

ENCH620: METHODS OF ENGINEERING ANALYSIS, Fall 2007

Instructor:

Dr. Panos Dimitrakopoulos

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Office hours: Mondays and Wednesdays: 1:00-1:45pm

Course web: Blackboard Learning System (<https://bb.eng.umd.edu>)

Class: MW: 2:30pm-3:45pm (CHM 0124)

Teaching Assistant:

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Office hours: Thursdays: 2:00-3:00pm

Course Description:

This course introduces the graduate students of chemical and biomolecular engineering to those areas of advanced mathematics which are currently most important in the engineering science. In particular, the course includes (the chapters' numbers are from Kreyszig, 9th ed.):

- (a) Linear Algebra (Ch. 7, 8)
- (b) Vector Calculus (Ch. 9, 10)
- (c) Ordinary Differential Equations (Ch. 1-5)
- (d) Partial Differential Equations (Ch. 12, Class Notes)
- (e) Numerical Methods (Ch. 19-21)
- (f) Probability and Statistics (Ch. 24, 25)
- (g) MATLAB: introduction and basic programming (Class Notes)

Most material taught during the semester is accompanied and explained via MATLAB.

Recommended Texts:

Advanced Engineering Mathematics, by Erwin Kreyszig, John Wiley & Sons, 9th edition (2006).

This book is on reserve in the Engineering Library. Note that the library has also an array of books with similar title; all of them may be used for further study.

Grading Policy:

Homework and Class Participation	20 %
Mid-term exam	30 %
Final exam	50 %

Homework Assignments:

Homework problems (to be solved by hand and by MATLAB) will be assigned on a regular basis.

The homework must be submitted at the beginning of the class the date it is due.

The problems and the solutions will be posted on the course web page.

Examinations:

All exams are “closed-books”/“closed-notes” (notes on 3 sheets of paper allowed).

The “mid-term” exam will be one class period in length.

Date for “mid-term” exam (subject to change): Wednesday October 24, 2006.

Final Exam: the date is set by the University (December 13-19, 2007).

Course Objectives:

The course main goal is to provide a solid knowledge of the mathematics on Linear Algebra, Vector Calculus, Ordinary and Partial Differential Equations, as well as Probability and Statistics, which may be used for the solution of a wide range of engineering and biological problems. The students should also become familiar with numerical analysis, computational methods, usage and programming via MATLAB, that can be used for all the aforementioned mathematical concepts.

Academic Honesty:

Plagiarism and academic dishonesty will not be tolerated, and suspected incidence will be referred to the Student Honor Council of the Judiciary Programs. For more information see:

<http://www.testudo.umd.edu/soc/dishonesty.html> & <http://www.shc.umd.edu>

The following information is suggested by the Student Honor Council:

The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit <http://www.shc.umd.edu>.

To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations and assignments: “I pledge on my honor that I have not given or received any unauthorized assistance on this examination (assignment).”