

MATH 212 DIFFERENTIAL EQUATIONS

FALL 2017

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Office Hours: To be announced on Canvas

Course Content: Mathematics 212 is a first course on ordinary differential equations. The course includes appropriate topics involving first-order differential equations, linear differential equations, linear systems, and series solutions.

Course Goals: At the end of the course, the students should be able to solve various ordinary differential equations (o.d.e.) by various methods; be familiar with and be able to apply the main points in the general theory of o.d.e.s; and be able to investigate some qualitative aspects of a given o.d.e. even if it cannot be solved explicitly.

Text Material: Dennis Zill, *A First Course in Differential Equations with Modeling Applications*, 10th Ed.

Class Attendance: The student is responsible for the course material discussed in class; therefore, the student is expected to attend all classes. Generally, students who attend class on a regular basis perform better on assessments than those who elect to be absent occasionally. Students accumulating an inordinate number of absences will be referred to the associate dean of academic affairs.

Grading: The student's final course grade will be determined as follows:

Modeling Project	50 points
Quizzes	200 points
Tests	300 points
Final Exam	200 points
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TOTAL	750 points

In general, letter grades will be determined as follows, based on points each student earns: A: at least 675 points; B: 600-674 points; C: 525-599 points; D: 450-524 points; F: fewer than 450 points. Grades of A-, B+, B-, C+, C-, D+ may be assigned for sums of points near these cut-off totals.

Homework: Students who thoughtfully engage with course material on a regular basis are more likely to demonstrate a high level of performance on tests and quizzes. A collection of suggested problems will be provided at most class meetings; each assignment should be completed before the next class. A homework assignment is not considered "complete" until the student is able to produce a full solution for each problem without any sort of assistance. The amount of time required to complete a homework assignment can vary from student to student, but completing each assignment is the most important aspect of preparation for this course; it is worth investing the necessary time.

Modeling Project: The study of differential equations plays an important role in the development and application of mathematical models for phenomena across a variety of disciplines. Students will write a brief paper developing and exploring a model appropriate to the scope of this course.

Quizzes: There will be regular announced quizzes in class. Questions will be similar to those encountered in lecture and in the homework. If more than eight quizzes are given, low quizzes will be dropped equitably between each testing segment (e.g. one quiz would need to be dropped from each testing segment before two quizzes would be dropped from any one testing segment).

Tests: Three tests will be given throughout the semester on the following Tuesday mornings: **September 19,**

October 17, November 14. Students are expected to take tests at the scheduled times. Conflicts, problems and emergencies will be handled on an individual basis. For legitimate excuses, arrangements may be made far in advance to take a test prior to the scheduled testing time.

Final Exam: The final exam will be given according to the exam schedule and will be comprehensive. Rescheduling a final exam is rarely accommodated and must be approved by the associate dean of academic affairs.

Inclusivity: Students with a documented disability who anticipate barriers related to the format or requirements of this course, or presume to have a disability (e.g. mental health, attention, learning, vision, hearing, physical or systemic) and are in need of accommodations this semester should contact the Office of Accessibility Services (OAS) as soon as possible to learn more about the registration process and steps for requesting accommodations.

Students who are currently registered with OAS who do not receive an accommodation notification letter within the first week of class must notify OAS immediately by emailing adsroxford@emory.edu. Students who have accommodations in place are encouraged to coordinate a face to face meetings with the instructor to communicate specific needs for the course as it relates to approved accommodations. All discussions with OAS and faculty members concerning the nature of a student's disability remain confidential. For additional information regarding OAS and how to register, please visit the website: equityandinclusion.emory.edu/access.

Support Services: Students should utilize the following resources:

- **Office Hours:** Office hours will be posted on Canvas. These times vary due to meetings and other obligations, but most afternoons should have some availability.
- **Canvas:** Announcements and important documents will be posted on the course's Canvas site. The student is responsible for regularly checking the site for new announcements and resources, including homework assignments and handouts.
- **Math Center:** Student tutors are generally available in the Math Center (in OSB 101) Monday through Thursday afternoons. Additional online resources from the Math Center are available at <http://www.oxfordmathcenter.com>.
- **Study Groups:** When used appropriately, study groups can be a useful tool in learning mathematics. Study groups should complement and enrich individual study of course material; with particular regard to homework assignments, it is suggested that study groups discuss completed (or attempted) assignments rather than work through homework problems for the first time.

Written Style: Thoughts are expressed through sentences, even in mathematics. Mathematical arguments will often use symbols to efficiently convey complex ideas, but these notions are still communicated through sentences. Note " $1+1 = 2$ " is a complete sentence: it has the subject " $1+1$ ", verb "=", and predicate " 2 ". It is important to clearly communicate solutions using appropriate mathematical symbols and complete sentences; pertinent work needs to be neat and orderly to be intelligible. Taking time to be neat while working problems often eliminates careless mistakes and allows the writer (and ultimately, the audience) to focus on the main concept at hand.

Course Outline: Approximately four weeks will be spent on chapters 2 and 3 of our textbook before Test 1. The following four weeks will be spent on chapters 4 and 5 in preparation for Test 2. Next, four weeks will be spent on chapters 6 and 8 before Test 3. The final three weeks of the course will be spent examining transforms and numerical solutions.

THE HONOR CODE OF OXFORD COLLEGE APPLIES TO ALL WORK SUBMITTED FOR CREDIT IN THIS COURSE. BY SUBMITTING SUCH WORK, YOU PLEDGE THAT WORK WAS DONE IN ACCORDANCE WITH THE RULES STIPULATED ON THE ASSIGNMENT AND IN THIS SYLLABUS.