Carleton Univ, School of Math & Stats
Differential Equations and Infinite Series
Math 1005-B / BIT 2004-B

Dr. ℜJ Cova

Winter 2016

✎ OFFICE: HP 5250. PHONE: 613-5202600 ext 1983. E-MAIL: rcova@math.carleton.ca

✎ LECTURES: Monday, Wednesday 8:35 - 9:55, River Building 2200.

✎ CONSULTATION HOURS: Thursday, 12:30 - 13:30 @ HP 5250.

✎ TUTORIALS: These classes, key for your learning process, will take place on Mondays (starting on 25 January) according to:

- B1: 14:35 - 15:25, SA 406. TA: `rajahojjati@cmail.carleton.ca`

√ B2: 13:35 - 14:25, SA 317. TA: `albertoamaya@cmail.carleton.ca`

√ B3: 13:35 - 14:25, SA 404. TA: `zaferaygin@cmail.carleton.ca`

√ B4: 13:35 - 14:25, SA 402. TA: `maryamkaka@cmail.carleton.ca`

√ B5: 13:35 - 14:25, SA 318. TA: `hanielassadi@cmail.carleton.ca`

*** Note that sub-sections B2, B3, B4, B5 belong to the BT section.

✎ TEXTBOOK: Ordinary Differential Equations and Infinite Series (2nd edition), by Sam Melkonian.

✎ CONTENTS from the textbook:

- Part I) Ordinary Differential Equations
  Chapter 1) Introduction.- 1.1 Basic concepts.
  Chapter 2) First-Order Equations.- 2.1 Separable equations: 2.1.1 Orthogonal trajectories. 2.2 Homogeneous equations. 2.3 Linear equations: 2.3.1 Bernoulli equations. 2.4 Functions of two variables: 2.4.1 Partial derivatives. 2.4.2 The chain rule. 2.5 Exact equations: 2.5.1 Integrating factors.

Chapter 3) Second-Order Equations.- 3.1 Basic definitions. 3.2 Linear homogeneous equations: 3.2.1 Equations with constant coefficients. 3.2.2 Cauchy-Euler equations. 3.3 Linear Non-homogeneous equations: 3.3.1 Undetermined coefficients. 3.3.2 Variation of parameters.

Chapter 5) 2 x 2 Linear Systems.-

5.1 Homogeneous systems: 5.1.1 General theory. 5.1.2 Systems with constant coefficients, complex eigenvalues, generalized eigenvectors.

- Part II) Infinite Series

Chapter 6) Sequences and Series.- 6.1 Sequences. 6.2 Series: 6.2.1 The integral test, approximations of series. 6.2.2 The comparison tests. 6.2.3 Alternating series, approximations of alternating series. 6.2.4 Absolute and conditional convergence.

Chapter 7) Taylor Series.- 7.1 Power series. 7.2 Representations of functions by power series, the binomial series, Taylor polynomials and approximations.

Chapter 8) Fourier Series.- 8.1 Fourier series for periodic functions. 8.2 Fourier series for functions on finite intervals.

* contents might slightly change depending on the course dynamics *

✎ GRADING SCHEME: * Term Tests 45 %. Final Exam 55 %

✍ Term TESTS: We will apply four Tests (all mandatory), one in each of the following tutorial sessions: **01 February, 22 February, 07 March, 21 March**. The arithmetic mean of your best three Tests will weigh 45 % of your final mark. Should you wish to review a Test please advise your Teaching Assistand (TA) within one week after receiving the Test in question.

We apologise that we cannot apply any make-up Tests in this course. In case of ill-health your mark will be pro-rated upon production of a valid medics note (for one Test, only).

✍ FINAL EXAMINATION (FE): This is the customary three-hour exam to be applied during the period 11-23 April. The exact date and venue will be announced by the university in due course. *Regretfully, we cannot apply the FE outside the official date published by the university.*

Participants absent from the FE may be eligible for a deferred exam; please check the eligibility criteria with the Registrars Office. Observe that students who sit less than two tests and are absent from the FE will be assigned the grade FND: failure with no deferred exam allowed.

Students who wish to revise their FE must do so within three weeks after the examination period.

✎ CALCULATORS, MEMORANDA: 7 $\mapsto$ Only non-programmable, non-graphing calculators are permitted.

$\mapsto$ We are sorry that no memoranda may be utilised in our evaluations.

✎ HOMEWORK: As a vital part of your training, please solve the exercises that we recommend during the teaching-learning process.

✎ Math TUTORIAL CENTRE: This is a great facility located @ HP 3422. Pop in for details.

✎ WITHDRAWAL: The last day for withdrawing the course with a full fee reimbursement is 31 January.

✎ ACADEMIC ACCOMMODATION, STUDENTS WITH DISABILITIES: Kindly apply before the Paul Menton Centre (500 University Centre) as soon as possible. Please visit the university website for details.

$\star$ the outline might change in the event of extenuating circumstances $\star$

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