

## MATH 1005 E, Fall 2020

### Differential Equations and Infinite Series for Engineering or Physics

**Instructor:** Ranjeeta Mallick, HP 5250

**Email:** [rmallick@math.carleton.ca](mailto:rmallick@math.carleton.ca)

**Text:** Ordinary Differential Equations and Infinite Series (2nd edition) by Sam Melkonian

**Lectures:** Tuesday and Thursday 7:35-8:55 pm starting on September 10, 2020 on cuLearn. There is no class during the week of Oct 26 to 30 (Fall Break).

**Office Hours:** Wednesday 5-6 pm, or by appointment on cuLearn. (subject to change)

**Tutorials:** Thursday 9:05-9:55 pm, starting **September 24, 2020**. During the tutorial sessions, a TA will go through examples of some challenging questions that appear on the assignments /tests.

**Grading scheme:**

Assignments: 20%

In Tutorial Tests: 40 %

Final Exam: 40 %

**Assignments:** There will be 11 assignments in total. Assignments are due each **Thursday at 11:59 pm**. Neither email submission nor late submission will be accepted. You need to submit a single pdf file to cuLearn. Detailed instruction will be given in the assignment.

In case some students have difficulty to submit their assignment electronically, you may try these two apps: CamScanner and TapScanner. These apps can help you scan your assignment with a smart phone.

The average of **best 8 out of 11 assignments** will be counted towards the assignment component of the final grade.

**Tests:** There will be four 50-minutes, closed book tests held during regular tutorial sessions on **Oct 1, Oct 15, Nov 5 and Nov 19, 2020**.

No make-up, early or late tests will be given. Students who must miss a test must inform me prior to the test and provide supporting documentation within one business day of the test date. If you miss a test for medical reason, an official and signed medical note must be presented. If you provide adequate documentation (doctor's note, etc), then the weighting of that test will be placed on the final exam, otherwise a mark of 0 will be given for the test. The total weight of missing test transferred to final exam must be less than 20% of total mark.

If you maintain **at least 40% on every test**, the average of best three tests out of four tests will be counted towards the test component of the final grade.

**Final Exam:** 3-hour final examination to be held during the December exam period (12th-23rd) covering the entire course. Date and time is TBD, so DO NOT schedule flights or other departures during the exam period! Any issues with assignments/test grades must be addressed one week before the final exam.

**Passing Conditions:** Students **who fail to achieve a term mark of at least 40% OR fail to achieve a minimum mark of 40% on the final exam** will automatically be assigned a grade of F in the course. Exceptions to this rule may be made at the discretion of the instructors.

**Homework:** Selected exercises, mainly from the text, will be posted on cuLearn. These exercises are not to be handed in and will not be graded. However, to succeed in the course it is ABSOLUTELY ESSENTIAL that you do the exercises on a regular basis.

**Calculators:** Only non-programmable calculators are allowed during the tests and the final examination. I reserve the right to disallow any calculators.

**Announcements:** All course related materials (slides, assignments, tests, solutions, office hours, announcements) will be done using cuLearn. Be sure to check the CuLearn page regularly for updates.

**Academic Accommodation:** You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

**Students with disabilities requiring academic accommodations** in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the deadlines published on the PMC website: <https://carleton.ca/pmc/>

**Pregnancy/Religious Accommodation:** write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details, visit the Equity services website <http://www2.carleton.ca/equity/accommodation>

**Academic Integrity:** Students are required to be familiar with Section 10 of the Academic Regulations of Carleton University: <https://calendar.carleton.ca/undergrad/regulations/academicregulationsoftheuniversity/>

All tests, assignments, quizzes, and exams are to be done independently. Academic dishonesty in any form will not be tolerated. Students who violate the standards of academic integrity during a test/examination will receive a grade of zero for that test/examination, and will be required to meet with the Associate Dean of Science for further disciplinary action.

### Tentative Schedule

Week	Textbook Sections	Topics
Week 1	1.1,2.1,2.2	Basic Concepts, First Order Equations, Separable Equations, Homogeneous Equations
Week 2	2.3,2.4,2.5	Linear Equations, Functions of Two Variables, Exact Equations
Week 3	3.1,3.2	Second Order Equations, Basic Definitions, Linear Homogeneous Equations
Week 4	3.3	Linear Nonhomogeneous Equations
Week 5	5.1	Linear Systems (2X2 systems only), Homogeneous Systems
Week 6	6.1	Sequences
Week 7	6.2	Series: The Integral Test, Approximation of Series, The Comparison Tests
Week 8	6.2	Alternating Series, Approximations of Alternating Series, Absolute and Conditional Convergence
Week 9	7.1	Taylor Series, Power Series
Week 10	7.2	Representations of Functions by Power Series, The Binomial Series, Taylor Polynomials and Approximations
Week 11	8.1	Fourier Series of Periodic Functions
Week 12	8.2 and Review	Fourier Series of Functions on Finite Intervals

The above is only an outline, and **may change** depending on the progression of the course.

**Online proctoring:** Please be aware by registering in this course you acknowledge that this course may use online proctoring tools. These online proctoring tools could require you to identify yourself via webcam. Additionally, while you are completing the proctored exam, your activities will be monitored. This could include direct observation via webcam and through the use of screen recording software. Evidence of academic misconduct during an exam will be treated seriously.