College of Arts and Sciences
Department of Mathematics and Statistics

MTH 205 Course Syllabus –Summer 2009

Instructor Information

Section	Professor	Room	Extension	E-mail
1&2	Ayman Badawi	NAB 262	2573	abadawi@aus.edu

OFFICE HOURS

Professor	Sun	Mon	Tue	Wed	Thu
Ayman Badawi	11:30-12:20	11:30-12:20	11:30-12:20	11:30-12:20	

Course Information

Course number: MTH 205
Descriptive title: Differential Equations
Text: *A First Course in Differential Equations with Modeling Applications*, by D.G. Zill, 9th Edition.

Objectives: In this course we will be discussing the mathematical modeling of real-life problems, which usually leads to differential equations. We will also study different techniques of solving differential equations and boundary value problems. Students will be introduced to the concept of Laplace transforms and Transforms of derivatives, integrals and periodic functions. A greater emphasis will be on differential equations as mathematical models, nonlinear differential equations, and linear and nonlinear systems of differential equations.

Grading	**%**	**Dates**	**Time**
Test 1	**22%**	Sunday, June 28 (afternoon)	TBA
Test 2	**44%**	Sunday, July 12, (afternoon)	TBA
Test 3		Sunday, July 19, 2009 (afternoon)	TBA
Final Exam	**34%**	TBA	2 hours

Remarks :

I will be AWAY from Tuesday June 16 – June 21. So No CLASS ON TUESDAY June 16. WE WILL MEET ON MONDAY JUNE 22.

MAKE UP CLASSES PLAN: TODAY, June 9. I will give a complete lecture and not just giving you hand outs (so we make up for one day). Three EXAMS WILL BE GIVEN OUTSIDE THE CLASS PERIOD and I will not dismiss the CLASSES for the DAY AFTER (so we make up for three classes).

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Math 205 - Suggested Problems

TEXT: *A First Course in Differential Equations, Ninth Edition.*
Dennis G. Zill

HOME WORK PROBLEMS FOR MTH 205:

Use convolution to do PROBLEMS 31, 33 32, 34 on Page 290 section 7.4.

Do 21, 25, 27, 29, 37, 41, 43, 45, 46 on section 7.4 page 290

For Perodic Functions: Page 290, 291 (7.4), Write down f(x), find T then find L{f(x)} for number 49, 50, 51, 53, 5

For Delta, page 295 (7.5) do 1, 3, 7, 9

For system of equations Page 299 (after Thursday Lecture) (7.6) Do 1, 3, 7, 11

For section 4.3 Page 138 I recommend : 1, 5, 9, 13, 15, 17, 25, 29, 41.

I STRONGLY RECOMMEND YOU LOOK AT EXAMPLE 2 on page 142

I recommend that you look at PAGE 144 (TABLE 4.1 FOR Particular Solution y_p)

For section 4.4 Page 148 I recommend: 1, 5, 11, 13, 15, 21, 26, 29, 31, 36, 37, 39, 41

For 4.6 (Variation) THE BOOK HAS EXCELLENT PROBLEMS: YOU MUST DO
1, 5, 9, 11, 13, 19, 21 on page 161-162.

Section 2.3 (Linear Diff. Equation) Page 60: 5, 7, 17, 19 (GOOD ONE), 21, 22 (so good), 24 (really good), 29, 30, 34 (ok but boring)

Page 194 (Spring, 5.1): 3, 5, 9, 11, 23, 29, 31 (I will discuss amplitude, Frequency, and period Later on...Do not worry about that in Question number 11)

Page 198 (Circuit, 5.1): 45, 49, 53

Page 89 (Growth, Decay, 3.1): 3, 5, 6, 7

HW on Bernoulli section 2.5
Page 74 section 2.5: Problems: 15, 17, 20, 21

Separable (Section 2.2 page 50): 3, 7, 11, 21, 23, 25, 29, 31 (THESE ARE GOOD PROBLEMS, MUST DO)

Exact (Section 2.4, Page 68): 3, 4, 7, 13(Can you do it using Linear D.E?), , 16, 23

Reduced to separable (Section 2.5, Page 74): 11, 12 (This is a nice Problem, first FIND dy/dx, then you can use Bernoulli..NICE) , , 23, 24, 25, 29.

Cauchy (Section 4.7, page 168): 1, 5, 13, 19, 23, 27, 29

Reduced second order (Section 4.2, page 132) 15 and 16

Autonomous Page 43 section 2.1. Just do 21, 23, 24, 25 AS WE DID in the class