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

MATH305 Introduction To Partial Differential Equations
Summer Semester 2022-2023

Course Catalog
3 Credit Hours. Classification of PDE. Solving initial boundary value problems using Separation of Variables Method and initial boundary value problems using Eigen function Expansion Method. Introducing the Sturm-Liouville Eigen-value Problems to students. Solving initial boundary value problems using Integral Transforms, like Laplace transform. Solving first-order Linear and Quasi-linear wave equations using Method of Characteristics.

Text Book	
Title	Elementary Applied Partial Differential Equations
Author(s)	Richard Haberman
Edition	4th Edition
Short Name	TextBook
Other Information	

Course References

Short name	Book name	Author(s)	Edition	Other Information
Ref 1	Partial Differential Equations: An Introduction	W. A. Strauss	2nd Edition	
Ref 2	An Introduction to Partial Differential Equations	Y. Pinchover and J. Rubinstein	1st Edition	

Instructor	
Name	**Prof. Kamel Al-Khaled**
Office Location	PH2, level 1, Ext. 23454
Office Hours	Sun : 09:00 - 11:00 Tue : 09:00 - 11:00 Wed : 09:00 - 11:00 Thu : 09:00 - 10:00

Email	kamel@just.edu.jo

Class Schedule & Room

Section 1:
  Lecture Time: Sun, Mon : 11:30 - 13:00
  Room: NG56

Prerequisites

Line Number	Course Name	Prerequisite Type
902520	MATH252 Mathematical Methods 1	Prerequisite / Pass

Tentative List of Topics Covered

Weeks	Topic	References
Week 1	Linear Partial Differential Equations (PDE)	From **TextBook**
Weeks 2, 3	Orthogonal Sets of Functions	From **TextBook**
Weeks 4, 5	The Sturm-Liouville Boundary Value problem	From **TextBook**
Week 6	Fourier Series	From **TextBook**
Week 7	Fourier Sine and Cosine series.	From **TextBook**
Weeks 8, 9	Heat equation	From **TextBook**
Week 10	Separation of variables- wave equation.	From **TextBook**
Week 11	Laplace Transform Solutions of PDE.	From **TextBook**
Weeks 12, 13	Fourier Transform Solutions of PDE.	From **TextBook**
Week 14	Method of Characterstics for 1st linear partial differential equations.	From **TextBook**
Week 15	Method of Characterstics for 2nd linear partial differential equations.	From **TextBook**
Week 16	Review	

Mapping of Course Outcomes to Program Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Classifications of partial differential equations, and analyzing PDEs of various types (parabolic, hyperbolic, elliptic). [1SLO1]	58%	
Extend many of the basic concepts in Fourier Series to use in solving PDEs. [1SLO1]	10%	
Solving first and second linear partial differential equations using Laplace method, Fourier transform method and the method of characteristic. [1SLO1]	32%	

Relationship to Program Student Outcomes (Out of 100%)					
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6
100					

Evaluation	
Assessment Tool	**Weight**
First Exam	25%
Second Exam	30%
Final Exam	40%
Quizzes	5%

Policy	
Communication	Official communication to you will often come through your JUST e-mail box and/or E-Learning system.
Attendance	It is your responsibility to attend class. I expect you to arrive on time and to remain for the full class period.

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