

# Course syllabus

## Course description

This course serves as an introduction to differential equations with a focus on solution techniques, transforms and modelling. Topics include first and second order linear ordinary differential equations, systems of first order linear differential equations, Laplace transforms, Fourier series and separation of variables for linear partial differential equations.

## Textbook

The recommended textbook for this course is Jiří Lebl's online textbook [Notes on Diffy Qs - Differential Equations for Engineers](http://www.jirka.org/diffyqs/) (<http://www.jirka.org/diffyqs/>). We will not follow it exactly but everything we cover will be either in there or covered in the online video lectures. If you prefer to have a physical book, any recent edition of Boyce and DiPrima's *Elementary Differential Equations and Boundary Value Problems* would be suitable.

## Marking scheme

- Weekly WeBWork assignments (12) - 10%
- Weekly written assignments (9) - 10% (we will count your best 7 out of 9)
- Midterm - 30%
- Final exam - 50%

## Homework

Homework for the course will come in two forms, (1) WeBWork assignments and (2) written assignments (scanned or created electronically and uploaded). As a general rule, there will be one of each type each week (exceptions for midterm week, for example). Doing homework (yourself) is critical to learning the material in this course - working with peers is ok but must be supplemented with independent practice.

WeBWork assignments are accessed and completed using the WeBWork menu link. Written assignments are accessed and submitted using the GradeScope menu link.

### Written assignment guidelines

- For each written assignment, you will upload a scan of your written work to GradeScope. Using a tablet with writing app is fine as long as you can export as a well-formatted pdf.
- Your work must be legible and well-organized enough for the markers to be able to read it and follow your logic without hesitation.

- Start a new page for each numbered question (lettered subparts of a question can be on the same page).
- You must use a scanner or scanning mobile app to create a single small (<10MB) pdf file that has even lighting. Do not take jpg pictures and glue them together in Word. Some people do this ok but mostly we end up with difficult-to-read grey-scale images that are sometimes ridiculously large (100+MB). ([video scanning demo \(https://canvas.ubc.ca/courses/79813/pages/scanning-demo\)](https://canvas.ubc.ca/courses/79813/pages/scanning-demo).)
- Use letter-sized paper. Do not use graph paper. You can use a tablet or similar to write up your answers provided your submitted pdf consists of separate letter-sized pages.
- The TA have been instructed to deduct 1 or 2 points for not adhering to these guidelines.

The written assignments are intended to be worked on during the last class of each week with the instructor providing some guidance as you work. The assignment questions will be released on Wednesday mornings so you have a bit of time to look them over before class. Skipping class is not advisable because the assignments are designed to be integrated directly into the lecture content for the week. They will be due on the following Wednesday.

There are three TA markers for the course. Each marker will mark the assignments for one third of the students in the course, each group being referred to as marker groups. You can sign up for a marker group on the [People \(https://canvas.ubc.ca/courses/79813/users\)](https://canvas.ubc.ca/courses/79813/users) page. You cannot change marker group after the initial sign-up period (ending on the due date of the first assignment). If you don't sign up for a marker group, you will be randomly assigned to one.

You can work on the written assignments in groups of up to three students (referred to as submission groups). Your submission group can change from assignment to assignment as long as all group members are in the same marker-group.

**There will be a total of 9 written assignments. Only 7 of them will be counted.**

## Missing midterms, exams, late homework

If you are unable to attend the midterm, you must notify your instructor before (preferred) or within two days after (in the case of emergencies) the exam date. In either of these two cases (and only in these two cases), suitable accommodations will be made. Generally, your final exam mark will be used in place of the missing midterm mark. Undocumented absence from the midterm will be given a score of zero.

The written homework will be due Wednesday night at 11:59 pm. It is possible to submit late but your assignment WILL NOT BE MARKED if you submit it more than 1 hr late unless you have contacted your instructor with a reasonable explanation for the lateness. DO NOT email submissions to your instructor.

DO NOT make any travel plans for December until the exam schedule is announced as no accommodation will be made for students unable to attend the final exam due to conflicting plans.

Note that the exam period will be compressed and your exams could be scheduled any day of the week.

## Getting help

There are a number of resources available for getting help with course material. These include

- your instructor's office hours,
- the textbook,
- Piazza, the online discussion forum for the course,
- the YouTube playlist for the course (and other videos online),
- posted practice problems with solutions,
- The Math Learning Centre (should appear as a course in Canvas).

## Prerequisites

- First year calculus (MATH 100/101 or equivalent)
- Linear algebra (MATH 152, MATH 221 or MATH 223)
- Co-requisite: Multivariable calculus (MATH 200, MATH 217, MATH 226, MATH 253 or MATH 263)