



JORDAN UNIVERSITY OF SCIENCE & TECHNOLOGY
MECHANICAL ENGINEERING DEPARTMENT
ME 305 Applied Mathematics For Engineers
Semester

Catalog Data- 2013 : 3 Credit hours (3 h lectures). Studying different techniques used to solve ordinary and partial differential equations. Studying the complex numbers. Topics include: review of the basic types of ordinary differential equations, Laplace transformation technique, complex numbers, Fourier series, separation of variables to solve partial differential equations,.

Text Book(s): Kreyszig, E. (2015), Advanced Engineering Mathematics, 11th Edition, John Wiley, New York.

References:

- Greenberg, M. D. (1998), Advanced Engineering Mathematics, 2nd ed., Prentice Hall New Jersey.
- Wylie, C. R. and Barrett, L. C. (1995), Advanced Engineering Mathematics, 6th ed., McGraw-Hill, New York.

Instructor: _____

Class Schedule: _____

Office Hours: _____

Pre/Co-Requisites:

Math 203
Basics of first and second order ordinary differential equations, fundamentals of linear algebra.

Objectives:

1. Learning how to solve basic first and second order ordinary differential equations [a, , e, k]
2. Familiarize the student with complex numbers and complex functions [a, e]
3. Use Laplace transformation technique to solve ordinary differential equations [a, e, k]
4. Perform Fourier expansion using Fourier series [a, e, k]
5. Familiarize the student with partial differential equations [a, e]

Topics Covered:

1. Definitions and Review of Basic First and Second Order Ordinary Differential Equations (Chapters 1, 2).
2. Laplace Transformation (Chapter 6).
3. Fourier Series and Transformation (Chapter 11).
4. Partial Differential Equations (Chapter 12 and Handouts).
5. Complex numbers and complex function (Chapter 13)

Computer Usage: Mat Lab

Design Activities/Project(s): None

Lab. Experiment(s): None

Scientific Visit(s): None

Evaluation:

Homework and Attendance	0 %
Experiment	0%
1 st Exam	30%
2 nd Exam	30%
Final Exam	40%

Relationship of the Course to ME Outcomes:

ABET a – k	√	Mechanical eng. Program Outcomes
a	√	a. Apply knowledge of mathematics, science, and engineering in practice.
b		b. Design and conduct experiments as well as analyze and interpret data.
c		c. Design a system, components, or process to meet desired needs.
d		d. Function on multidisciplinary teams.
e	√	e. Identify, formulate, and solve engineering problems.
f		f. Understanding of professional and ethical responsibility of an engineer.
g		g. Communicate effectively.
h	√	h. Broad education to understand the impact of engineering solutions in global and societal context.
i		i. Recognition of the need for, and possess the ability to engage in, lifelong learning.
j		j. Possess knowledge of contemporary issues.
k	√	k. Use the techniques, skills, and modern engineering tools necessary for engineering practice.
		l. Adhere to safety rules and regulations.

ABET Category:

Engineering Science	3	Credits
Engineering Design	0	Credits

Prepared By: _____ **Date:** _____