Date:	Examination No.: 15367	Version:1/9/2020	Start: 1/9/2020
Module Name - Code	Mathematics IV - 110		
Module Language:	English		
Responsible:	Mr. Shuwan Jawdat Ibrahim Barzanjy		
Lecture (s):	Mr. Shuwan Jawdat Ibrahim Barzanjy / M.Sc.		
College:	College of Engineering – Salahaddin University		
Duration:	15 weeks – 2nd semester		
Course outcomes:	Analyze real world scenarios to recognize when ordinary differential equations (ODEs) or systems of ODEs are appropriate, formulate problems about the scenarios, creatively model these scenarios (using technology, if appropriate) in order to solve the problems using multiple approaches, judge if the results are reasonable, and then interpret and clearly communicate the results. Recognize ODEs and system of ODEs concepts that are encountered in the real world, understand and be able to communicate the underlying mathematics involved to help another person gain insight into the situation. Use multiple integrals with correct mathematical terminology, notation and symbolic processes. Analyze real world scenarios to recognize when use of matrices or linear systems is appropriate. Formulate problems, creatively model those problems (using technology, if appropriate), and solve those problems using multiple approaches.		
Course Content:	1. Ordinary Differential Equation (ODE) and Applications a. Basic Concepts b. First Order Differential Equations c. Second Order Differential Equations 2. Multiple Integrals a. Multiple Integrals b. Line Integrals c. Surface Integrals-images 3. Matrices and Determinants		
Literature:	1. William H. Boyce and Richard C. Diprima, Elementary Differential Equations and Boundary Value Problems (6th Edition), Wiley, New York, 1996. 2. A.K. Sharma, Text Book Of Multiple Integrals DPH, Discovery Publishing House, 2005 3. Nita H. Shah, Foram A. Thakkar, Matrix and Determinant Fundamentals and Applications, Published December 21, 2020 by CRC Press		
Type of Teaching:	4 hrs. in lectures		
Pre-requisites:	Mathematics III (0109)		
Frequency:	Yearly in spring semester		
Requirements for credit points:	For the award of credit points, it is necessary to pass the module exam. The module exam contains: Normal and Final Semester Exams Daily Requirements (Assessments, Quizzes, Daily Activities and etc.) **Student's attendance is required in all classes**.		
Credit point:	5		
Grade Distribution:	The Grade is generated from the examination result(s) with the following weights (w): Oral/Written [w: 1]		
Work load:	The workload is 120 hrs. It is the result of 60 hrs. attendance and 60 hrs. self-studies.		