

DIFFERENTIAL EQUATIONS, A SECOND COURSE

CLASS ANNOUNCEMENT FOR FALL SEMESTER

MATH 445

3 HOURS CREDIT

11:15-12:30 TTh (tentative)

PREREQUISITE: ELEMENTARY DIFFERENTIAL EQUATIONS (MATH 355)

INSTRUCTOR: DR. ROBERT GARDNER

LSU in Shreveport will offer Differential Equations, a Second Course (Math 445) in the Fall Semester of 1992. The class is tentatively scheduled for Tuesday and Thursday from 11:15 to 12:30 but may be rescheduled to meet student needs. The class is designed as an extension of the standard introductory differential equations class. The class is intended for those students majoring in mathematics, physics, chemistry and other technical or scientific fields.

Systems of linear differential equations will be dealt with extensively. This will require some knowledge of linear algebra and all necessary background will be given in class. The Laplace transform will be studied along with its application to initial value problems. We will discuss nonlinear differential equations and their applications. This will allow us to introduce the concept of *stability* and stable solutions. Finally, we will study boundary value problems and Sturm-Liouville boundary value problems. If time permits, we may introduce some topics from Integral Equations.

Throughout the class, we will emphasize applications whenever possible. The most common application will be to physical problems such as spring-mass systems and electrical circuits. We will also deal with the predator-prey model from ecology (when we address nonlinear problems). We will see several applications to the area of Special Functions.

Students will be evaluated based on their performance on 3 in-class tests, homework assignments, and a final. Currently, the texts under consideration for use in the class are:

1. *Elementary Differential Equations and Boundary Value Problems*, 5th edition by W. Boyce and R. DiPrima, published by John Wiley, and
2. *A Second Course in Elementary Differential Equations* by P. Waltman, published by Academic Press.

This class will make a nice follow up to an introductory differential equations class. We will deal exclusively with ordinary differential equations and a class in Partial Differential Equations (Math 440) will be offered in the Spring of 1993.

If you have any questions concerning this class, please call Dr. Robert Gardner of the LSUS Mathematics Department, 422 Bronson Hall at 797-5131.