



Philadelphia University

Faculty of Science
Department of Basic
Sciences and Mathematics

Numerical Analysis
Second (spring) Semester
2009/2010

Syllabus

Course Title	Course Code	Course Credits	Course Prerequisite
Numerical Analysis	0250371	3 Hours	250241 & 250203

Lecturer Name	Rank	Office hours	Address
Ramzi Albadarneh	Assistant. Prof	Sunday, Tuesday, Thursday 12-1	Office Number:15203
			Place: Faculty of Nursing
		Monday, Wednesday 11-12	Phone extension: 2473
			E-mail: rbadarneh@ philadelphia.edu.jo

Course Description:

This course, Numerical Analysis, covering topics such as finding roots of polynomials, interpolation and polynomial approximation, numerical differentiation and integration, numerical solutions of ordinary differential equations, and selected topics in numerical methods of linear algebra.

Textbook:

1) (Required)

Burden and Faires, Numerical Analysis, 8th edition 2005, Brooks Cole

2) (Optional - not required – only for those who need extra assistant)

- Brian Bradie, A Friendly Introduction to Numerical Analysis, 2006, Prentice Hall
- Kendall Atkinson, Elementary Numerical Analysis, 3rd edition 2004, Wiley

Mark Distribution:

	Marks	Date	Time	Place
First Exam	15%	5 March 2010	9:45-11:00	Lap
Second Exam	15%	7 April 2010	9:45-11:00	Lap
Three Short Exams	20%	TBA		
Final exam	50%	TBA		

Course Academic Calendar:

Week		Hours
1	1.1 Review of calculus	3
2	1.2 Round-off errors, Computer arithmetic	3
3	2.1 The Bisection Method,	1
	2.2 Fixed-Point Theorem,	1
	2.3 Newton's Method	1
4	2.4 Error Analysis,	1:30
	2.5 Accelerating Convergence	1:30
5	2.6 Zeros of polynomials,	1:30
	2.6 Muller's Method	1:30
6	3.1 Interpolation, Lagrange Polynomials	3
7	First Exam	1
7	3.2 Divided Difference,	1
	3.3 Hermite Interpolation	1
8	4.1 Numerical Differentiation	3
9	4.2 Richardson's Extrapolation	3
10	4.3 Numerical Integration	1:30
11	4.4 Composite Numerical Integration,	1:30
	4.5 Romberg Integration	1:30
12	Second Exam	1
12	5.1 Initial Value Problems	3
13	5.2 Euler's Method,	1:30
	5.3 Higher Order Taylor Method	1:30
14	6.1 Review of Linear Systems of Equations, Matrices, Derminants, Eigenvalues	1:30
	6.2 Pivoting Strategies	1:30
15	7.3 Iterative Method for Solving Linear System	3
16	Final Exam	2