



Jordan University of Science and Technology
Faculty of Science & Arts
Mathematics Department

MATH495 Topics In Differential Equations

First Semester 2021-2022

Course Catalog

3 Credit Hours. Introduction to integral equations (IEs), types of IEs, types of Kernels, solutions of IEs, conversions of IVPs and BVPs into IEs, solving homogenous and non-homogenous Fredholm IEs with separable Kernels, solving IEs by Laplace Transform.

Text Book

Title	Linear Integral Equations, Theory and Techniques
Author(s)	Ram Kanwal
Edition	1st Edition
Short Name	Text Book
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Text book	Methods of Applied Mathematics	Hildebrand	2nd Edition	

Instructor

Name	Prof. Marwan Alquran
Office Location	Ph 4, level 1
Office Hours	Sun : 10:00 - 12:00 Mon : 10:30 - 11:30 Tue : 11:00 - 13:00 Wed : 10:00 - 11:00
Email	marwan04@just.edu.jo

Class Schedule & Room

Section 1:

Lecture Time: Mon : 11:30 - 13:00

Room: SF05

Section 2:

Lecture Time: Wed : 11:30 - 13:00

Room: SF05

Prerequisites

Line Number	Course Name	Prerequisite Type
903050	MATH305 Introduction To Partial Differential Equations	Prerequisite / Pass

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Review: Introduction to IEs. Types of IEs, types of Kernels, solutions of IEs.	From Text Book
Week 2	Conversions of IVPs and BVPs into IEs.	From Text Book
Week 3	Conversions of IVPs and BVPs into IEs.	From Text Book
Week 4	Solving homogenous Fredholm IEs with separable Kernels.	From Text Book
Week 5	Solving non-homogenous Fredholm IEs with separable Kernels.	From Text Book
Week 6	Solving homogenous IEs by using iterated Kernels.	From Text Book
Week 7	Solving non-homogenous IEs by using iterated Kernels.	From Text Book

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Classifications of integral equations and its conversion to differential equations. [1SLO1, 1SLO4]	35%	Mid term
Solve homogenous Fredholm IEs with separable Kernels. [1SLO1, 1SLO2, 1SLO3, 1SLO4]	15%	Mid term
Solve non-homogenous Fredholm IEs with separable Kernels. [1SLO3, 1SLO4]	20%	Final Exam
Solve IEs by iterated kernels. [1SLO2, 1SLO4]	20%	Final Exam
Solve IEs by Hilbert-Schmidt process [1SLO1, 1SLO2]	10%	Final Exam

Relationship to Program Student Outcomes (Out of 100%)

SLO1	SLO2	SLO3	SLO4	SLO5	SLO6
26.25	18.75	13.75	41.25		

Evaluation

Assessment Tool	Weight
Mid term	50%
Final Exam	50%

Date Printed: 2022-09-21