

Department of Mathematical Sciences
Fall 2015, Math 311
Ordinary Differential Equations

Instructor: Professor Emily Stone **E-mail Address:** stone@mso.umt.edu
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Office Hours: M 2-3, T 2-3, W 10-11, F 11-12

Course Description: In this course we will cover analytic solution techniques for first order differential equations (ODEs) and second order linear differential equations (including some series solution methods often used in Physics). We will also study numerical methods for constructing approximate solutions to ODEs, and qualitative methods for studying nonlinear systems, namely phase plane analysis. Modeling simple systems governed by ODEs will be introduced, along with the general analysis of linear systems of ODEs.

Texts: • *Elementary Differential Equations*
Boyce and DiPrima, 10th Ed., J. Wiley

Prerequisite: Math 251/M273

Important Dates:

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| Sept. 7: | Labor Day Holiday - no classes |
| Sept. 21: | Last day to drop via Cyberbear |
| Nov. 2: | Last day to drop classes/change sections with form |
| Nov. 11: | Veteran's Day Holiday - no classes |
| Nov. 25-27: | Thanksgiving Day Holiday - no classes |
| Dec. 11: | Last Day for Drop Petitions |

Exams: (tentative)

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| Oct. 2 (Friday): | Exam 1 |
| Oct. 30 (Friday): | Exam 2 |
| Dec. 15 (Tuesday): | Final Exam, 8:00–10:00 a.m. |

Grading:

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|------------|---------------------|
| Homework | 25% of course grade |
| Exams (2) | 50% of course grade |
| Final Exam | 25% of course grade |

SOME COMMENTS

Homework Assignments:

Homework assignments have two parts: online and written/handed in. The online portion is on WileyPlus. You should have purchased an access code, either with a paper or electronic copy of the text. The grades from each part will be combined to yield a single grade. The handed-in HW will have fewer problems than the online, but will be graded by a human being, so be neat, put the problems in order and show work for full credit. The online HW will have its own grading policy which I specify on WileyPlus.

A computer or calculator may be used to aid with the calculations in the homework. We will use Maple in class, which is widely available on campus, and I will give you worksheets with examples of the types of calculations you will be required to do for the class. However, Maple is not the only software package out there with these capabilities, and you are welcome to use whatever package suits you. You are encouraged to work together on the assignments, but are asked to write up the solutions individually.

Written Homework assignments will be due on Wednesdays by 2:00 p.m. Homework received on Thursday by 2:00 p.m. will receive a 25% deduction, on Friday by 2:00 p.m., a 50% deduction. Homework will not be accepted any later than Friday. You may hand in your assignment in class, or you can place it in the homework box in the main office, MATH 111. Please have your assignments stapled or paper-clipped on 8.5 by 11 inch paper. Online HW is due the same day as the written, but at 11:45 p.m.

Readings:

In mathematics lectures, a new term is often defined at the beginning of the class period and then used repeatedly throughout the session. It is helpful to be prepared for class by reading the text ahead of time. Thus, when a new topic is introduced in class, it is *not* the first time you have seen it! The reading assignments are designed to help you make better use of class time, they are to be done *before* the material is covered in class.

Exam Information:

There will be two in-class exams and a final given on the dates listed at the bottom of the first page of this syllabus. The final exam will be cumulative with a slight emphasis on the material covered after the second test. Make-ups for an exam will not be given unless you have a valid excuse and you contact me prior to the exam.

Grading:

Grading will be done on the usual percentage scale, 90-100% A, 80-89 % B, etc.

Students with Disabilities:

Students with disabilities should discuss accommodations with me.

Academic Misconduct:

All students need to be familiar with the Student Conduct Code. You can find it in the “A to Z Index” on the UM home page. From this, please note that all students are expected to practice academic honesty. Academic misconduct is subject to an academic penalty by the course instructor and/or a disciplinary sanction by the University.

Final Note:

Announcements made in class are considered addenda to this syllabus.