



**COURSE OUTLINE**

1. **Course:** MATH 375, Differential Equations for Engineers and Scientists - Fall 2019

Lecture 01: MWF 10:00 - 10:50 in ICT 121

Instructor	Email	Phone	Office	Hours
Dr Mohammed Aiffa	aiffam@ucalgary.ca	403 220-6313	MS 432	11:00-13:00

Lecture 02: MWF 10:00 - 10:50 in CHC 105

Instructor	Email	Phone	Office	Hours
Dr Elena Braverman	maelena@ucalgary.ca	403 220-3956	MS 444	M 8:30-9:30 W 13:30-14:30 F 14:30-16:00

Lecture 03: MWF 14:00 - 14:50 in KNB 126

Instructor	Email	Phone	Office	Hours
Kexue Zhang	TBA	TBA	TBA	TBA

Lecture 04: MWF 14:00 - 14:50 in CHC 105

Instructor	Email	Phone	Office	Hours
Dr Mohammed Aiffa	aiffam@ucalgary.ca	403 220-6313	MS 432	11:00-13:00

**Coordinator(s)**

Name	Email	Phone	Office	Hours
Dr Mohammed Aiffa	aiffam@ucalgary.ca	403 220-6313	MS 432	11:00-13:00

**Course Site:**

D2L: MATH 375 L01-(Fall 2019)-Differential Equations for Engineers and Scientists

**Note:** Students must use their U of C account for all course correspondence.

2. **Requisites:**

See section [3.5.C](#) in the Faculty of Science section of the online Calendar.

**Prerequisite(s):**

Mathematics 277 or both Mathematics 267 and 177.

**Antirequisite(s):**

Credit for Mathematics 375 and either 376 or Applied Mathematics 311 will not be allowed.

3. **Grading:**

The University policy on grading and related matters is described in [F.1](#) and [F.2](#) of the online University Calendar. In determining the overall grade in the course the following weights will be used:

Component(s)	Weighting %	Date
Assignments - Webwork (6)	18	
Midterm Examination	32	October 24 <sup>th</sup> , 2019
Final Examination	50	To be scheduled by the Registrar

Each piece of work (reports, assignments, quizzes, midterm exam(s) or final examination) submitted by the student will be assigned a grade. The student's grade for each component listed above will be combined with the indicated weights to produce an overall percentage for the course, which will be used to determine the course letter grade.

The conversion between a percentage grade and letter grade is as follows.

	<b>A+</b>	<b>A</b>	<b>A-</b>	<b>B+</b>	<b>B</b>	<b>B-</b>	<b>C+</b>	<b>C</b>	<b>C-</b>	<b>D+</b>	<b>D</b>
<b>Minimum % Required</b>	95 %	90 %	85 %	80%	76%	72 %	68 %	64%	59%	55 %	50 %

Bear in mind that a grade of **D** or lower will result if the student's score in the final exam is less than 45%. This is to ensure that those students who receive a **C-** or better have a reasonable chance to succeed in courses that require this course as a prerequisite.

This course has a registrar scheduled final exam.

#### 4. Missed Components Of Term Work:

In the event that a student misses the midterm or any course work due to illness, supporting documentation, such as a medical note or a statutory declaration will be required (see [Section M.1](#); for more information regarding the use of statutory declaration/medical notes, see [FAQ](#)). Absences must be reported within 48 hrs.

The regulations of the Faculty of Science pertaining to this matter are found in the Faculty of Science area of the Calendar in [Section 3.6](#). It is the student's responsibility to familiarize themselves with these regulations. See also [Section E.3](#) of the University Calendar.

If you miss the midterm, you must provide supporting documentation as outlined in

<https://www.ucalgary.ca/pubs/calendar/current/m-1.html>

If you are granted an excuse for missing the midterm, then you will be asked to write a makeup that will be offered the week following the exam.

**Note:** unlike the midterm, the makeup will **not** be multiple choice.

#### 5. Scheduled Out-of-Class Activities:

The following out of class activities are scheduled for this course.

Activity	Location	Date and Time	Duration
Midterm	ENE 241, ENE 243, ST 140, ST 148	Thursday, October 24, 2019 at 6:00 pm	2 Hours

**REGULARLY SCHEDULED CLASSES HAVE PRECEDENCE OVER ANY OUT-OF-CLASS-TIME-ACTIVITY.** If you have a conflict with the out-of-class-time-activity, please contact your course coordinator/instructor no later than **14 days prior** to the date of the out-of-class activity so that alternative arrangements may be made.

A common 90 minutes midterm exam is scheduled.

More information will be provided after the start of the term.

## 6. Course Materials:

Recommended Textbook(s):

William F. Trench, *Elementary Differential Equations with Boundary Value Problems*. Digital Commons at Trinity University.

