1. Course Name:
Engineering Mathematics

2. Course Code:
MIE21204

3. Semester / Year:
First Semester 2025−2026

4. Description Preparation Date:
2025/11/22

5. Available Attendance Forms:

6. Number of Credit Hours (Total) / Number of Units (Total)
3

7. Course administrator's name (mention all, if more than one name)
Prof.Dr. Emad A. Kuffi

8. Course Objectives

Course Objectives	1. The goal of this module is to give students the necessary mathematical skills and to to solve a range of design engineering issues. 2. Demonstrate basic knowledge and understanding of a core of vector analysis, lir algebra and applied mathematics. 3. Introduce student to Infinite and power series. 4. Understand how to solve Differential equations of the 1st and nth order. 5. Introduce student to Integral Transforms: Fourier series and Laplace transform their applications in signal and systems.

9. Teaching and Learning Strategies

Strategy	The major approach used to offer this module will be to promote student engagement in exercises while also enhancing and broadening their critical thinking abilities. Classes interactive lessons will be used to achieve this.

1. Course Structure

Week	Hours	Required Learning Outcomes	Unit or subject name	Learning method	Evaluation method
1	**3**	Define a vector. represent a vect by a directed straight line, add vectors, write a vector in terms component vect write a vector in terms of component unit vectors, set up a coordinate syste for representing vectors, and obt the direction of vector.	Vector analysis.	Lecture	.exam

2	3	Explain the conc of a vector field and make sketch of simple vector fields in the plar	Vector fields.	Lecture	homework
3	3	Memorize algebraic definitions and explain geometr meanings of dot and cross produ	Orthogonal vectors and Dot Product.	Lecture	quizzes
4	3	Memorize algebraic definitions and explain geometr meanings of dot and cross produ	Parallel vectors and Cross Product.	Lecture	exam
5	3	Learn Partial Derivatives.	Partial Derivatives: Formulas for Del operation.	Lecture	homework
6	3	Learn polar coordinate.	Polar Coordinates.	Lecture	quizzes
7	3	Learn Cylindri Coordinates	Cylindrical Coordinates Systems.	Lecture	Mid-term Exam
8	3	Learn Spheric Coordinates	Spherical Coordinates Systems.	Lecture	
9	3	know what is meant by infinit series & its convergence,	Infinite series.	Lecture	quizzes
10	3	know what is meant by infinit series & its convergence,	Convergence and divergence series.	Lecture	exam
11	3	Definition of	Differential equations.	Lecture	quizzes
12	3	Learn formation Differential Equations - solutions of first order Differentia Equations: Homogeneous- Non-homogene - Exact – Non- exact and soluti of nth order Differential Equations as we	Differential equation of the first order.	Lecture	exam
13	3	Learn format about nth ord ODEs	Differential equation of nth order.	Lecture	homework
14	3		Power series.	Lecture	quizzes
15	3	Definition of Laplace and Fourier transfor Condition for existence, Lapla transform of standard functio	Integral Transforms: Fourier series and Laplace transform.	Lecture	exam

		Properties of Laplace transform			

2. Course Evaluation

Quizzes   2   5%   (10)
ONLINE assignments   2   5%   (10)
Report   1   10%   (10)

On-site assignment   2   5%   (10)
 Midterm Exam   2hr   10%

Final Exam   3hr   50%

3. Learning and Teaching Resources

Required textbooks (curricular books any)	https://dokumen.tips/download/link/engineering-mathematics-5th-ed-by-k-a-stroud.html
Main references (sources)	Advance mathematical Engineering \ Wely
Recommended books and references (scientific journals, reports…)	https://www.bau.edu.jo/UserPortal/UserProfile/PostsAttach/59003_3812_1.pdf
Electronic References, Websites	//dokumen.tips/download/link/engineering-mathematics-5th-ed-by-k-a-stroud.html

Course Description Form

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