

Carleton University
School of Mathematics and Statistics
MATH 1005B
Differential Equations and Infinite Series for Engineering or Physics
Fall 2020

Instructor	Dr. (Eric) Hua (5218 HP)
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Web Site	https://carleton.ca/culearn/
Office Hours	Tuesdays and Wednesdays 1pm-2pm, or by appointment, or by email (email Subject: MATH1005B).
Textbook	Ordinary Differential Equations and Infinite Series, 2nd edition, by Sam Melkonian. Hard copies available at the Carleton University Bookstore.
Lectures	Sep 9 - Dec 11, Tue & Thu, 10:05 - 11:25. ZOOM link will be on CuLearn.
Tutorials	Thu: 16:35 - 17:25. Tutorial will start on Sep 18. Culearn.
Tests	There will be four tests (50 minutes each), held during the tutorial sessions, Thursdays, 16:35-17:25 , on the following dates: Oct 1, Oct 15, Nov 5, Nov 19, 2020
Assignments	Weekly assignments, 11 in total, count 8 only.

Prerequisites: MATH 1004 or a grade of at least C- in MATH 1007, and successful completion of an OAC in Algebra and Geometry. Otherwise, permission of the School. If you need further clarification, please contact the Mathematics Undergraduate Advisor.

Marking Scheme:

Tests	4 tests	40%
Assignments	The best 8 out of 11 assignments	20%
Final Exam	3 hours final exam	40%

Course Policies

- **Tutorial:**
 - You are required to attend all tutorials. During the tutorial, the TA will go through examples of some challenging questions that will be similar to the assignments/tests.

- First day of tutorials is September 18, 2020.
- **Assignments:**
 - There will be 11 assignments. The best 8 out of 11 will be counted.
 - Assignments are due prior to the start of tutorial class on the assigned due date, unless stated otherwise.
 - No late assignments will be accepted. No E-mail submission is accepted.
 - You need to submit **one** pdf file to cuLearn. You can use any electronic device or write on blank paper. CamScanner and TapScanner can help you scan your assignment with cellphone.
- **In Tutorial Tests:**
 - Four 50-minutes, closed book tests given during regular tutorial session on Thursday, Oct 1, Oct 15, Nov 5, Nov 19, 2020.
 - You are expected to take all the tests.
 - No make up, early, or delayed tests.
 - If you maintain at least 40% on every test, the lowest test will be dropped.
 - If you miss a test and provide supporting documentation within one business day of the test date (such as 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 tests transferred to final exam must be less than 20% of total mark.
- **Checking the Test/Assignment Grades:**
 - It is your responsibility to make sure that your test/assignment marks recorded correctly by visiting cuLearn.
 - Deadline to make any corrections is **within one week** when you receive marks.
- **Final Exam:**
 - 3-hours exam scheduled by university, closed book exam based on whole term.
 - It is the responsibility of each student to be available at the time of the examination. In particular, no travel plans for the examination period in December, 2020 should be made until the examination schedule is published.
 - Students wishing to see their examination papers must make an appointment within three weeks of the examination to do this.
- **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:**
 - Non-programmer calculators are permitted for this course. I reserve the right to confiscate any calculator during a test or final exam.
- **Course Information:**
 - All course related materials (slides, assignments, solutions, grades, announcements) will be posted on cuLearn.
 - It is your responsibility to keep up with information announced in class, on cuLearn, or sent to your Carleton e-mail account.
- **E-mail:**
 - According to Carleton University policy under the Freedom of Information of Privacy Act (FIPPA), Please use your Carleton account ONLY for all course related email, and write your course code Math 1005 B on the subject line.
- **Copyright:**
 - **All course related materials (including slides, assignments, solutions, and tests) are intended for personal use only and MAY NOT be reproduced or redistributed without prior written consent of the author(s).**
- **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.

University Policies

- **Academic Integrity:**
 - Students are required to be familiar with Section 10 of the Academic Regulations of Carleton University. 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.

- **Students with disabilities requiring academic accommodations:**
 - Students requiring academic accommodations in this course must contact a coordinator at the Paul Menton Centre for Students with Disabilities to complete the necessary Letters of Accommodation. After registering with the PMC, make an appointment to meet and discuss your needs with me in order to make the necessary arrangements as early in the term as possible.
 - If you require accommodations only for formally scheduled exam(s) in this course, you must request accommodations by the official accommodation deadline published on the [PMC website](#).
- **Pregnancy obligation:**
 - 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 see the [Student Guide](#).
- **Religious obligation:**
 - 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 see the [Student Guide](#).

Extra Help Options

- **Math Tutorial Center:**
 - There is a mathematics and statistics help centre located at 1160HP. For information visit the website <http://www5.carleton.ca/math/handbook-2/tutorial-centre/>
- **MS-LAP:**
 - Online support is available for this course through MS-LAP. You should automatically be registered in MS-LAP via CuLearn. You have access to online tutorial videos free of charge. For more information and tutorials on how to access MS-LAP, please see: <https://carleton.ca/math/math-learning-assistance-program/>

Important Dates: <https://carleton.ca/registrar/registration/dates-and-deadlines/>

- Oct 26-30: Fall break. Classes are suspended.
- November 13: Last day to request formal exam accommodations for December examinations to the [Paul Menton Centre for Students with Disabilities](#). Note that it may not be possible to fulfil accommodation requests received after the specified deadlines.

Tentative Schedule (This schedule is subject to change depending on the progress of the course.)

Week	Sections	Topics
Week 1	Sec 1.1, 2.1, 2.3	Basic concepts, Separable equations, first-order Linear equations.
Week 2	Sec 2.2, 2.4, 2.5	Functions of two variables, Partial derivatives, The Chain Rule, Exact equations, Bernoulli's equation, Homogeneous equations.
Week 3	Sec 3.1, 3.2	Homogeneous linear equations with constant coefficients, Cauchy-Euler equations, reduction of order.
Week 4	Sec 3.3	Nonhomogeneous linear equations, method of undetermined coefficients, variation of parameters.
Week 5	Sec 5.1	Linear systems.
Week 6	Sec 6.1	Linear systems, Sequences.
Week 7	Sec 6.2	The integral test, p-series, estimation of sums, The comparison tests .
Week 8	Sec 7.1	Alternating series, The ratio and root tests.
Week 9	Sec 7.2	Taylor polynomials and approximations, Power series .
Week 10	Sec 8.1	Representation of functions as power series , Taylor and Maclaurin series.
Week 11	Sec 8.2	Fourier series.
Week 12	Review	Fourier series. & Review