



MUTAH UNIVERSITY
College of Science
Department of Mathematics

Course Syllabus

Course Code	Course Name	Credits	Contact Hours
0301203	Ordinary Differential Equations (1)	3	3T

INSTRUCTOR/COORDINATOR

Name	Mohammad Marashdeh
Email/Office	Marashdeh@mutah.edu.jo
Office Hours	12:00-1:00 Sun, Tue, Thu 10:00-11:00 Mon, Wed
Classroom/Time	12:00-1:00 Sun, Tue, Thu 10:00-11:00 Mon, Wed

TEXTBOOK

Title	A first course in differential equations with modeling applications
Author/Year/Edition	Dennis G. Zill, 2012, 10 th edition

Other Supplemental Materials

Title	Fundamentals of differential equations and boundary value problems
Author/Year/Edition	R. Nagle , Edward Saff, Arthur Snider, 2017,7th edition

SPECIFIC COURSE INFORMATION

A. Brief Description of the Content of the Course (Catalog Description)

This course introduces methods, theories, and applications of differential equations. The module covers the following main topics: First and higher order differential equations, Solutions by series near ordinary points, removable singularity, solution of ODE's and IVP using Laplace transformation

B. Pre-requisites (P) or Co-requisites (C)

Calculus 2 (0301102) (P)

C. Course Type (Required or Elective)

Required

SPECIFIC GOALS

A. Course Learning Objectives (CLOs)

CLO1: Understanding the core concepts of Differential Equations [1].

CLO2: Understanding how to classify differential equations [1].

CLO3: Understanding how to solve B.V.P. [1].

CLO4: Understanding the Series solution [1].

CLO5: Understanding how to use Laplace transform to solve D.E. [1].

B. Student Learning Outcomes (SOs) Addressed by the Course

1	2	3	4	5	6	7
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BRIEF LIST OF TOPICS TO BE COVERED

List of Topics	No. of Weeks	Contact Hours
Definition of Ordinary Differential Equations (ODE)	1	3
Direction Fields and Autonomous DE	1	3
Solution of First Order ODE Separable, Linear, Exact And Homogeneous ODE	1	3
Higher Order ODE	1	3
Homogeneous ODE with Constant Coefficients.	1	3
Undetermined Coefficients: Superposition	1	3
Undetermined Coefficients: Annihilator	1	3
Variation of Parameters	1	3
Cauchy-Euler Equations	1	3
Series Solution of ODE	1	3
Ordinary Points vs. Singular Points	1	3
Laplace Transform Inverse Laplace Transform	1	3
Derivative of Transform The Dirac Delta Function	1	3
Review	1	3

Total 14 42

EVALUATION

Assessment Tool	Due Date	Weight (%)
Mid Exam	According to the university calendar	30
Course Work (Homework's, Quizzes, Projects, ...etc.)	One week after being assigned	20

Final Exam	According to the university calendar	50
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ABET's Students Learning Outcomes (Criterion # 3)

Relationship to program outcomes		
ABET 1-7		Electrical Engineering Student Outcomes
1.	√	an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2.		an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic
3.		ability to communicate effectively with a range of audiences
4.		an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5.		an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6.		an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7.		an ability to acquire and apply new knowledge as needed, using appropriate learning strategies