

McMaster University
Math 2C03: Differential Equations
Summer Term 2015

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Office Hours: Mon. 5:30-7pm, Wed. 5:30-7pm, or by appointment.

Lectures: Mon. 7-10pm (HH305)

Wed. 7-10pm (HH305)

Course Webpage: <http://ms.mcmaster.ca/~dedieula/2C03.html>

Required Text: Differential Equations With Boundary Value Problems, 8th Edition, Zill & Wright, published by Brooks Cole.

Prerequisites: One of Math 1AA3, 1LT3, 1NN3, 1XX3, ARTS&SCI 1D06, 1SCI 1A24, and one of Math 1B03, 1D03, 1ZC3.

Antirequisites: Engineering 2Z03, Math 2M03, 2M06, 2P04, 2Z03.

Course Topics: Ordinary differential equations (ODE's): basic concepts, first order ODE's, higher order linear ODE's, Laplace transforms, series solutions (see tentative schedule below for more details).

Course Format:

We will meet as a class twice per week for three hours. Class time will be spent underlining key concepts from the assigned textbook chapters and working through examples. There will be no tutorials. There will be a 10 minute quiz at the beginning of class each Monday (and one extra quiz on Wed. July 29th). The midterm and exam will also be written during class time.

Intended Learning Outcomes:

By the end of this course, students should be able to:

- solve ordinary differential equations using the techniques learned in class.
- analyze the solutions of ordinary differential equations.
- describe the basic theory of ordinary differential equations.
- apply the theory learned in class to key examples using precise mathematical writing.

Course Evaluation:

- **Assignments (20%):** There will be 5 assignments. Each assignment will have an online component and a written component.

Written components must be deposited in the course assignment locker located in the basement of Hamilton Hall by 2pm on the due date. Late assignments will not be marked. Students are encouraged to discuss assignment problems with their classmates, but must write their own solutions individually.

Questions for the online portion of the assignment are available through WeBWork at the following link:

<http://webwork.math.mcmaster.ca/webwork2/2C03-Summer-2015/> . Your login is your MacID and your password is your student number. You can then change your password if you prefer. To obtain credit, online assignments must be completed by 11:59pm on their due date. Non-multiple choice questions will have unlimited attempts. There is an Orientation module located at the above address which explains how to use WeBWork.

- **Quizzes (15%):** There will be a 10 minute quiz at the beginning of class each Monday (and one additional quiz on Wed. July 29th). Your best 5 of 6 quizzes will count towards your final grade. There will be no rewrites – if you miss a quiz you will receive a grade of zero. We will be discussing the answers immediately following the quiz, so make sure you arrive to class on time! At the end of each week, I will provide a list of possible quiz questions, and the quiz will consist of a few questions from this list (so it shouldn't be stressful!).

- **Midterm:** There will be one midterm written during class time (room TBA). The midterm will last 90 minutes, followed by a short lecture. The Standard McMaster calculator Casio fx 991MS+ may be used. No make-up midterms will be arranged. In the event that you miss the midterm, the weight from the midterm will be transferred to the final exam (see Marking Scheme #2). One question on the midterm will be taken directly from the Practice Problems.
- **Final Exam:** There will be one 3-hour exam written during class time (room TBA). Standard McMaster calculator Casio fx 991MS+ may be used. Two questions on the exam will be taken directly from the Practice Problems.

Marking Scheme: Option #1			
Assignments	Online	10%	4% each
	Written	10%	
Quizzes		15%	3% each (best 5 of 6)
Midterm		25%	
Exam		40%	

Marking Scheme: Option #2			
Assignments	Online	10%	4% each
	Written	10%	
Quizzes		15%	3% each (best 5 of 6)
Midterm		0%	
Exam		65%	

Online Forum: There is an online discussion forum for the course located at <http://ezh.ca/>. You are encouraged to use this forum to ask and answer questions about particular concepts, theorems, Practice Problems, etc. I will monitor the forum, but students are encouraged answer their classmates' questions. If you regularly use the online forum to ask and answer questions, you may receive up to three bonus points. The number of bonus points will be determined by me at the end of the course. In order to be eligible for receiving bonus points, you must register with your @mcmaster.ca email account and must make your username your LastName_FirstName. If you would like to anonymously ask questions, feel free to make another username, but in this case you won't be eligible to receive bonus points.