**Textbook:** Our text is an open access text available at

<https://digitalcommons.trinity.edu/textbooks>

**Assignments:** We will be using the Webwork system for our on-line assignments. They can be accessed at [webwork.ucalgary.ca/webwork2/F2019MATH375/](http://webwork.ucalgary.ca/webwork2/F2019MATH375/) or directly from the course's D2L site. Each student will have an account and will be able to do the assignments using any electronic device with internet access. All **six** assignments will count toward your overall grade. Do not wait until the last night to work on your assignment. Start early so you have enough time to seek help with the problems you might find challenging. If you understand the lectures and attend the Tutorials, you shouldn't have any difficulty doing the assignment problems.

**Homework:** will be posted weekly on D2L in the form of worksheets. You are responsible for finding out what problems have been assigned. Only selected problems from the worksheets will be solved during the weekly tutorial. Even though the homework problems are not collected, you should do as many of the assigned problems as possible. Experience shows that students who do little or no homework, usually don't do well in the course. Help is available from the Teaching Assistant, during the tutorials and from the Instructor during the office hours.

Assignments and homework are critical components of the course to help prepare you for the exams as well as help you self-assess your progress in the course.

**Announcements:** course announcements and other relevant material, will be available at the course's D2L website. You are strongly advised to visit the site regularly to check for eventual new announcements and updates.

### **Important Dates:**

<i>Fri, Sep 06</i>	<i>First Lecture</i>
<i>Mon, Oct 14</i>	<i>Thanksgiving, no classes</i>
<i>Thu, Oct 24</i>	<i>Midterm</i>
<i>Mon-Fri, Nov 11-15</i>	<i>Remembrance Day &amp; Midterm Break</i>
<i>Fri, Dec 06</i>	<i>Last Lecture</i>
<i>Mon-Thu, Dec 09-19</i>	<i>Final exams period</i>

## 7. Examination Policy:

Both midterm and final exams are closed book. The use of calculators and/or portable computing devices are not allowed.

Students should also read the Calendar, [Section G](#), on Examinations.

## 8. Approved Mandatory And Optional Course Supplemental Fees:

There are no mandatory or optional course supplemental fees for this course.

## 9. Writing Across The Curriculum Statement:

For all components of the course, in any written work, the quality of the student's writing (language, spelling, grammar, presentation etc.) can be a factor in the evaluation of the work. See also [Section E.2](#) of the University Calendar.

## 10. Human Studies Statement:

Students will not participate as subjects or researchers in human studies.

See also [Section E.5](#) of the University Calendar.

## 11. Reappraisal Of Grades:

A student wishing a reappraisal, should first attempt to review the graded work with the Course

coordinator/instructor or department offering the course. Students with sufficient academic grounds may request a reappraisal. Non-academic grounds are not relevant for grade reappraisals. Students should be aware that the grade being reappraised may be raised, lowered or remain the same. See [Section I.3](#) of the University Calendar.

- a. **Term Work:** The student should present their rationale as effectively and as fully as possible to the Course coordinator/instructor within **10 business days** of either being notified about the mark, or of the item's return to the class. If the student is not satisfied with the outcome, the student shall immediately submit the Reappraisal of Graded Term work form to the department in which the course is offered. The department will arrange for a re-assessment of the work if, and only if, the student has sufficient academic grounds. See sections [I.1](#) and [I.2](#) of the University Calendar
- b. **Final Exam:** The student shall submit the request to Enrolment Services. See [Section I.3](#) of the University Calendar.

## 12. Other Important Information For Students:

- a. **Mental Health** The University of Calgary recognizes the pivotal role that student mental health plays in physical health, social connectedness and academic success, and aspires to create a caring and supportive campus community where individuals can freely talk about mental health and receive supports when needed. We encourage you to explore the mental health resources available throughout the university community, such as counselling, self-help resources, peer support or skills-building available through the SU Wellness Centre (Room 370, MacEwan Student Centre, [Mental Health Services Website](#)) and the Campus Mental Health Strategy website ([Mental Health](#)).
- b. **SU Wellness Center:** The Students Union Wellness Centre provides health and wellness support for students including information and counselling on physical health, mental health and nutrition. For more information, see [www.ucalgary.ca/wellnesscentre](http://www.ucalgary.ca/wellnesscentre) or call [403-210-9355](tel:403-210-9355).
- c. **Sexual Violence:** The University of Calgary is committed to fostering a safe, productive learning environment. The Sexual Violence Policy (<https://www.ucalgary.ca/policies/files/policies/sexual-violence-policy.pdf>) is a fundamental element in creating and sustaining a safer campus environment for all community members. We understand that sexual violence can undermine students' academic success and we encourage students who have experienced some form of sexual misconduct to talk to someone about their experience, so they can get the support they need. The Sexual Violence Support Advocate, Carla Bertsch, can provide confidential support and information regarding sexual violence to all members of the university community. Carla can be reached by email ([svsa@ucalgary.ca](mailto:svsa@ucalgary.ca)) or phone at [403-220-2208](tel:403-220-2208).
- d. **Misconduct:** Academic misconduct (cheating, plagiarism, or any other form) is a very serious offence that will be dealt with rigorously in all cases. A single offence may lead to disciplinary probation or suspension or expulsion. The Faculty of Science follows a zero tolerance policy regarding dishonesty. Please read the sections of the University Calendar under [Section K](#). Student Misconduct to inform yourself of definitions, processes and penalties. Examples of academic misconduct may include: submitting or presenting work as if it were the student's own work when it is not; submitting or presenting work in one course which has also been submitted in another course without the instructor's permission; collaborating in whole or in part without prior agreement of the instructor; borrowing experimental values from others without the instructor's approval; falsification/ fabrication of experimental values in a report. **These are only examples.**
- e. **Assembly Points:** In case of emergency during class time, be sure to FAMILIARIZE YOURSELF with the information on [assembly points](#).
- f. **Academic Accommodation Policy:** Students needing an accommodation because of a disability or medical condition should contact Student Accessibility Services in accordance with the procedure for accommodations for students with disabilities available at [procedure-for-accommodations-for-students-with-disabilities.pdf](#).

