

THE COLLEGE OF STATEN ISLAND
DEPARTMENT OF MATHEMATICS
COURSE OUTLINE
MTH 335 - NUMERICAL ANALYSIS

TEXT: Atkinson, Han, Elementary Numerical Analysis, Third Edition,
Wiley & Sons, 2004

Note: Each numbered lesson corresponds to a two-hour class.

<u>Lesson</u>	<u>Pages</u>	<u>Topics</u>
1	1-22	Taylor Polynomials
2	23-31	Polynomial Evaluation
3	33-43	Floating-Point Numbers
4	44-70	Errors: Definitions, Sources, and Exam- ples
5	71-89	Bisection and Newton's Method
6	90-109	Secant Method and Fixed Point Iteration
7	189-203	Trapezoidal and Simpson Rule
8	203-219	Error formulas for Numerical Integration
9		Review for Exam 1

10	Exam 1	
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11		Discussion of Exam 1
12	243-263	Linear Equations and Matrix Arithmetic
13	264-283	Gaussian Elimination
14	283-294	LU Factorization

<u>Lesson</u>	<u>Pages</u>	<u>Topics</u>
15	367-379	Theory of Ordinary Differential Equations
16	379-393	Euler's Method
17	394-408	Numerical Stability
18	408-423	Runge-Kutta Methods
19	432-442	Systems of Differential Equations
20	Handout	Application: Fiber optics
21		Review for Exam 2
22	Exam 2	
23		Discussion of Exam 2
24	232-242	Numerical Differentiation
25	451-466	The Poisson Equation
26	466-481	The Heat Equation
27	Handout	Heat Equation and Random Processes
28		Review for Final