ENCH620: METHODS OF ENGINEERING ANALYSIS, Fall 2009

Instructor:

Dr. Panos Dimitrakopoulos
Office: Room 1227B, Chemical & Nuclear Engineering Bldg
Phone: (301) 405-8166, Email: dimitrak **at** umd.edu
Office hours: Mondays and Wednesdays: 1:00-2:00pm
Course web: Blackboard Learning System (https://bb.eng.umd.edu)
Class: MW: 2:30pm-3:45pm (CHM 0124)

Course Description:

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

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

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

Recommended Textbooks:

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

Mathematical Methods for Physics and Engineering, by Ken F. Riley, Mike P. Hobson and Stephen J. Bence, Cambridge University Press, 3rd edition (2006).

Advanced Engineering Mathematics with MATLAB, by Thomas L. Harman, James B. Dabney and Norman J. Richer, Thomson-Engineering, 2th edition (1999).

These books are on reserve in the Engineering Library. Note that the library has also an array of books with similar titles; all of them may be used for further study.

Grading Policy:

Homework	10 %
Two mid-term exams of equal weight	$2 \times 25 = 50$ %
Final exam	40 %

Homework Assignments:

Homework problems for practice will be assigned on a regular basis (e.g. every week); use them to practise your knowledge and compare your solutions with those posted on the course web page.

Homework problems for grading (including problems to be solved by hand and by MATLAB) will be assigned on a less regular basis (e.g. every two weeks). This homework must be submitted at the beginning of the class the date it is due.

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

Examinations:

All exams are "closed-books"/"closed-notes" (notes on 1,2,3 sheets of paper allowed).
Date for "mid-term" exams (subject to change): Wednesday October 7 and November 18, 2009.
Final Exam: the date is set by the University (December 14-19, 2009).

Computer Laboratory:

MATLAB is available in the ENCH computer lab located in Room 2143. To obtain access to this lab via your ID card, please see Ms. Patricia Lorenzana in ENCH Main Office (Room 2113).

Course Objectives:

The course main goal is to provide a solid knowledge of the mathematics on Linear Algebra, Vector Calculus and Ordinary Differential Equations 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)."