



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

MATH252 Mathematical Methods 1

First Semester 2020-2021

**Course Catalog**

3 Credit Hours. Laplace transforms: definition, properties, inverse Laplace transform, solving IVP's, Laplace transforms and special functions, convolution, impulses and the Dirac Delta functions. Special functions: Gamma, Beta, Error, trigonometric series, periodic extension and convergence, Fourier series, convergence of Fourier series, Integration and differentiation of Fourier series, conditions for the uniform of a Fourier series. Fourier transform, integral Fourier transform. Fourier sine and cosine transforms, applications to Fourier transform

**Text Book**

<b>Title</b>	Mathematical methods in the physical science
<b>Author(s)</b>	Mary L. Boas
<b>Edition</b>	3rd Edition
<b>Short Name</b>	Text
<b>Other Information</b>	

**Course References**

Short name	Book name	Author(s)	Edition	Other Information
Ref #1	Mathematical Methods For Physics	H. W. Wyld	1st Edition	
Ref #2	Special Functions	Mico M. Temme	1st Edition	

**Instructor**

Name	<b>Prof. Kamel Al-Khaled</b>
Office Location	PH2, level 1, Ext. 23454
Office Hours	Sun : 13:00 - 14:00 Mon : 13:00 - 14:00 Tue : 13:00 - 14:00 Wed : 12:00 - 14:00 Thu : 11:00 - 12:00

Email	kamel@just.edu.jo
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Class Schedule & Room
Section 1: Lecture Time: Sun, Tue : 11:30 - 13:00 Room: منصة الكترونية

Prerequisites		
Line Number	Course Name	Prerequisite Type
902030	MATH203 Ordinary Differential Equations	Prerequisite / Pass

Tentative List of Topics Covered		
Weeks	Topic	References
Weeks 1, 2	Chapter 7: Fourier Series And Transform.	From <b>Text</b>
Weeks 3, 4	Chapter 11 Special functions	From <b>Text</b>
Weeks 5, 6	Chapter 12 Legendre , Bessel Functions	From <b>Text</b>
Week 7	Chapter 8: Ordinary differential equations.	From <b>Text</b>
Week 8	Final Exams	

Mapping of Course Outcomes to Program Student Outcomes	Course Outcome Weight (Out of 100%)	Assessment method
Find the Fourier series for suitable functions and understand the related convergence Theorems. [5SLO1, 1SLO4]	30%	FINAL, quizzes, Midterm Exam
Understand Fourier transform and compute Fourier transform for some functions. [4SLO1, 1SLO2]	25%	FINAL, quizzes, Midterm Exam
Compute the Laplace transform and inverse Laplace for suitable functions. [3SLO1, 1SLO4, 1SLO6]	15%	FINAL, Midterm Exam
Study some important functions (Gamma function, Beta function, error function) and some orthogonal functions (Legendre polynomials, Bessel functions). [4SLO1, 1SLO4]	30%	FINAL

Relationship to Program Student Outcomes (Out of 100%)					
SLO1	SLO2	SLO3	SLO4	SLO5	SLO6
78	5		14		3

<b>Evaluation</b>	
<b>Assessment Tool</b>	<b>Weight</b>
FINAL	50%
quizzes	10%
Midterm Exam	40%

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