Course Specification

Program(s) on which the course is given: B. Science

Major or Minor element of Programs Minor

Department offering the Program: Mathematics

Department offering the course: Physics

Academic year / Level: Second year (Mathematics) / First Semester

Date of Department approval: 2008

A- **Basic Information**

Title: Waves and relativity Code: Phy 241

Credit Hours: Lecture: 2 hr/week

Tutorial: 2 hr/week Practical: 0 Total: 4 hr/week

B- **Professional Information**

1 – **Overall Aims of Course**

By Finishing of this course the graduate will be able to know the fundamental of waves and special relativity theory.

2 – Intended Learning Outcomes of Course (ILOs)

a- Knowledge and Understanding:

To make the graduate able to:

a1- Understand the damped motion

a2- Understand the wave equation of motion.

a3- Study the electromagnetic rays.

a4- Understand the elongate waves.

a5- Know the Lorentz and Einstein transformations.

a6- Understand Dirac matrix and hole theory.

b- Intellectual Skills

To make the graduate able to:

b1- Exam the damped and harmonic motion.

b2- Collect, summarize and analyze the practical data.

b3- Differentiate between the sound and the electromagnetic waves.

b4- Exam the validity of the physical laws in any coordinates.

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
Wave motion	2	1	2/0
Damped wave	6	3	6/0
Equation of motion	2	1	2/0
Lorentz and Einstein transformations	6	3	6/0
Dirac matrix and equation	4	2	4/0
Hole theory	4	2	4/0

4– Teaching and Learning Methods
- 4.1- Lectures
- 4.2-Discussion sessions
- 4.3-Class activities

5- Student Assessment Methods
- 5.1 Mid-term exam to assess Understanding
- 5.2 Final term exam to assess knowledge with understanding
- 5.3 Oral exam to assess understanding

Assessment Schedule

Assessment 1 Mid-term exam week 7
Assessment 2 Essay Week 3
Assessment 3 Oral exam Week 9
Assessment 4 Final term exam week 14

Weighting of Assessments

Mid-Term Examination		10%
Final-term Examination		80%
Oral Examination	10%	
Practical Examination		0 %
Semester Work		0%
Other types of assessment		%
Total		100%

6- List of References

6.1- Course Notes: Lecture materials

6.2- Essential Books (Text Books)

6.3- Recommended Books

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: Dr. Mohamed Abd-Elwahab

Head of Department: Prof. Dr. L.I. Abou-Salem

Date: