



Department of Mathematics

College of Science

University of Salahaddin

Subject: Partial differential equations with
Application

Course Book – (Year-4)

Lecturer's name: Hero Waisi Salih

Academic Year: 2022/2023

Semester: I

Course Book

1. Course name	Partial differential equations with application
2. Lecturer in charge	Hero Waisi salih
3. Department/ College	Mathematics/ Science
4. Contact	e-mail :hero.salih@su.edu.krd Tel: ()
5. Time (in hours) per week	For Theory: 3
6. Office hours	2hours
7. Course code	
8. Teacher's academic profile	<p>Name: Dr. Hero Waisi Salih Work Address: Mathematics Department, College of Science, Salahaddin University-Erbil. Employment October 2017– up to now: Mathematics Department, College of Science, Salahaddin University-Erbil Qualifications & background B. Sc., Salahaddin University-Erbil, College of Science, Mathematics Department, Iraq. M. Sc., Koya University-Erbil, College of Science, Mathematics Department, Iraq. PhD, university technology Malaysia (UTM) , Faculty of Science Mathematical science department , Malaysia. General specialization: Mathematics. Specific specialization: Differential Equations.</p>

9. Keywords	Ordinary differential equations, series solution, Leibnitz formula, Laplace and Laplace inverse tables.
<p>10. Course overview: Partial differential equations occur in advanced studies in applied mathematics, physics and engineering.</p> <p>11. Course objective: The aim of this course is to learn the students the importance of Partial differential equations, the difference between these equations and ordinary differential equations .Also, this course demonstrates the area of using partial differential equations specially students in physical and engineering science,since,these equations arise in solving problems which is of great importance in applications.</p>	
<p>12. Student's obligation : Attending classes regularly, doing homework's, quizzes and exams, participate solving homework in the class.</p>	
<p>13. Forms of teaching Magic board and discussion and allow students to write some problems on the board.</p>	
<p>14. Assessment scheme The students are required to do 3 closed book exams during of the study year. The exam has 30 marks, the attendance, and classroom activities and quizzes 10 marks. There will be a final exam on 60 marks.</p>	
<p>15. Student learning outcome: The student learns new types of equations called Partial differential equations and special Partial differential equations, which occur in physical and engineering applications, for</p>	
<p>16. Course Reading List and References: [1] Applied mathematics ,N.P.Bali,unversty science press,Delhi,2008 [2] Mathematical methods in physics, D. Biswas new central book agency (p)Ltp, India, 2002 [3] Mathematical methods in physics, Arfken and Weber, A Harcourt Science</p>	

and Technology company

[4] A Text book of differential equation, N. Kapoor pita bar publishing Company (p) LTP., WewDelhi.

17.The Topics: -	Lecturer name
1. Basic concepts 1.1. Definition of partial differential equations (p.d.e). 1.2. Order and degree. 1.3. Formulation of p.d.e. 1.4. Solution of p.d.e. 1.5. Equation solvable by direct integration.	
2. Partial differential equations of the first order 2.1. Linear p.d.e. of the first order. 2.2. Lagrange's linear equation. 2.3. Non-linear equations. 2.4. Charpit's method. 2.5. Jacobi's method.	
3. Special linear partial differential equations 3.1. One dimensional Heat equation. 3.2. One dimensional wave equation. 3.3. Laplace equation in two dimension.	
18. Practical Topics (If there is any)	
19. Examinations <i>Apart of exam questions from lecture</i> notes and the home works. In add ions, some questions about the subject but not included in the lecture notes for high level students in mathematics	

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