Note: Apart from this online forum, there will be no additional way to earn bonus marks in this course.

Practice Problems: There will be a list of recommend practice problems posted on the course website each week. The practice problems will come from the course text. These problems are not to be handed in, but you are strongly encouraged to complete them in order to succeed in this course. One of these problems will appear on your midterm, and two will appear on your final exam.

Tentative Course Schedule:

Date	Topics	Assessment	Practice Problems
Week 1			
June 22 nd	Introduction (1.1), Initial Value Problems (1.2)	Assignment #1 (due Fri. Jun. 26)	1.1: 1,3,5,7,9,15,33,35,43 1.2: 5,7,15,19,25,27,49
June 24 th	Separable Equations (2.2) Linear Equations (2.3), Exact Equations (2.4),		2.2: 1,5,7,25,29,31,37,49 2.3: 25,27,33,46,48 2.4: 1,7,25,31,39,44
Week 2			
June 29 th	Solutions by Substitution (2.5) Solution Curves Without a Solution (2.1)	Quiz #1 (in class)	Assignment #2 (due Fri. Jul. 3)
July 1 st	**Canada Day** (no class)		
Week 3			
July 6 th	Linear Equations (4.1), Reduction of Order(4.2), Homogeneous Linear Equations (4.3)	Quiz #2 (in class)	Assignment #3 (due Fri. Jul. 10)
July 8 th	Superposition Approach (4.4), Annihilator Approach (4.5), Variation of Parameters (4.6), Cauchy-Euler Equation (4.7)		

Week 4

July 13 th	Laplace Transforms (7.1), Inverse & Derivative Transforms (7.2)	Quiz #3 (in class)		TBA
July 15 th	Operational Properties (7.3)	Midterm (in class)		TBA

Week 5

July 20 th	Operational Properties (7.4), Dirac Delta Function (7.5), Systems of Linear Differential Equations (7.6)	Quiz #4 (in class)	Assignment #4 (due Fri. Jul. 24)	TBA
July 22 nd	Power Series (6.1)			TBA

Week 6

July 27 th	Ordinary Points (6.2), Singular Points (6.3)	Quiz #5 (in class)	Assignment #5 (due Fri. Jul. 31)	TBA
July 29 th	Special Functions (6.4)	Quiz #6 (in class)		TBA

Week 7

Aug. 3 rd	**Civic Holiday** (no class)			
Aug. 5 th		Final Exam (in class)		

Academic Integrity:

Final Policy Notes:

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy located at <http://www.mcmaster.ca/univsec/policy/AcademicIntegrity.pdf>

The following illustrates only three forms of academic dishonesty:

- 1) Plagiarism, e.g., the submission of work that is not one's own or for which other credit has been obtained.
- 2) Improper collaboration in group work.
- 3) Copying or using unauthorized aids in tests and examinations

A final word on cheating: all work submitted must be your own. At the same time, you are encouraged to discuss problems and general ideas with each other. Mathematics need not be an isolating activity. What you may not do is to copy someone else's work.

Requests for Relief for Missed Academic Term Work:

For information regarding MSAF, please see the following two links:

<https://www.mcmaster.ca/msaf/index.html>

http://academiccalendars.romcmaster.ca/content.php?catoid=7&navoid=559#Requests_for_Relief_for_Missed_Academic_Term_Work

Important Message:

The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

Academic Accommodation of Students with Disabilities

Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail sas@mcmaster.ca. For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities.