

MTHU343 SYLLABUS (3.0)

QUARTER: Summer II 2008
COURSE: MTHU343, MTWΘ 8:00-9:40, 424HA
INSTRUCTOR: N. Krikorian, 557LA, ×5661, office hours: MW 10:00-11:00,
n.krikorian@neu.edu.
TEXT: Edwards and Penney, *Differential Equations and Linear Algebra*
(custom edition for NU with bundled lab packet).

1. This is a first course in the theory and solution methods of ordinary differential equations. Applications will be made to problems in growth and decay, motion, and vibrations. Matrix techniques are also developed and used to solve both algebraic and differential systems of equations.
2. The course meets four times a week. If you miss a class for any reason, you are responsible for the material covered in that class.
3. The homework problems are the heart and soul of the course. They will be assigned from the text at the end of each class. Solutions will be discussed in the following class. Answers are in the back of the text.
4. There will be a closed-book exam given each Thursday—six altogether. The exams and the final will consist essentially of homework problems. There will be no makeup exams and no exemptions from the final for any reason. Notify me as soon as you know you are going to miss an exam. The final will be on 08/19/08 at 3:30 pm. Make travel plans accordingly.
5. There will be four required computer labs. These are an essential part of the course in which important concepts will be introduced and explored. Late labs will not be accepted. It is expected that students will work on the labs together, but the writeups of the labs must be done separately. The Math Dept Computer Lab is in 553LA.
6. Your final grade will be based on the exams (50%), the computer labs (10%), and the final (40%). I will drop the lowest exam.
7. You can receive extra help from me during my office hours.
8. I reserve the right to make changes in the syllabus at any time of the day or night. This includes homework assignments, exam dates, material covered, and grading policy. It is your responsibility to be aware of these changes as they are announced in class.
9. If you have a concern about the course that cannot be resolved by speaking with me, you can contact the undergraduate director (Professor A. Martsinkovsky, 471LA, x5510, alexmart@neu.edu).
10. For the University's Academic Honesty and Integrity Policy see the Undergraduate Student Handbook 2007-2008, pp38-39.

Section Exercises

First Order Equations

- 1.4 separable eqns 1,7,13,17,19,22,25,33,35,43,45,46,47
- 1.5 linear eqns 5,6,7,11,13,17,20,23,33,34,36,37
- 1.6 homogeneous and Bernoulli eqns 5,7,9,11,13,19,21,23,25
- 2.1 population models 2,5,9,12,21,28
- 2.2 stability 1,3,4,6
- 2.3 motion 1,3,5

Second Order Equations

- 5.1 introduction 3-15 odd, 20,24
- 5.3 constant coefficients 1-9,15,17,21-23,27,31
- 5.4 vibrations 1-4,13,15,17,19
- 5.5 undetermined coefficients 1-4,9,21,23,25,26,31,32,33
- 5.6 forced oscillations 2,3,8

Laplace Transforms

- 10.1 introduction 3,7,13,15,16,19,23,27,28,31
- 10.2 initial value problems 1,3,4,5,7,9,10
- 10.3 partial fractions 1,3,11,13,14,17,19,20,27,29
- 10.4 derivatives, integrals, products 15,16,23,24
- 10.5 periodic input functions 1,3,5,11,14
- 10.6 Dirac-delta function 1-4

Matrices

- 3.2 Gaussian elimination 1,9,10,11,13,15,17,19,23,27
- 3.3 reduced row-echelon form 1,5,7,13
- 3.4 matrix operations 1-11 odd, 17,19,23
- 3.5 inverses 1,3,5,9,11,13,15,17,23,25
- 3.6 determinants 1-4,7,9,11
- 6.1 eigenvalues and eigenvectors 3,9,13,17

Linear Systems of ODE's

- 7.1 first order systems 11,13,17,18,19
- 7.2 matrix representation 3,5,6,13,15,24
- 7.3 eigenvalue method of solution 1,4,17

Computer Lab Due Dates

- Lab 2: July 8
- Lab 3: July 17
- Lab 4: July 29
- Lab 5: August 7