ENGINEERING MATHEMATICS-II
B.Tech. First year ,Second Semester

(Common to all Branches)

Credits	Periods			Exam Hrs.	Sessional Marks	Exam Marks	Total Marks
	Theory	Tutorial	Lab				
3	3	1	-	3	40	60	100

PURPOSE	
To impart analytical ability in solving mathematical problems as applied to the respective branches of Engineering	
INSTRUCTIONAL OBJECTIVES	
1	To apply advanced matrix knowledge to Engineering problems.
2	To familiarize with the applications of differential equations.
3	To equip themselves familiar with Laplace transform

UNIT-I: Linear Algebra: (11 Periods)

Rank of matrix-Elementary Transformation of a matrix- Gauss Jordan Method of finding the inverse – Normal form of the matrix- PAQ form – Consistency of linear system of equations – System of homogeneous and non- homogeneous equations .

UNIT-II : (12 Periods)

Linear transformations – Orthogonal transformations- Vectors (Linearly Independent & Dependent) , Eigen values , Eigen Vectors, Properties of Eigen values – Cayley Hamilton theorem (without proof). Reduction to diagonal form – Reduction of Quadratic form to canonical form – Nature of quadratic form,.

UNIT-III : Differential Equations of first order and its Applications: (10 Periods)

First order Linear differential equations , Bernoulli's equations , Exact Differential Equations –Equations reducible to exact Equations - Orthogonal trajectories – Simple Electric circuits- Newton law of cooling.

UNIT – IV : Higher order Linear Differential Equations : (10 Periods)

Definitions – Rules for finding the complementary function, rules for finding the particular integral, method of variation of parameters, equations reducible to linear equations with constant coefficient - Cauchy's homogeneous linear equation ,Legendre's linear equation.

UNIT-V: Laplace Transforms: (17 Periods)

Introduction – definitions- Transforms of elementary functions - Properties of Laplace transforms- Transforms of Periodic functions –Transforms of Derivatives – Transforms of Integrals- Multiplication by t^n - division by t -Evaluation of integrals by Laplace transforms. Inverse Laplace transforms – Other methods of finding inverse transforms (Excluding Residue method) Convolution theorem – Application's to Differential Equations – Unit Step function- Unit Impulsive functions.

Text BookPrescribed :

1. Dr. B.S. Grewal, Higher Engineering Mathematics,43rd edition, Khanna Publishers, New Dehli.

Reference books:

1. N.P. Bali, Dr . Ashok Saxena,Dr.N.Ch.S. Narayana, A Text book on Engineering Mathematics Laxmi pub.(p)Ltd. New Dehli.
2. H.K.Dass, Advanced Engineering Mathematics,S.chand and company ltd
3. Dr.M.K. Venkataraman, Higher Engineering Mathematics National Pub.Co.Madras.
4. Erwin kreyszig. Advanced Engineering Mathematics,John Wiley and sons ,Newyork.