

ELEMENTARY DIFFERENTIAL EQUATIONS

COURSE: MATH 355
BRONSON HALL 440

SECTION 1
9:10-10:25 TTh

TEXT: Introduction to Ordinary Differential Equations, Fourth Edition by Shepley L. Ross.

INSTRUCTOR: Dr. Robert Gardner

OFFICE: Bronson Hall 422

OFFICE HOURS: 10:00-11:00, 2:00-3:00 MWF and 11:00-12:00, 2:00-3:00 TTh.

PHONE: 797-5131 (Math Office 797-5377)

The *art* of solving differential equations has been the primary motivation behind much of the research done in mathematics since the renaissance. We will follow this lead and relate the problems we solve to applied problems whenever possible. We will deal with differential equations as applied to falling bodies, population growth, radioactive decay, mixture problems, the logistic equation, harmonic motion and electric circuit problems.

TENTATIVE OUTLINE (CHAPTER.SECTION):

Test 1: 1.1-1.3, 2.1-2.4 = introduction, solutions to D.E.'s, First order equations, exact D.E.'s, separable equations, linear equations, integrating factors.

Test 2: 3.1-3.3, 4.1-4.5 = trajectories of equations, mechanics problems, rate problems, homogeneous linear equations, method of undetermined coefficients, variation of parameters.

Test 3: 5.1-5.6, 6.1-6.3 = vibrations of a mass on a spring, forced motion, resonance, electric circuit problems, power series solutions, method of Frobenius, Bessel's equation.

Homework (H) will be collected every other Friday (late homework will not be accepted). Other homework will be assigned, but not collected. Tests will be spaced at roughly 4 week intervals. The final (F) will be comprehensive. Your grade will be calculated as:

$$AVERAGE = \frac{T_1 + T_2 + T_3 + H + F}{5}$$

Grades will be assigned as follows:

$$A = 90-100, B = 80-89, C = 70-79, D = 60-69, F = 0-59$$

All students are expected to attend class and make-up tests will be given only under the most EXTREME conditions.

Important dates:

Friday, January 17 = Last day to add courses for credit or to change from audit to credit.

Monday, January 20 = Martin Luther King Holiday.

Monday, February 3 = Last day to drop courses or resign without receiving grades of W.

Monday, February 24 = Last day to change from credit to audit.

Monday, March 2 to Friday, March 6 = Mardi Gras/Spring Break.

Monday, March 30 = **LAST DAY TO DROP** or to resign.

Thursday and Friday, April 16 and 17 = Easter Holiday.

Friday, May 1 = Classes end.

Tuesday, May 5 = The final exam is on this date, 8:00 a.m. to 10:00 a.m.