed description of your solution technique for theoretical problems and a printout of summary of results for computational problems. You are also required to email me all codes used to generate solutions.

**Academic Integrity and Standards of Conduct:** The guidelines of academic integrity and standards of conduct are presented in the Undergraduate catalogue. The Loyola University Honor Code states that all students of the Loyola community have been equally entrusted by their peers to conduct themselves honestly on all academic assignments. In this class you may work with your peers on assigned homework. However, you should write up submissions by yourself. You may not consult your books or notes for in class exams. Please refer to the Community Standards Handbook for more information and further clarification of the honor code standards, type of violations, adjudication process, and sanctions that may be imposed for violations.

**Extra Help:** Do not hesitate to come to my office during office hours or by appointment to discuss a homework problem or any aspect of the course.

**Important Dates:**

- Add/Drop Deadline .............. Friday, September 6
- Withdrawal Deadline .............. Friday, November 8
- Exam 1 ........................................ Friday, October 11 (in class)
- Exam 2 ........................................ Friday, November 15 (in class)
- Final Exam ......................... Monday, December 16, 9:00 AM

**Student Athletes:** Please provide me with your athletic travel letters indicating when you will not be able to make it to class due to athletic commitments. You will be required to make up any assignments or exams that you miss.

**Learning Disabilities:** Any student with a disability documented with the Disability Support Service Office (DSS) requiring accommodations in this course is encouraged to contact me as soon as possible. If you have a disability that has not yet been documented, please contact the DSS Office (410-617-2602) for assistance.