# Course Specifications

**Programme(s) on which the course is given Physics : P., P.&las.**
**Major or Minor element of programmes : minor - minor**
**Department offering the course Physics**
**Academic year / Level 2**
**Date of specification approval 2012**

## A- Basic Information

**Title: Matematical physics (2) Code: P2710**
**Credit Hours: 3h Lecture:3h**
**Tutorial:00 Practicals:00 Total: 3h**

## B- Professional Information

### 1 – Overall Aims of Course

**studies the Gamma function- Beta function, Bess's function and Legender function**
**studying numerical analysis- interpolation (Newton forward – Newton backward and Stirling formula and LaGrange's formula ) and deduce differentiation and integration methods for discreet data**

### 2 – Intended Learning Outcomes of Course (ILOs)

**a Knowledge and Understanding:**

**The student will be able to**

**a1- use in deduce the integration of complicated problems and solve the second order differential equations and deduce a new equation from the data**

**b Intellectual Skills**

**The student will be able to**

**b1- apply the gained information in**

**explanation, differentiation and integration from a given data such as experimental data**

**c Professional and Practical Skills**

**c1-in any research from a given result we can analyze and understand the new studies depended on the mathematical physics studies**

**d General and Transferable Skills**

**d1- in any research from a given result we can analyze and solve the problem result and the special function is the based from any theoretical courses**

**3- Contents**

| Topic | No. of hours | Lecture | Tutorial/Practical |
|---|---|---|---|
| Gamma function | 9 | 3 | |
| Beta function | 3 | 1 | |
| Bessel's function | 6 | 2 | |
| Legendr function | 6 | 2 | |
| Interpolation | 6 | 2 | |
| Differentiation methods | 6 | 2 | |
| Integration methods | 6 | 2 | |

**4– Teaching and Learning Methods**

**4.1- lectures**

**4.2 – seminars**

**4.3- discussion**

**4.4- problem sheets**

**5- Student assessment methods**

**5.1 Written Exam to assess understanding and intellectual competencies.**

**5.2 Oral exam to assess attendance, data collection and**

**presentation.**

**Assessment schedule**

| | |
|---|---|
| **Assessment 1 Mid term** | **Week 8** |
| **Assessment 2 Semester activities** | **Week 10** |
| **Assessment 4 Final term written exam** | **Week 14** |

**Weighting of assessments**

| | |
|---|---|
| **Mid-Term Examination (written)** | **20 %** |
| **Final-term Examination (written)** | **60 %** |
| **Semester Work (presentation)** | **20 %** |
| **Total** | **100 %** |

**6- List of References**

**6.1- Course Notes**

**6.2- Essential Books (Text Books)**

**theory and problems of numerical analysis (Schoum series)**

**special functions of mathematics for engineers (Andrews Larry)**

**6.3- Recommended Books**

**6.4- Periodicals, Web Sites, … etc**

**7- Facilities Required for Teaching and Learning**

**Course Coordinator: Prof.Dr.Mageda Hanem Khairy**

**Head of Department: Prof.Dr. Sana Maize**

**Date: / /**