Fall 2012: Math 265, Section 103: Linear Differential Equations

http://www.math.ubc.ca/~coombs/tch/265.html

Instructor: Dr. Daniel Coombs.
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Text: Our main reference will be the online textbook Diffy Qs by Lebl. You can download the book (for free) or order a copy (for cheap) to be sent to you from this page: http://www.jirka.org/diffyqs.
Additional free online notes are available at the following sites:
http://tutorial.math.lamar.edu/Classes/DE/DE.aspx
http://www.math.ust.hk/~machas/
http://www.springerlink.com/content/p78848/?MUD=MP (for the last link you will need to be accessing from UBC, either directly or via VPN: http://www.it.ubc.ca/service-catalogue/internet-and-telephone/network-management/myvpn)
You can also consult physical textbooks. Some favourites are Boyce and DiPrima (any recent edition) and Edwards and Penney. Boyce and DiPrima has often been used at UBC.

- **Clickers** will be used in this course. Everyone needs to get a clicker (available from the bookstore).

Important Dates:

- Midterm test 1: October 10 EVENING
- Midterm test 2: November 14 EVENING
- Final exam: TBA

Note: You must inform me on or before Sept 14th if you will have any problem with attending the midterms. The midterms will be held in the evenings of Oct 10 and Nov 14, likely between 7pm-8pm.

Grading

- The breakdown of marks between course elements will be as follows: Final exam: 50%. Midterms: 15% each. HW, clicker questions, quizzes and other activities: 20%.
- Missing a midterm normally results in a mark of 0. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency. In the latter case, the instructor must be notified within 48 hours of the missed test, and presented with a doctor's note immediately upon the student's return to UBC. No make-up midterms will be given.
- Term marks may be scaled up or down on a classwide basis, depending on performance on the final exam. This is to ensure fairness across both sections of the course.

Homework

- Homework will be regularly assigned.
- Homework 1: Due in class on Sept 19.
- Homework 2: Due in class on Oct 3.
- Homework 3: Due in class on Oct 17.
- Homework 4: Due in class on Oct 31.
- Homework 5: Due in class on Nov 19.
- Homework 6: Due on Nov 30.

Other sections

Section 101 (Zwiers)

Approximate Schedule of Topics

Date	Day	Note	Topics	Book Section (Lebl)	
05-Sep	Wed		Linear vs nonlinear, 1st vs 2nd, etc. Direction fields for 1st order	1.1,1.2	
10-Sep	Mon		Integrating factor method, separable equations	1.3,1.4	
12-Sep	Wed		Separable equations (brief) and examples/applications of 1st order	1.4	
17-Sep	Mon		Examples and applications of 1st order		
19-Sep	Wed		Second order constant coefficient with examples (mass-spring/LCR)	2.1/2.4	
24-Sep	Mon		Superposition, existence, Wronskian (briefly)	2.1/2.2	(minimal treatment)
26-Sep	Wed		Complex roots	2.2	
01-Oct	Mon		Repeated roots and higher-order problems	2.1, 2.3	
03-Oct	Wed		Nonhomogeneous equations: undetermined coefficients solution	2.5	
08-Oct	Mon	NO CLASS			
10-Oct	Wed	TEST 1 (EVENING)	Examples and applications: SHO, damping	2.6	
15-Oct	Mon		Examples and applications: forcing, resonance, frequency response	2.6	
17-Oct	Wed		Laplace transform: definition, examples	6.1	
22-Oct	Mon		Solution of ODE with LT; properties of LT	6.2	
24-Oct	Wed		LT: step response	6.2	

29-OctMon		Delta function forcing, LT solution	6.2
31-OctWed		Examples/review/catch-up	
05-NovMon		Systems of ODE, examples	3.1,3.2,3.3
07-NovWed		Basic solution of x'=Ax	3.4
12-NovMon	NO CLASS		
14-NovWed	TEST 2 (EVENING)	Phase plane analysis, complex eigenvalues examples	3.5
19-NovMon		Complex and repeated eigenvalues, examples	3.7
21-NovWed		Nonhomogeneous systems: undetermined coefficients solution	3.9
26-NovMon		Examples/review/catch-up	
28-NovWed		Examples/review/catch-up	
