

Course specifications

Programme(s) on which the course is given Pre – Master M.Sc. of Mathematics,
Pure Mathematics

Major or minor element of programmes Mathematics
Department offering the programme September 2011
Department offering the course

A- Basic Information

Title: Partial Differential Equations **Code: M618**

Credit Hours: 2 hrs **Lecture: 2 hrs**

Tutorial: 0 **Practical: 0** **Total: 2 hrs**

Teaching Staff Prof. Dr/ Mohamed El Sheikh

B- Professional Information

1- Overall aims of course

To serve as a first step in advanced level of partial differential equations. To utilize the student background in basic partial differential equations to serve the course of advanced partial differential equations.

2- Intended learning outcomes of course (ILOs)

a- Knowledge and understanding:

On completion of the course , successful students should be able to:

a1 Understand a knowledge and understanding of fundamental definitions and ideas of partial differential equations.

a2 Have the knowledge about the mathematical terminologies used in this course.

- a3** Develop the knowledge about the methods of solutions of some partial differential equations taught in this course for further use in other applied and computational courses.
- a4** Understand theories and applications on physical phenomena like wave and heat equations.

b- Intellectual skills

On completion of the course , successful students should be able to:

- b1** Formulate exercises according to the type of the course.
- b2** Classify the topics of the course into groups according to their application.
- b3** Identify the different methods introduced in the course for

Suitable use in dealing with problems in differential equations.
- b4** Construct Differential equations to describe the physical world and show an understanding of mathematical modeling of physical phenomena; use appropriate mathematical tools in physics problems.

c- Professional and practical skills

On completion of the course, successful students should be able to:

- c1** Work exercise based on the tools he learned in the course.
- c2** Test the outcomes of the course through its use in practical application in different scientific fields.
- c3** Apply the results of mathematical ideas, in formal presentations, both oral and written

d- General and transferable skills

On completion of the course , successful students should be able to:

- d1** Formulate exercise based on the tools he learned in the course.
- d2** Test the outcomes of the course through its use in practical application in different scientific fields.
- d3** Explain their own learning and use appropriate learning resources; work both independently and as part of a team.

3- Contents

Topic	No. of hours	Lecture
Fourier transforms and initial value problems	4	2
Green's function and boundary value problems	4	2
Laplace transform method for boundary value	4	2
Sturm Liouville problem for Laplace Equations in rectangular and spherical coordinates	4	2
Elliptic partial differential equations	6	3
Wave equation		
Heat equation (maximum principle, Existence	6	3
Fourier integral-application to boundary value problems.		

4- Teaching and learning methods

4.1- Lectures

4.2- Working on hand in assignments

4.3- Attending practical 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 Semester hand in assignments to assess understanding professionalism.

5.4 Final term written Exam to assess comprehension.

Assessment schedule

Assessment 1	Mid term	Week 4 and 7
Assessment 2	semester activities	Week 5 and 8
Assessment 3	Final term oral exam	Week 13
Assessment 4	final term written exam	Week 14

Weighting of assessments

Mid-Term Examination 20%

Semester Work (homework assignments + oral tests)	20%
Other types of assessment	00%
Final-term written Examination	60%
Total	100%

Any formative only assessments

6- List of references

6.1 Course notes

Collected and prepared notes that cover the main topics in the course content

6.2 Essential books (text books)

Elementary text books under the title : *Introduction to partial Differential Equations*

6.3 Recommended books

1-Rene Dennemeyer,, Introduction to partial differential equations and Boundry value problema " Mc Graw Hill New York 1968

2-

6.4 Periodicals, Web sites, ... etc

Non.

7- Facilities required for teaching and learning

PC's - packages for ready made scientific programs.

Course coordinator: Prof. Mohamed El-sheikh

Head of Department: Prof. Mohamed A. Ramadan

Date: