Sardar Vallabhbhai Patel Institute Of Technology- SVIT- VASAD

LESSON EXECUTED

Name: Mahesh C. Prajapati | Subject: VCLA | Hrs/Week: 3

Designation: Asst. Professor | **Subject code: 2110015** | Total week required:11

Department: A.S.&H. | **Class of:** IT-I | Total Hrs required: 33

LESSON NO.	Details of Topics to be Covered in one lecture	Actual Date dd/mm/yr	Slot No *.	No. of Present Student	Sign of HOD/Principal
	Syllabus Lesson No .1: System Of Linear Equations				
1	Introduction to Systemof linear equation and Matrix				
2	Elementary matrices, Special matrices(Symmetric, Skew-symmetric, Conjugate, etc...)				
3	Row echelon form, reduced row echelon form, Gauss elimination method, Gauss Jordan elimination method for non-homogeneous				
4	Trivial and Non-trivial solution for homogeneous system of linear equations, inverse of the matrix by Gauss Jordan method.				
5	Solving the system by inverting the coefficient matrix, Cramer's rule				
6	Hermition, Skew-hermition, Unitary, Orthogonal				
7	Determination of rank of a matrix by definition, Necessary and sufficient condition for system to be consistent				
	Syllabus Lesson No .2: Vectors in R^n and Vector Spaces				
8	Vectors in R^n (Norm, Distance, Pythagorean thm, Parallelogram law, Cauchy Schwartz Inequality)				
9	Linear Combinations, Span, Linear Indpendence				
10	Definition of vector space and examples				
11	Subspaces and their examples				
	Syllabus Lesson No .3: Basis, Dimension				
12	Basis, Dimension				
13	Basis for row space, column space and null space				
14	Rank-Nullity theorem, Examples				
15	Orthogonal complement				
	Syllabus Lesson No .4: Inner Product Spaces				
16	Dot Product on R^n				
17	Definition of Inner Product Spaces and their examples				
18	Orthonormal basis (Gram-Schmidt Orthogonalization Process)				
19	Least Square Solution				
	Syllabus Lesson No .5: Eigen Values and Eigen Vector				
20	Eigen values and Eigen vectors				
21	Algebraic and Geometric Multiplicity, Caley Hamilton Theorem				
22	Diagonalization				
23	Quadratic forms and its Applications				
	Syllabus Lesson No .6: Linear Transformations				

24	Definition and Theorems for L.T & their examples				
25	Range & Kernel				
26	Matrix Representation of a L.T				
27	Similarity and change of basis				
	Syllabus Lesson No .7: Vector Calculus				
28	Gradient of a scalar function, Directional Derivative				
29	Divergence & Curl of a vector point function				
30	Line integral & Path independence of Line integral				
31	Green's Theorem in a Plane				
32	Surface & Volume integral				
33	Stokes Theorem & Gauss Divergence Theorem				

* in which it is actually conducted & mark ** if conducted due to load adjustment.

If subject is shared between two faculties then Name of the other faculty:

Text Book: (1)Elementary Linear Algebra, Applications version,
By : Anton and Rorres
Publication : Wiley India Edition
(2)Calculus, Volumes 2
By : T. M. Apostol
Publication : Wiley Eastern

Reference Books: Vector Calculus and Linear Algebra by

1. Dr. Shailesh S. Patel (Atul Prakashan)
2.Dr. K. R. Kachot (Mahajan Publishing House),
3. DR. R. C. Shah (Books India Publications)

Date of preparation:
Name of the Faculty:
Signature of the faculty: **Principal's Signature**