Math 3120 Differential Equations syllabus

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OBJECTIVES:

• Learn to recognize and classify various types of ordinary differential equations.

• Get used to thinking about and working with functions as variables.

• Understand the qualitative nature of solutions to certain classes of differential equations, with emphasis on exponential growth, oscillations, and equilibrium solutions.

• Learn to solve certain types of elementary differential equations analytically, with an emphasis on first order differential equations and higher order linear differential equations.

• Develop skill in formulating differential equation models to address problems arising in engineering, physics, and other applied areas.

• Gain exposure to a few numerical and graphical tools for studying and solving differential equations.

• To serve as an introduction to differential equations.

• To utilize a student’s background in Calculus in solving differential equations.

• To illustrate several of the many applications of differential equations.

LEARNING OUTCOMES: 1
1. Solve different forms of first order differential equations.

2. Solve some linear higher order differential equations.

3. Solve some linear second order initial value problems using Laplace transform.


5. Solve a linear system of differential equations in normal form.

**REQUIREMENTS:** In general, you are expected to

1. attend class lectures;

2. read and study class assignments and solve assigned problems;

3. ask questions in class when you are unsure of any concept or unclear on any assigned problem;

4. come to my office for additional assistance as necessary;

5. take all exams (including the final) on the day they are scheduled

6. come to class prepared (this includes completing homework in a timely manner, and bringing your textbook).

1 Corequisite

Math 3110

2 Textbook


3 Schedule of classes

3.1 August

25 Housekeeping, Software: Python, Section 1.1, 1.2
27 Section 1.2, 1.3
3.2 September
1 Section 1.3, 1.4
3 Section 2.2, 2.3
8 Test one
10 Section 2.3, 2.4
15 Section 2.5, 2.6
17 Section 2.6, 3.2
22 Section 3.3, 3.6
24 Section 3.6, 3.7
29 Section 4.1, 4.2

3.3 October
1 Section 4.2, 4.3
6 Test Two
15 Section 4.4, Section 4.5
20 Section 4.5, 4.6
22 Section 4.7, 4.8
27 Section 4.8, 4.9 29 Section 4.10, Section 5.1

3.4 November
3 Section 5.1, 5.2
5 Section 5.3, Section 5.4
10 Section 5.4, Section 6.1
12 Test 3
17 Section 6.2, 6.3
19 Section 6.3, 6.4
29 Section 7.2, 7.3
24 Test 4

3.5 December
1 Project presentations
8 (Tuesday) Final comprehensive examination
10.30a.m-12.30pm.
4 Grading policy

Four tests will be given which will count 50 percent towards the Final grade. Homework will count 10 percent. Project will count 20 percent and the final exam will count 20 percent.

90-100 A, 80-89 B, 70-79 C, 60-69 D Below 60 F.

The Grade I indicates that the student has not completed all course requirements because of illness or other uncontrollable circumstances especially which may occur toward the close of the term. Mere failure to makeup work or turn in required work on time does not provide a basis for the grade I.

Please note the following dates and information: Last day to drop the course without a grade-September 6 Last day to drop with a "W"-October 28.

Judicial Statement/Academic Misconduct Academic misconduct is defined as plagiarism, cheating, fabrication, or facilitating any such act. For purposes of this section, the following definitions apply:

(1) Plagiarism. The adoption or reproduction of ideas, words, statements, images, or works of another person as one's own without proper acknowledgment.

(2) Cheating. Using or attempting to use unauthorized materials, information, or study aids in any academic exercise. The term academic exercise includes all forms of work submitted for credit or hours.

(3) Fabrication. Unauthorized falsification or invention of any information or citation in an academic exercise.

(4) Facilitation. Helping or attempting to help another to violate a provision of the institutional code of academic misconduct.

Academic misconduct will result in actions taken as defined by the MTSU code of Academic Integrity. A complete description of this code can be found at www.mtsu.edu/judaff. In addition to other possible disciplinary sanctions that may be imposed through regular institutional procedures as a result of academic misconduct, the instructor has the right to assign an F or a zero for the work in question, or to assign an F for the course. If a student believes he or she has been falsely accused of academic misconduct, and if his or her final grade has been lowered as a result, the student may appeal the case through the appropriate institutional procedures.
Reasonable Accommodations for Students with Disabilities: Middle Tennessee State University is committed to campus access in accordance with Title II of the Americans with Disabilities Act and Section 504 of the Vocational Rehabilitation Act of 1973. Any student interested in reasonable accommodations can consult the Disability & Access Center (DAC) website www.mtsu.edu/dac and/or contact the DAC for assistance at 615-898-2783 or dacemail@mtsu.edu.

Lottery Scholarship Policy: Do you have a lottery scholarship? To retain the Tennessee Education Lottery Scholarship eligibility, you must earn a cumulative TELS GPA of 2.75 after 24 and 48 attempted hours and a cumulative TELS GPA of 3.0 thereafter. A grade of C, D, F, FA, or I in this class may negatively impact TELS eligibility.

If you drop this class, withdraw, or if you stop attending this class you may lose eligibility for your lottery scholarship, and you will not be able to regain eligibility at a later time.

For additional Lottery rules, please refer to your Lottery Statement of Understanding form (http://www.mtsu.edu/financial-aid/forms/LOTFEV.pdf) or contact your MT One Stop Enrollment Counselor (http://www.mtsu.edu/one-stop/counselor.php).