

King Saud University Mathematics Department
MATH-254 (NUMERICAL METHODS) First Semester (1437-38 H)
TEXTBOOK: Introduction to Numerical Analysis using MATLAB
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Note: The Contents of the course will be covered by the following sections:

CHAPTER 1: 1.2,1.3.

CHAPTER 2: 2.1,2.2,2.3,2.4,2.5,2.6,2.7,2.8.

CHAPTER 3: 3.1,3.2,3.3,3.4,3.5,3.6,3.7.

CHAPTER 4: 4.1,4.2,4.3.

CHAPTER 5: 5.1,5.2,5.3,5.5,5.6.

CHAPTER 6: 6.1,6.2,6.3,6.4.

Theorems with Proofs: Theorem 2.2,3.18,5.2,5.3,5.4.

Note: The proofs of "Linear Lagrange formula+unique Lagrange polynomial+ Simple Trapezoidal rule + Simple Simpson's rule + differentiation formulas (Two - Point + Three - Point) (Forward+Central+Backward))" can be ask.

Theorems and Lemmas without Proofs:

Theorems 2.1,3.1,3.2,3.7,3.8,3.14,3.20,3.21,3.22,4.1,4.2,4.3,4.4,5.1,5.5,6.1.

Lemmas 2.1,2.2,2.3,2.4.

Note: About the 10 Marks we do as follows:

Two Quizzes (3+3) + Computer Assignments (2) + Class Attendance (2).

Note: Quizzes, Computer Assignments and Class Attendance should be taken in the tutorial classes.

NAMES OF CHAPTERS OF THE COURSE

Chapter 1: Introduction to Numerical Methods.

Chapter 2: Solution of Nonlinear Equations.

Chapter 3: Systems of Linear Algebraic Equations.

Chapter 4: Polynomial Interpolation and Approximation.

Chapter 5: Numerical Differentiation and Numerical Integration.

Chapter 6: Numerical Solution of Ordinary Differential Equations.

Computer Assignment: Write computer program of the following method.

Gauss-Seidel Method for Linear Systems.

Dates of Midterm and Final Examinations will be take place as follows:

First Mterm: (25 Marks)Tuesday: 01-02-1438(01-11-16) Time:7:0-8:30 PM.

Second Mterm: (25 Marks)Tuesday: 28-03-1438(27-12-16) Time:7:0-8:30 PM.

Final Exam: (40 Marks)Monday: 25-04-1438(23-01-17) Time:1:00-4:00 PM.

<http://faculty.ksu.edu.sa/rizwanbutt/default.aspx>