

With effect from: 2022-23 (R-22)

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS)

Accredited by NAAC with A++ Grade

9-5-81, Ibrahimbagh, Hyderabad-500031, Telangana State

DEPARTMENT OF MATHEMATICS

LINEAR ALGEBRA

(OPEN ELECTIVE-I for Civil,EEE,ECE,Mech of 2/4 B.E III-Sem)

L:T:P (Hrs./week):2:0:0	SEE Marks :60	Course Code: U210E310MA
Credits : 2	CIE Marks: 40	Duration of SEE: 3 Hrs

COURSE OBJECTIVES	COURSE OUTCOMES
<i>The course will enable the students to:</i>	<i>At the end of the course students will be able to:</i>
1. Study the concept of Vector Spaces and understand the meaning of Basis and Dimension of a vector Space and Co-ordinates.	1. Solve the problems on Vector Spaces and determine the Basis and Dimension of a Vector Space and find the Co-ordinates.
2. Understand the meaning of Linear transformation, properties.	2. Determine Linear Transformation, Range and Kernel and Matrix of Linear Transformation.
3. Understand Range and Kernel, Rank-Nullity and Matrix of Linear Transformation.	3. Determine Range and Kernel, Rank-Nullity and Matrix of Linear Transformation.
4. Understand Inner Product Spaces, Orthonormal sets, Gram-Schmidt's Orthogonalization process.	4. Determine distance, orthogonal, orthonormal sets and construct orthonormal basis based on Gram-Schmidt's Orthogonalization process.

UNIT – I (8 classes)

Vector Spaces-Definition of a Vector Space, Subspaces, Basis and Dimension, Coordinates and Change of Basis.

UNIT – II (6 classes)

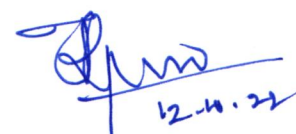
Linear Transformation -I

Definition of Linear Transformation- Properties of Linear Transformations – Product of Linear Transformations – Algebra of Linear Operators- Linear sum- Scalar multiple- Composition of maps.

UNIT – III (6 classes)

Linear Transformation -II

Range and kernel of a linear map – Dimension of Range and Kernel - Rank and nullity – Inverse of linear transformation - Rank nullity theorem (without Proof)- Matrix of Linear Transformation.


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UNIT – IV (8 classes)

Inner Product Spaces- The Dot Product on \mathbb{R} and Inner Product Spaces, Orthonormal Bases, Orthogonal Complements- Gram-Schmidt's Orthonormalization process.

Learning Resources:

1. Introduction to Linear Algebra with Application, Author : Jim Defranza, Daniel Gagliardi, Publisher : Tata McGraw-Hill
2. An Introduction to Linear Algebra, V.Krishna Murthy, V.P Mainra, J.L Arora, Affiliated to East-West Press Pvt Ltd

Reference Books:

- 1 Elementary Linear Algebra, Author: Anton and Rorres, Publisher: Wiley India Edition.
- 2 Advanced Engineering Mathematics, Author : Erwin Kreysig, Publisher : Wiley Publication
- 3 Elementary Linear Algebra, Author : Ron Larson, Publisher : Cengage Learning

Online Resources :

- 1 <http://mathworld.wolfram.com/topics>
- 2 <http://www.nptel.ac.in/course.php>

The break-up of CIE: Internal Tests + Assignments + Quizzes

1	No. of Internal Tests	:	2	Max. Marks for each Internal Tests	:	30
2	No. of Assignments	:	2	Max. Marks for each Assignment	:	5
3	No. of Quizzes	:	2	Max. Marks for each Quiz Test	:	5
	Duration of Internal Tests	:	90	Minutes		

(Dr. N Kishan)
(OU Nominee)

(Prof.M A Srinivas)
(Subject Expert -1)
(JNTU-H)

(Prof.A.lakshmi Narayana)
(Subject Expert-2)
(IIT-H)

(Dr.T Sudhakar Rao)
(Chairman, BOS)

12.10.22

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