

Course Specification

Program(s) on which the course is given: Statistics

Major or Minor element of Programs: Major

Department offering the Program: Mathematics

Department offering the course: Mathematics

Academic year / Level: third year (Statistics) /First Semester

Date of Department approval: 2008

A- Basic Information

Title: Numerical Analysis

Code: 321 M

Credit Hours:

Lecture: 3hrs/week

Tutorial: 1hrs/week

Practical: Total: 4hrs/week

B- Professional Information

1 – Overall Aims of Course: **At the end of this course the students able to:**

- i) Understand how and why numerical methods are used and applied
- ii) Develop the student's ability to implement and use various numerical methods
- iii) Develop the student's capability of using algorithms and numerical software package on the computer

2 – Intended Learning Outcomes of Course (ILOs): **At the end of this course the students able to:**

a-Knowledge and Understanding:

- a1- Understand some numerical methods and techniques to solve systems of algebraic equations, eigen, initial and boundary value problems and the ability to convey these techniques to others
- a2- Write a program and using numerical software
- a3- Select the appropriate numerical analysis for solving a given problem

b-Intellectual Skills

- b1- Apply basic principles of numerical analysis
- b2- Formulate discussions concerning assigned problems
- b3- Discover the mental ability for the student

c-Professional and Practical Skills

- c1- Assess the ability of student to relate between topics.
- c2- Correlate and analyze what was studied in the previous courses.
- c3- Assess the capability of student for thinking.

d-General and Transferable Skills

- d1- Solve problems
- d2- Work in groups
- d3- Analyze results



3- Contents

Topic	No. of hours	Lecture	Tutorial/Practical
Error analysis	4	3	1
Solution of equation of one variable	8	6	2
Interpolation and polynomial approximate	8	6	2
Numerical integration and differentiation	8	6	2
Initial – value problems	8	6	2
Nonlinear equations	4	3	1
Iterative methods	4	3	1
Boundary – value problems	4	3	1

4– Teaching and Learning Methods

- 4.1- Lecturing
- 4.2- Discussions
- 4.3- Exercises
- 4.4- Homework

5- Student Assessment Methods

- 5.1 Discussions to assess the student ability to think independently and express himself
- 5.2 Practices to assess the acquired skills
- 5.3 oral exams to assess the student ability to express himself
- 5.4 Essay to assess the student ability in using information and communication technology
- 5.5 Midterm exam to assess intellectual skills
- 5.6 End of term exam to assess knowledge with understanding

Assessment Schedule

- Assessment 1: Discussions Week 9
- Assessment 2: Essay Week 3
- Assessment 3: Midterm Week 7
- Assessment 4: Final exam Week 14

Weighting of Assessments

Mid-Term Examination	10%
Final-term Examination	80%
Oral Examination.	5%
Practical Examination	%
Semester Work	5%
<u>Other types of assessment</u>	<u>%</u>
Total	100%

Any formative only assessments

6- List of References

- 6.1- Course Notes: Lecture materials
- 6.2- Essential Books (Text Books):

Theory and Applications of Numerical Analysis, G. M. Phillips and P. J. Taylor, Academic Press: London and New York, 1973



6.3- Recommended Books:

Theory and Applications of Numerical Analysis, G. M. Phillips and P. J. Taylor, Academic Press: London and New York, 1973

6.4- Periodicals, Web Sites, etc

<http://www.google.com>

<http://www.Sciencedirect.com>

<http://www.dbworld.com>

7- Facilities Required for Teaching and Learning

Personal computer, data show, power point application, and experimental tool devices

Course Coordinator:

Head of Department: **Prof. Dr. Effat Abbas**

Date:

