Northern Arizona University
College of Engineering, Forestry, and Natural Sciences
Department of Mathematics and Statistics

MAT 239 (Differential Equations) Syllabus
Fall 2017, 3 Credit Hours
Section 5 (3323) TuTh 11:10-12:25 in AMB 163
Section 6 (5854) TuTh 2:20-3:35 in AMB 163

Instructor Information

Instructor: `Jim.Swift@NAU.edu` AMB 110 523-6878 `www.nau.edu/Jim.Swift`

Office Hours: MWF 1:35-3:00, TTh 3:40-4:00. If these times are inconvenient, you can make an appointment, or drop by my office. E-mail is always a good way to contact me. I will check my e-mail after 9:00pm on nights before a WeBWorK assignment is due, and reply that night.

Course Description

Text: *Elementary Differential Equations* 10th edition, by Boyce and DiPrima. This text is optional, and an older (or newer) edition is almost as good as the 10th. Some homework may be assigned from the text, but mostly the homework will be on WeBWorK. A link to Paul Dawkins' notes is on the web site.

Prerequisite: A grade of C or better in MAT 238 or current registration in MAT 238. You are responsible for making sure that you have met this prerequisite.

Content/Outline: Solutions of first-order differential equations, second and higher order linear equations, systems of linear differential equations, series solutions, numerical solutions of differential equations (chapters 1-5 and 7 of the text, with some skipped sections).

Student Learning Outcomes: Students will learn how to solve first order differential equations that are linear or have some other special form. Students will learn how to solve linear differential equations with constant coefficients. Students will learn how to use differential equations to model physical systems. There are many differential equations that nobody can solve. Students will learn a few methods of finding approximate solutions to these differential equations which cannot be solved exactly.

Course Structure/Approach The class will use lecture-discussion-group work format.

Assessment of Student Learning Outcomes

Points: There will be approximately 750 possible "class points." All class points are assigned with the scale A (90%), B (80%), C (70%), and D (60%). The timeline for assessment is simple; whenever *class points* are assigned, they they are fully "curved" and will not change further. So at any point students can calculate the fraction of the possible class points obtained so far to determine their current grade.

Midterms: ($3 \times 100 = 300$ class points, about 40%) There will be 3 midterm exams. Each exam will have a raw score and a "curved" or scaled score based on 100 possible class points. In fairness to those with classes before or after ours, the exams will start and end on time. The Math department has special permission to give exams during end of semester week, and we might do that.

Homework: (Approximately 200 class points, about 27%) We will be using WeB-WorK for most of the homework assignments, but there will be some homework assigned from the textbook, and possibly other homework. Each of WeBWorK sets is worth 10 class points. The point value of the paper assignments will be announced when they are assigned.

Final Exam: (250 class points, about 33%) The Final Exam will be comprehensive. The final exam is scheduled for Thursday, December 14 from 10 to 12 for the 11:10 class, and Thursday, December 14 from 12:30 to 2:30 for the 2:20 class. I reserve the right to raise your course grade from the 90/80/70 curve, based on an exceptional final exam.

Extra Credit: At each midterm exam I will give you 3 points if you had no unexcused absences since the previous exam. I give extra credit for the math department's "Problem of the Week" as described on the bebsite

Course Policies

Technology: A graphing calculator will be allowed at the midterm exams, but not the Final Exam. Please bring your calculator to class. (You don't need to bring your textbook to class.) You may use a phone or laptop during class to take notes or do WeBWorK or go to other relevant web sites (like Paul's notes).

Late Homework: I can delay your individual due date for WeBWorK assignments. I will handle requests on a case-by-case basis, but you must contact me before the due date since the answers are made available at that time.

Missed Class Days: I will allow excused absences, for extra credit purposes, for institutional excuses, illness, or other reasons that I approve. Please notify me of an absence by e-mail or voice mail *before* class if possible. Furthermore, if you are late and I take roll before you arrive, then you will be counted absent.

Makeup Exams: A similar policy to "Missed Class Days" holds. I will give a makeup exam for illness or other emergencies. Please notify me that you will miss an exam by e-mail or voice mail *before* the exam if possible.

Academic Honesty: Do not look at other people's exams during tests. You may not have cell phones, watches or other electronic communication devices with you during the exams. (Place backpacks at the front of the room.) You may work together with others in the class on the homework, but please do your own work.

University and Departmental Policies: Our class web site has these links. http://www.nau.edu/Jim.Swift/classes/MathDepartmentPolicies.pdf and https://nau.edu/University-Policies/.

Amendments: Any changes to this syllabus will be announced in class, and an updated version will be posted on my website.