

Carleton University
School of Mathematics and Statistics
MATH 1005E
Differential Equations and Infinite Series for Engineering or Physics
Fall 2021

Instructor	Dr. Eric Hua
E-mail	xhua@math.carleton.ca
Web Site	BrightSpace
Office Hours	Mondays and Wednesdays 4pm-4:40pm, or by appointment, or by email (email Subject: MATH1005E).
Textbook	Ordinary Differential Equations and Infinite Series, 2nd edition, by Sam Melkonian. Top Hat Monocle (available as eBook from the Carleton University Bookstore).
Lectures	Sep 8 - Dec 10, Tue & Thu, 7:35pm - 8:55pm. ZOOM link will be on course website.
Tutorials	Tue: 21:05 - 21:55. Tutorial will start on Sep 17 . E1 : Tue Time: 21:05 - 21:55 Building: Tory Building Room: 236 EW : Tue Time: 21:05 - 21:55 Building: ON Room: LINE
Tests	Tests will be online, hosted on BrightSpace on October 15th and November 26th . They will be timed, but accessible for a 24 hours period. There will be no make up tests.
Assignments	Assignments will be due at regular intervals throughout the term. Details will be announced on course website.

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	2 tests	40%
Assignments	3 assignments	30%
Final Exam	3 hours final exam	30%

Course Policies

- **Tutorial:**
 - You are required to attend all tutorials. During the tutorial, the TA will go through examples of some challenging questions.
- **Assignments:**
 - Due dates and time will be on course website.

- No late assignments will be accepted. No E-mail submission is accepted.
- You need to submit **one** pdf file to course website. You can use any electronic device or write on blank paper. CamScanner and TapScanner can help you scan your assignment with cellphone.
- **Tests:**
 - Test(s) will be online, hosted on course website on the specified dates. They will be accessible for a 24 hours period, and will be timed. Please note that these dates may or may not coincide with scheduled lectures or tutorials. If the test is missed for valid reason, alternate arrangements will be made at the discretion of the Professor.
- **Checking the Test/Assignment Grades:**
 - It is your responsibility to make sure that your test/assignment marks recorded correctly by visiting course website.
 - **Deadline to make any corrections is December 10.**
- **Final Exam:**
 - A 3-hour final examination will be held during the exam period, covering the entire course. The exam will be online, hosted on course website. E-proctoring software will not be used. The option of re-weighting any amount of the term towards the Final Exam is NOT available.
- **Homework:**
 - To succeed in the course, it is ABSOLUTELY ESSENTIAL that you do the exercises on a regular basis.
- **Course Information:**
 - All course related materials (slides, assignments, solutions, grades, announcements) will be posted on course website.
 - It is your responsibility to keep up with information announced in class, on course website, 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 E 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).**
- **Student Academic Integrity Policy**

Every student should be familiar with the Carleton University student academic integrity policy. A student found in violation of academic integrity standards

may be awarded penalties, which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University. Some examples of offences are: plagiarism and unauthorized co-operation or collaboration. Information on this policy may be found in the Undergraduate Calendar.

- **Plagiarism**

As defined by Senate, "plagiarism is presenting, whether intentional or not, the ideas, expression of ideas or work of others as one's own". The office of the Dean of Science will review such reported offences.

- **Unauthorized Co-operation or Collaboration**

Senate policy states that "to ensure fairness and equity in assessment of term work, students shall not co-operate or collaborate in the completion of an academic assignment, in whole or in part, when the instructor has indicated that the assignment is to be completed on an individual basis". Please refer to the course outline statement or the instructor concerning this issue.

- **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/>
- **Medical Notes**
 The Self Declaration Form:
<https://carleton.ca/covid19/cu-faq/what-academic-accommodations-are-in-place/>

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