

# MATH 215/255, Section 104: Ordinary Differential Equations

Fall 2018 Course Outline

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**Instructor:** Shirin Boroushaki

**Office:** Math building, Room 229A

**Email:** shirinbr@math.ubc.ca

**Office hours:** Thursday 4-5 pm and Fridays: 4-5:30 pm

**Class location:** M/F: Macmillan Building, Room 166. W: Pharmaceutical Building, Room 1101.

**Instructor-In-Charge:** Brian Marcus

**Registration:** Questions regarding registration for this class should be addressed to the Mathematics Department office staff Room 121 Mathematics Building.

**Textbook:** Our main reference will be the online textbook Diffy Qs by Lebl. You can download the book (for free) or order a copy (for cheap) to be sent to you from this page: Diffy Qs

**Course Description:** This course is an introduction to ordinary differential equations (ODEs). We will cover most of chapters 1, 2, 3, 6 and 8 of the textbook. In this course, you will learn techniques for explicitly solving several classes of ODEs. However, most ODEs cannot be solved explicitly and so we will introduce numerical approximations to solutions of ODEs, and qualitative theory of ODEs. Many applications will be included.

**Pre-reqs and Co-reqs:**

Pre-reqs: Calculus II: One of MATH 101, MATH 103, MATH 105, MATH 121, SCIE 001 and Linear Algebra: one of MATH 152, MATH 221, MATH 223.

Co-reqs: Multivariable Calculus: One of MATH 200, MATH 217, MATH 226, MATH 253, MATH 263.

**Important Dates:**

First day of class: Wednesday, Sept. 5

Midterm 1: Friday, Oct, 12 (in class)

Midterm 2: Friday, Nov. 16 (in class)

Last day of classes: Friday, Nov. 30

Final exam: TBA

**Course Evaluation:**

Webwork (5%)

Homework (10%)

Midterm 1 (17.5%)

Midterm 2 (17.5%)

Final exam (50%)

**Webwork and Homework:** They will be assigned in alternate weeks and due on Fridays, 11:59PM.

*Webwork:* Follow the link "Webwork (general link)" (in Course Summary below) to complete Webwork assignments. *Homework:* All homework assignments are posted (in Course Summary below) and are submitted on Canvas.

*Homework assignments* consist of two parts: Written questions: Submit a scanned copy or a photo from your phone. MATLAB questions: Follow the instructions on the assignment .pdf.

**Policies on homework and midterms:**

You must submit only your own work. Although you are welcome to study together and discuss the homework with other students, the work you submit must be your own. UBC policies on cheating and plagiarism are extremely strict. If in doubt, enquire before submitting.

Not all homework problems will necessarily be graded.

Late homework will not be accepted.

Missing a midterm normally results in a mark of 0. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency. In the latter case, the instructor must be notified within 48 hours of the missed test, and presented with a doctor's note immediately upon the student's return to UBC. In these cases, the proportion of the course mark allocated to the midterm will be re-allocated to the final exam.

No make-up midterms will be given.

Term marks may be scaled up or down on a class-wide basis, depending on performance on the final exam. This is to ensure fairness across all sections of the course.

**MATLAB Information:**

Create a Mathworks account using your UBC email address: <https://www.mathworks.com/mwaccount/register>  
Use MATLAB Online: <https://matlab.mathworks.com/> If you prefer to run MATLAB on your machine, login to your Mathworks account and click the down arrow to download.

Checkout the Modules section to get started with MATLAB. MATLAB TAs are available during the weeks prior to assignment due dates. See MATLAB Help Center schedule. Math Learning Centre (MLC) Teaching Assistants are available to answer MATH215/255 related questions at the Math Learning Center located in LSK 301/302.

**Other textbooks and resources:** Physical textbooks such as Boyce and DiPrima (any recent edition) or Edwards and Penney. Or Pauls Online Notes