

MATH311 Ordinary Differential Equations (winter 2021)

Text: Elementary Differential Equations (6th ed.), by Edwards and Penny

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Course objectives: This course is an introduction to the subject of differential equations. Topics include

1. First-order ordinary differential equations (Sect. 1.1 up to 1.6)
2. Higher-order ODEs (All sections except 2.7)
3. Power series methods (3.1 up to 3.4)
4. Laplace transform methods (4.1 up to 4.4)
5. Linear system of ODEs (5.1 up to 5.4).

Differential equation is a powerful tool in solving practical problems. Many examples will be studied in the course.

Course structure: The course is divided into 20 learning modules, that is one module per day with each module covering roughly 1 section. In each module, there is a mini-lecture that briefly goes over the section, highlighting important points for attention. There is **no need** to click on the mini-module folder, you will see the mini-lecture once you open the module, or you may click on the pdf version of the module near the bottom. Please read through the mini-lecture before you read the textbook. Remember, for an on-line course learning responsibilities lie heavily on the students. If a person finds it hard to read and comprehend math independently, or cannot devote enough time to study during this four-week period, then this course is not suitable for him/her. Homework is assigned at each module. It is collected for grading at the end of the session. We will have four exams, and exam problems are either selected from the homework or are very similar. In each module there is a link to Discussion Board. Discussion Board is the place where you can post questions and have discussions with me and your fellow students. In some modules, there is also a link to a YouTube video. The video shall give

you additional expositions on some topics. Students may watch other related youtube videos for study as well. On average, a student is expected to spend at least 3 hours in each module.

Office hour: Zoom office hour on Tue. and Thur. (1–2pm). Zoom id: 720 057 6697.

Homework: Homework is assigned at each module, and it is due at the end of each Sunday. But HW will not be graded in details. Instead it will be used to evaluate students' attendance and effort in the study.

Exams: There will be four exams. That is about one exam per week. Exams are not accumulative, they cover the material learned in that week. **There is NO make-up exams.**

Exam 1: Dec 23, 2020, Exam 2: Jan 1, 2021,
Exam 3: Jan. 8, 2021, Exam 4: Jan 15, 2021.

Exams are 100 points each. Partial credits will be given to reasonable steps. **Answers without proper steps and explanations will not have credit!** As stated before, exam problems are either selected from homework or are similar. Please print out the exam and do it on paper. To submit your work, scan or take a photograph of your work, then **make a pdf file** and upload directly to Blackboard. Other format of files may not submit correctly to Blackboard. Remember to **double check** to make sure that your scanned result or picture is clear to read. Moreover, make sure you have submitted all intended pages. Illegible or late submissions are not accepted for grading. Only two attempts are allowed for submission. Please DO NOT submit to me by email. Also do not wait until the last minute to submit, because technical problems may cause a late submission. **Warning: Exam work suspected of cheating will not be graded and will be reported to the student's home school.**

Grading: Homework: 50, Exams: 100pts each. Here is a rough score-grade conversion:

400 and above=A- to A, 340-399=B- to B+, 280-339=C- to C+, 200-279=D- to D+, 199 or less =F