

Applied Engineering Mathematics – II

STUDY MATERIAL

Semester – II



Prepared by :

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Syllabus

RMA2A001

MATHEMATICS – II

3-0-0

OBJECTIVE :

The objective of the course Mathematics – II is to familiarize the prospective engineers with techniques in Matrix algebra, Vector differential calculus, Vector integral calculus, Fourier series, Fourier transform, Fourier integral. It aims to equip the students with standard concepts and tools as an intermediate to advanced level that will serve them well towards tackling more advanced level of mathematics and applications that they would find useful in their disciplines.

Module – 1 :

Matrix Algebra, Solution of system of linear equations (Gauss Elimination), Rank and Inverse of matrices (Gauss-Jordan), Examples of Vector Spaces.

Module – 2 :

Eigen values and eigen vectors, Symmetric and skew-symmetric matrices. Orthogonal matrices. Complex matrices. Hermitian and skew matrices, Unitary matrices and similarity of matrices, Diagonalisation of Matrices.

Module – 3 :

Vector differential calculus : vector and scalar functions and fields, Derivatives, Curves tangents and arc length, gradient, divergence, curl.

Module – 4 :

Vector integral calculus : Line Integrals, Green Theorem, Surface integrals, Gauss theorem and Stokes Theorem (without Proof)

Module – 5 :

Fourier series, Fourier expansion of functions of any period, Even and odd functions, Half range Expansion, Fourier transform and Fourier Integral.



Contents

Sl. No.	Chapters	Pages
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APPLIED ENGINEERING MATHEMATICS – II

MODULE – I

CHAPTER – 1 : Linear Algebra – I	1.1 – 1.50
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MODULE – II

CHAPTER – 2 : Linear Algebra – II	2.1 – 2.75
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MODULE – III

CHAPTER – 3 : Vector Differentiation	3.1 – 3.75
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CHAPTER – 4 : Vector Integration	4.1 – 4.38
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MODULE – IV

CHAPTER – 5 : Vector Integration Applications	5.1 – 5.27
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MODULE – V

CHAPTER – 6 : Fourier Series	6.1 – 6.80
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CHAPTER – 7 : Fourier Transforms	7.1 – 7.34
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