

The Mississippi School for Mathematics and Science

Differential Equations

Instructor: Mr. William K. Funderburk

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Office Hours: TBA

Textbooks: *A First Course in Differential Equations 10th Edition* by Dennis G. Zill

Supplemental Text: *Schaum's Outline of Differential Equations, 2nd Edition* by Richard Bronson

Objectives: This course will provide an investigation of differential equations through analytical techniques and descriptive analysis using software visualization. Applications will be stressed throughout so that the interrelationship of pure mathematics, modeling and the physical sciences may be developed. Major topics include first order, second order, systems of differential equations and the Laplace Transform.

Prerequisite: University Calculus II or Integral Calculus

Co-requisite: Calculus III

Chronology of Objectives:

Weeks 1-2: Classifications & Basic Concepts, 1st order Separable DE's & Homogeneous forms

Weeks 3-4: 1st order Exact DE's, 1st order Linear DE's & Bernoulli forms

Weeks 5: 1st order Applications

Weeks 6-7: Linear DE's, Theory of Solutions, 2nd order Linear Homogeneous DE's

Weeks 8-9: Nth order Homogeneous DE's with Constant Coefficients

Weeks 10-12: Method of Undetermined Coefficients, Method of Variation of Parameters

Weeks 13: Applications of 2nd Order DE's

Weeks 13-14: Finding Laplace Transforms, Inverse Laplace Transforms, Some Solutions to Linear DE's by L.T.

Weeks 15-16: Convolutions & Other Solutions to Linear DE's by L.T.

Weeks 17-18: Solutions to Systems by L.T., Applications of Systems of DE's

Grading Scale: A: 90 – 100 B: 80 – 89 C: 70 – 79 NC: 0 – 69

General Information:

Keep a three-ring notebook to organize class notes, homework, and returned quizzes and tests.

Use a pencil.

Bring your textbooks, notebook and calculator to class.

After each section is discussed in class, homework problems will be assigned. These problems should be completed/attempted on a daily basis.

Homework problem sets will be assigned. These account for 10% of your nine weeks average.

Several quizzes will be given each nine weeks. These account for 30% of your nine weeks average.

In-class and/or take-home assessments will be given each nine weeks. These account for 60% of your nine weeks average.

The final exam counts as 20% of your semester average. The test date will be announced later.

Your semester grade is 20% Exam and 40% 1st term and 40% 2nd term.

Follow the make - up work guidelines as set forth in *Student Handbook*.

Attendance will be taken at the beginning of each class period. Tardies and unexcused absences will be reported to the office. See the *Student Handbook*.

Follow the academic honesty guidelines as set forth in *Student Handbook*. ALL INSTANCES OF ACADEMIC DISHONESTY WILL BE REPORTED TO THE DIRECTOR FOR ACADEMIC AFFAIRS.