

<b>Date:</b> 30/1/2022	Examination No.:	Version:2023-2024	Start:30/1/2024
<b>Module Name - Code</b>	Math-IV- 0109		
<b>Module Language:</b>	English		
<b>Responsible:</b>	Arazoo Mustafa Aziz (Lecture)		
<b>Lecture (s):</b>	None		
<b>College:</b>	College of Engineering – Salahaddin University-Erbil		
<b>Duration:</b>	15 week – (Spring semester)		
<b>Course outcomes:</b>	At the end of the semester, students would be able to Understand the types of Definitions, differential equations, ordinary differential equations, non differential equations, order of differential equations, degree of differential equations, types of the second order differential equations, characteristic Equations and its derivation of all types of roots. Formation of partial differential equations, Linear partial differential equations homogeneous partial differential equations with constant coefficients.Laplace transforms of various standard functions, Inverse Laplace transforms.		
<b>Course Content:</b>	Representation of ordinary Differential Equations(ODE) and Partial Differential Equations (PDE): Solution of Differential equations of first order and first degree.Solution of the second order differential equations:Types of the second order differential equations, characteristic equations and its derivation of all types of roots.Linear differential equation of order n,Homogeneous Linear differential equation with constant coefficients,Non- Homogeneous Linear differential equation with constant coefficients. Solution of partial differential equations by the method of separation of variables and Laplace Transform.Solution of Wave equation, Heat conduction, Laplace equation. Properties of Laplace transforms.		
<b>Literature:</b>	Schaum’s, “Theory and problems of Differential equations in si metric units”, First edition, 1972.Stanley I. Grossman, “Calculus”, part1, 1977.Stanley I. Grossman, “Calculus”, part2, 1977.		
<b>Type of Teaching:</b>	4 hrs. in lectures		
<b>Pre-requisites:</b>	0109		
<b>Preparation Modules:</b>	Atomic Structure of Elements		
<b>Frequency:</b>	Spring Semester		
<b>Requirements for credit points:</b>	For the award of credit points, it is necessary to pass the module exam. It contains: Two examination during the academic semester, Quizzes and Final examination. <b>Student's attendance is required in all classes.</b>		
<b>Credit point:</b>	5		
<b>Grade Distribution:</b>	The following grade system is used for the evaluation of the module exam: The module exam is based on the summation of two categories of evaluations: <b>First: (40%)</b> of the mark is based on the academic semester effort which includes -Two examination during the academic semester = 30%. - <b>Quizzes=10%</b> <b>Second: (60%)</b> of the mark is based on final examination that is comprehensive for the whole of the study materialsreviewed during the academic semester.		
<b>Work load:</b>	The workload is 150hrs. It is the result of 60 hrs. attendance and 90 hrs. self-studies (Assignments, preparation for exam and applications).		