Students needing an accommodation in relation to their coursework or to fulfill requirements for a graduate degree, based on a protected ground other than disability, should communicate this need, preferably in writing, to the Associate Head of the Department of Mathematics & Statistics, Jim Stallard by email [jbstall@ucalgary.ca](mailto:jbstall@ucalgary.ca) or phone 403-220-3953. Religious accommodation requests relating to class, test or exam scheduling or absences must be submitted no later than **14 days** prior to the date in question. See [Section E.4](#) of the University Calendar.

- g. **Safewalk:** Campus Security will escort individuals day or night (See the [Campus Safewalk](#) website). Call [403-220-5333](tel:403-220-5333) for assistance. Use any campus phone, emergency phone or the yellow phones located at most parking lot pay booths.
- h. **Freedom of Information and Privacy:** This course is conducted in accordance with the Freedom of

Information and Protection of Privacy Act (FOIPP). Students should identify themselves on all written work by placing their name on the front page and their ID number on each subsequent page. For more information, see [Legal Services](#) website.

- i. **Student Union Information:** [VP Academic](#), Phone: [403-220-3911](#) Email: [suvpaca@ucalgary.ca](mailto:suvpaca@ucalgary.ca). SU Faculty Rep., Phone: [403-220-3913](#) Email: [sciencerep@su.ucalgary.ca](mailto:sciencerep@su.ucalgary.ca). [Student Ombudsman](#), Email: [ombuds@ucalgary.ca](mailto:ombuds@ucalgary.ca).
- j. **Internet and Electronic Device Information:** Unless instructed otherwise, cell phones should be turned off during class. All communication with other individuals via laptop, tablet, smart phone or other device is prohibited during class unless specifically permitted by the instructor. Students that violate this policy may be asked to leave the classroom. Repeated violations may result in a charge of misconduct.
- k. **Surveys:** At the University of Calgary, feedback through the Universal Student Ratings of Instruction ([USRI](#)) survey and the Faculty of Science Teaching Feedback form provides valuable information to help with evaluating instruction, enhancing learning and teaching, and selecting courses. Your responses make a difference - please participate in these surveys.
- l. **Copyright of Course Materials:** All course materials (including those posted on the course D2L site, a course website, or used in any teaching activity such as (but not limited to) examinations, quizzes, assignments, laboratory manuals, lecture slides or lecture materials and other course notes) are protected by law. These materials are for the sole use of students registered in this course and must not be redistributed. Sharing these materials with anyone else would be a breach of the terms and conditions governing student access to D2L, as well as a violation of the copyright in these materials, and may be pursued as a case of student academic or [non-academic misconduct](#), in addition to any other remedies available at law.

### **Course Description:**

In this course you will be introduced to ordinary and partial differential equations. You will learn how to solve first order differential equations, linear higher order constant coefficients differential equations, and systems of linear differential equations. You will learn about Laplace transform and its use in solving initial value problems with discontinuous right hand sides. Finally, you will be introduced to Fourier series and their use in solving the one dimensional heat equation, the one dimensional wave equation, and the two dimensional Laplace equation.

### **Course Outcomes:**

- classify ordinary and partial differential equations, check whether a given function is a solution of a given equation or a given initial value problem, distinguish between general and particular solutions;
- apply the general theory of second and higher order linear ordinary differential equations to design the characteristic equation for equations with constant coefficients and Cauchy-Euler equations, construct the general solution, solve non-homogeneous equations using methods of undetermined coefficients or variation of parameters;
- solve certain types of first order ordinary differential equations (linear, separable, Bernoulli and exact equations), develop and solve equations arising in various fields of science and engineering;

Department Approval:

Electronically Approved

Date: 2019-09-04 12:29

Associate Dean's Approval for out of regular class-time activity:

Electronically Approved

Date: 2019-09-04 14:58