Course specifications

Program(s) on which the course is given: **Post-graduate student of Applied Mathematics.**
Major or minor element of program: **Major,   Minor**
Department offering the program   **Mathematics   Applied Mathematics**.
Department offering the course: **Mathematics**
Academic year / Level: Pre-Master in Applied Mathematics
Date of specification approval: September 2008

A- Basic Information

   Title: Initial value-boundary value problems   Code: M6211

   Credit Hours: 2   Lecture: 2
   Tutorial: 0   Practical:0   Total: 2
B- Professional Information

   1 – Overall aims of course
   The aims of this course are the student learn what the boundary condition and how it effect on the solution of the P.D.E what the kind of boundaries and how the student has the ability to formulism and solve some important physical problems as Heat Equation—Wave Equation-Potential Equation.

   2 – Intended learning outcomes of course (ILOs)
a Knowledge and understanding:
   a1- Display some mathematical methods
   a2- Present of the boundary condition in the suitable form
   a3- Apply the Heat-Wave-Potential Equations in different forms and other problems
   .

 b- Intellectual skills

    b1- **Construct ideas depend on mathematical methods.**

    b2**- Interpret how the student transfer the physical problems to the mathematical problem**

    b3**- Apply some abilities to construct some problems in our life.**

c- Professional and practical skills

    c1- **Apply the outcomes of the course through its use in practical application in   different scientific fields.**

d- General and transferable skills

d1**- Adopt the solution of equations related to the topics covered in the course in**

> **different coordinates**

> d2**- Apply an extend and modification of the methods of the course for more   complicated problems in Applied mathematics..**

3- Contents

Topics	No. of hours	Lecture
1- Some definition of the mathematical methods	4	2
2- Derivation of the Heat Equation and its boundaries	4	2
properties	4	2
3-S solution of the heat equation in diferent boundaries		
1-Dereviation of the Wave Equation and its boundaries properties	4	2
2- D'Alambert solution of the wave equation	4	2
1- The different shape of the Potential Equation	4	2
2- Solution of the Potential in a rectangle, a disk and a slot	4	2

4– Teaching and learning methods

4.1-Lectures
4.2-Atteding tutorial classes.

5- Student assessment methods

5.1-Mid term written exam to assess understanding competencies.
5.2- Oral exam to assess attendance and interesting.
5.3- Final term written exam to assess comprehension

Assessment schedule

Assessment 1   Mid term.   Week   6-8
Assessment 2   Final term   Week   13
Assessment 3   Final term written exam   Week   14

Weighting of assessments

Mid-Term Examination   20   %
Final-term Examination   60   %
Oral Examination.   10   %
Semester Work   10   %
 Total   100   %

Any formative only assessments

6- List of references

David L. Power .

7- Facilities required for teaching and learning

   PC's – package for ready made scientific programs.
Course coordinator: Dr Gamil shalaby

Head of Department: Prof. Dr. Mohamed A Ramadan

Date: /   /