

# Differential Equations and Infinite Series for Engineering or Physics (Math 1005 D, Fall 2021)

**Instructor: Dr. Gang Li**

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<https://brightspace.carleton.ca/d2l/home>

## Class Schedule

Class Times:	Tuesday & Thursday	8:35 am - 9:55 am	Brightspace
Tutorial Times:	Tuesday	4:35 pm - 5:25 pm	Brightspace
Office Hours:	Tuesday & Thursday	11:35 am - 12:55 pm	Brightspace
	Or by appointment.		

## Marking Scheme

Assignment	3 (each worth 10%)	30% total
Tests	2 (each worth 20%)	40% total
Final Exam		30%

## Text Book

Ordinary Differential Equations and Infinite Series. 2nd Edition. By *Sam Melkonian*.  
Top Hat Monocle (available at the Carleton University Bookstore).

### Tentative Schedule

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

### Course Policies

- **Class:** The first class(September 9, 2021) and the last class (December 9, 2021) will be synchronous classes, all other classes will be asynchronous classes, lecture videos will be posted before the scheduled class time.
- **Tutorial:** You are required to attend all tutorials.

- ✓ During the tutorial, the TA will go through examples of some challenging questions that appear on the assignments/tests.
- ✓ **First day of tutorials is September 23, 2021.**
- There will be **3 assignments**.
  - ✓ Assignments will be posted on [Brightspace](#).
  - ✓ **No late assignments will be accepted. No E-mail submission is accepted.**
  - ✓ You need to submit a 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.
- **Tests** will be timed, but accessible for a 24 hours period on **Friday, Oct 15, Nov 26, 2021**.
  - ✓ You are expected to take all the tests. **No make up, early, or delayed tests.**
- **Checking the Test/Assignment Grades:**
  - ✓ It is your responsibility to make sure that your test/assignment marks recorded correctly by visiting [Brightspace](#).
  - ✓ Deadline to make any corrections on your test/quiz marks is within one week when you receive them.
- **Final Exam** will be 3-hours, closed book exam based on whole term.
  - ✓ The questions will be similar to those seen on the tests, tutorials, and in the homework assignments.
  - ✓ 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, 2021** 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. **This examination review is**

for educational purposes only and NOT for negotiation of your grade. Please remember that we do not change your grade on the basis of your needs (such as scholarships, etc).

- **Homework:** Selected exercises, mainly from the text, will be posted on [Brightspace](#). 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 for tests and the final exam. I reserve the right to confiscate any calculator during a test or final exam.
- **Course Information:** All course related materials (slides, videos, assignments, solutions, grades, announcements) will be posted on [Brightspace](#).
  - ✓ It is highly recommended that you print the slides and bring them in as we will be discussing all of the content presented in the slides.
  - ✓ It is your responsibility to keep up with information announced in class, on [Brightspace](#), 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.
  - ✓ Write your course code **Math 1005 D on the subject line**. Failing to start your heading with the course code might send your e-mail to the spam folder.
  - ✓ Be patient. Don't expect an immediate response. Please allow 24-48 hours for a reply.
- **Copyright:** All course related materials (including slides, videos, 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)**.
- **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, and exams are to be done independently.
  - ✓ **Plagiarism** is a specific matter of Academic Integrity. Plagiarism includes reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source. In mathematics, an answer can not be plagiarized, but the presentation of its solution can! Thus, copying answers from fellow students, online posts, or online calculators (such as Wolfram, Symbolab, etc.) is strictly prohibited.
  - ✓ **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 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. Please note the deadline for submitting completed forms to the Paul Menton Centre is **Nov 12, 2021**. For more details visit 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 visit the [Equity Services website](#).

- **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 visit the [Equity Services website](#).

### 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

- **Tests:** *Friday, Oct 15, Nov 26, 2021.*
- **Withdrawal:** The last day for academic withdrawal from the course is *December 10, 2021.*
- For more information, please visit [Dates and Deadlines](#).

*The End*

*Last modified: August 26, 2021, 21:43*