Syllabus for Math 353-03: Elementary Differential Equations
Fall Semester 2018

Course Information

Instructor: Dr. Erwin Miña-Díaz
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Time/Place: T. TH. 2:30-3:45 PM, Hume 215

Course description/learning objectives

This course is an introduction to ordinary differential equations. We intend to cover Chapters 1, 2, 4, and 7 of the textbook, together with some applications from other chapters. This includes first-order differential equations and their applications, linear differential equations of higher order, and the Laplace transform. The successful student will acquire a good knowledge of the topics studied in the course, being able to classify (i.e., recognize the type of) a differential equation and apply proper methods to solve it. The course will prepare the student for those higher level courses in Mathematics, Physics, Engineering, and Economics, where a basic understanding of ordinary differential equations is needed.

Homework, quizzes, tests and final exam

The homework problems are assigned at the end of the second page.

There will be 8 quizzes, each worth 10 points.

There will be 3 tests (each 100 points) and a final exam (100 points). Your final exam grade will replace your lowest test score. Quiz, test, and final exam dates are indicated in the tentative schedule below.

The cumulative point total for the course is 480 points. The grade scale is as follows: A is 446 pts = 93%, A- is 432 pts = 90%, A+ is 416 pts = 87%, B is 398 pts = 83%, B- is 384 pts = 80%. C+ is 369 pts = 77%, C is 336 pts = 70%, D is 288 pts = 60%, F is less that 288 pts. An “I” grade will not be given without the permission of the Department of Mathematics.

IMPORTANT: There will be no make-up tests given for any reason other than an official university function, in which case the student must reschedule and take this test at a time before the test is scheduled to be given. Any student having three or more final examinations scheduled for the same day will arrange with the instructor to take the examination on some other, mutually satisfactory date.

Attendance, cheating, electronic devices

- Students are allowed 3 absences. Ten points are deducted from the final point total for each absence. It is the student’s responsibility to make sure his/her attendance record is correct.
- Cheating on any exam or quiz, theft or attempted theft of exam questions, possession of exam questions prior to the time for examination, or the use of an illegal calculator/smart phone on tests or quizzes shall all be offenses subject to appropriate penalties.
- No calculators allowed in any test/exam. All cellular phones, pagers, and other electronic equipment must be turned off during the class period.

Deadlines

Monday, October 1 is the deadline for course withdrawals. After the course withdrawal deadline, courses dropped will be recorded on University records and the W grade will be recorded if the student is not failing the course at the time of withdrawal; otherwise the grade recorded will be F. After the course withdrawal deadline, a student may drop a course only in cases of extreme and unavoidable emergency as determined by the academic dean; dropping a course after the deadline will not be permitted because of dissatisfaction over an expected grade or because the student is changing his/her major.
Disability Access and Inclusion

The University of Mississippi is committed to the creation of inclusive learning environments for all students. If there are aspects of the instruction or design of this course that result in barriers to your full inclusion and participation, or to accurate assessment of your achievement, please contact the course instructor as soon as possible. Barriers may include, but are not necessarily limited to, timed exams and in-class assignments, difficulty with the acquisition of lecture content, inaccessible web content, and the use of non-captioned or non-transcribed video and audio files. If you are approved through SDS, you must log in to your Rebel Access portal at https://sds.olemiss.edu to request approved accommodations. If you are NOT approved through SDS, you must contact Student Disability Services at 662-915-7128 so the office can: 1. determine your eligibility for accommodations, 2. disseminate to your instructors a Faculty Notification Letter, 3. facilitate the removal of barriers, and 4. ensure you have equal access to the same opportunities for success that are available to all students.

TENTATIVE TEST DATES AND HOMEWORK ASSIGNMENTS

**Quizzes**: August 28, September 4, 25, October 2, 16, 23, 30, November 13.

**TEST 1** (Tuesday, September 11)

Chapter 2. First-order differential equations.
- Separable Equations
- Linear equations
- Exact equations
- Homogeneous equations
- Bernoulli equation (might be left for Test 2)

**TEST 2** (Thursday, October 4)

Chapter 4. Linear differential equations of higher order.
- Linear independence and Wronskian
- Constructing a second solution from a known solution
- Homogeneous equations with constant coefficients
- Non-homogeneous linear equations

**TEST 3** (Thursday, November 1)

- Method of undetermined coefficients (superposition approach)
- Method of variation of parameters

Chapter 7. Laplace transform.
- Laplace Transform and its inverse

**FINAL EXAM** (Tuesday, December 4 at 4:00 PM)

The final exam is comprehensive, and will include the following topics not listed above from Chapter 7:
- Translation theorems
- Derivatives of transforms and transforms of derivatives
- Initial value problems using Laplace transform

**HOMEWORK PROBLEMS**

2.2 Ex: 1-16, 41-45. 4.4 Ex: 1-16.
2.4 Ex: 1-15, 25, 26. 7.1 Ex: 1,3, 11-17.
2.3 Ex: 11-26, 31-33. 7.2 Ex: 1-22.
2.6 Ex: 1-6. 7.3 Ex: 1-36, 61-64.
4.2 Ex: 1-15
4.3 Ex: 1-20, 37-40.