

Course Objectives:

The course introduces the basic methods for solving and analyzing ordinary differential equations and gives a variety of applications.

Course Schedule: (approximate, shift topics back at least 1 lec. after Victoria Day in May)

Week	Lec#	Dates	Section	Lecture Topics	Events**
1	1-2+	May 5-9	1.1, 1.2	Intro, 1st-Order Separable & Linear DEs	Ex. Lec
2	3,4	May 12-16	1.2, 1.3	Sketching Sol., Undetermined Coeffs., Applications	Quiz 1
3	5	May 20-23	2.1	Dimensional Analysis, Non-Dimensionalization	Quiz 2
4	6,7	May 26-30	2.2	Dimensional Analysis ctd., Buckingham 'Pi' Thm.	Quiz 3
5	8,9	June 2-6	3.1, 3.2	Second-Order Constant-Coeff. DEs	Quiz 4
6	10,11	June 9-13	3.2, 3.3	Analysis of Mechanical Oscillator	Quiz 5
7	12,13	June 16-20	3.3, 4.1	Resonance, Intro & Laplace Transforms	Midterm
8	14,15	June 23-27	4.2	More Laplace Transforms, Solving DEs, Heaviside	Quiz 6
9	16	July 2*-4	4.3 - 4.5	Convolution, Transfer fun., Dirac Delta	No Quiz*
10	17,18	July 7-11	5.1, 5.2	Intro & Solving Vector DEs	Quiz 7
11	19,20	July 14-18	5.4, 5.3	Sketching Phase Portraits, Laplace revisited	Quiz 8
12	21,22	July 21-25	5.3, 5.5	The Fun. Matrix and Variation of Parameters	Test 2
13	23,24	July 28-30		Catch-up / Q& A	Quiz 9

NOTES: **this schedule indicates the week in which each quiz will be *written*, but does NOT indicate the *material covered* for that quiz; see the list of Practice Questions posted on LEARN.

* Wednesday, July 2nd will follow a MONDAY schedule for all UW courses.

+ There will probably be an extra lecture on Wed. May 7 during the TUT time to “get ahead”.

Textbook: *Introduction to Differential Equations, Course Notes for AMath 250, edition 2.0*, by J. Wainwright and J. West, available as a free pdf here. I recommend that you print a hardcopy (e.g. via W Print).

Final Grade: Quizzes 18%, Test 2 12%, Midterm 20-35%, Final Exam 35-50% (whichever is better). For details on missed assessments, please see the next page. If a quiz or exam is forced online, its weight may be greatly reduced for integrity.

Quizzes: The weekly tutorial time (TUT) will be used to have quizzes which last 45 minutes each.

Practice Questions: In order to prepare for quizzes, there is a list of practice questions that you should work through.

Tests/Exams: Midterm: Thursday, June 19th, 4:30-5:50pm location TBA. Test 2: Wed. July 23 during the lecture time. Final Exam TBA.

NOTE: if you have a time conflict with another one of your courses (e.g. midterm overlaps our midterm/quiz/lecture), then the instructor for the other course MUST accommodate you, provided that you give sufficient notice. Our midterm, quizzes, and lectures are pre-booked, so we have priority at those times. For more information, see

<http://ugradcalendar.uwaterloo.ca/page/Acad-Regs-Guidelines-Tests-Formal-Lecture-Period>.

Course website: learn.uwaterloo.ca

Instructor: Prof. Joe West, jjwest@uwaterloo.ca, office hours:

<http://www.math.uwaterloo.ca/~jjwest/OfficeHours.htm>. If you don't attend lectures, please do not ask for help.

Missed assessments and illness:

Please do not come to campus when you are contagious.

If you are ill and need to miss an assessment, something reasonable will be done; contact your instructor. Note that co-op interviews do NOT count as a valid conflict — you should reschedule those, and they should never force you to miss anything on your UW schedule.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility. [Check <https://uwaterloo.ca/academic-integrity/> for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, <https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-70>. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about rules for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline, <https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-71>. For typical penalties check Guidelines for the Assessment of Penalties, <https://uwaterloo.ca/secretariat/guidelines/guidelines-assessment-penalties>.

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals, <https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policy-72>.

Note for students with disabilities: AccessAbility Services (AAS), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with

AAS at the beginning of each academic term.

Photos/Recordings: the instructor and/or TA(s) may take photos and/or video/audio recordings during and around quizzes, exams, tutorials, or lectures in order to gather potential evidence of academic misconduct or to check attendance. Such recordings won't be posted online and will be deleted when no longer needed. Students may NOT record anything (e.g. lectures, office hours) without permission of the instructor.

Intellectual Property: Students should be aware that this course contains the intellectual property of their instructor, TA, and/or the University of Waterloo. Intellectual property includes items such as:

- Lecture content, spoken and written (and any audio/video recording thereof);
- Lecture handouts, presentations, and other materials prepared for the course; and
- Questions or solution sets from various types of assessments (e.g., assignments, quizzes, tests, final exams)

Course materials and the intellectual property contained therein are used to enhance a student's educational experience. However, **sharing this intellectual property without the intellectual property owner's permission is a violation of intellectual property rights.** For this reason, it is necessary to ask the instructor, TA and/or the University of Waterloo for permission before uploading and sharing the intellectual property of others online.

Permission from an instructor, TA or the University is also necessary before sharing the intellectual property of others from completed courses with students taking the same/similar courses in subsequent terms/years. In many cases, instructors might be happy to allow distribution of certain materials. However, doing so without expressed permission is considered a violation of intellectual property rights.

Please alert the instructor if you become aware of intellectual property belonging to others (past or present) circulating, either through the student body or online. The intellectual property rights owner deserves to know (and may have already given their consent).

See policy 73 – Intellectual property rights (<https://uwaterloo.ca/secretariat/policies-procedures-guidelines/policies/policy-73-intellectual-property-rights>)

UW Email Address: If you are corresponding with other members of the university community, it is expected that you use your University of Waterloo account (userid@uwaterloo.ca). See the "Official Student Email Address" link at uwaterloo.ca/email.