

SARDAR PATEL UNIVERSITY, VALLABH VIDYANAGAR
~~PROPOSED~~ SYLLABUS FOR B.Sc.(APPLIED MATHEMATICS) SEMESTER - 4
PAPER-1(T) (LINEAR ALGEBRA)
THREE HOURS PER WEEK (3 CREDIT) *US04CANT01*
Effective from June 2018
Marks:-100(30 internal+70 external)

UNIT-1 . Vector spaces : Definition and examples , Properties of vector spaces , Subspaces Definition and Examples , Span of a set : Examples and Properties , Union and intersection of subspaces of a vector space .

UNIT-2 . Linear dependence and independence vectors : Definition and Examples , Properties of LD and LI vectors , Collinear and coplanar vectors : Definition and Examples .

UNIT-3 . Dimension and basis of a vector space : Definition , Examples and Applications , Linear Transformations : Definition and examples .

UNIT-4 . Property of linear Transformation , Matrix associated with a linear map , Linear map associated with a Matrix and Examples, Trace and Transpose , Rank.

Recommended text:

V.Krishnamurthy , An introduction to Linear Algebra :
Chapter 3 (3.1,3.2,3.3,3.5,3.6), Chapter 4 (4.1), Chapter 5 (5.1,5.2).

Reference texts:

- (1) P.B.Bhattachary,S.K.Jain,N.R.Nagpaul,First Course in Linear Algebra , Wiley - Eastan Ltd.
- (2) Dr.Gundadhar Paria , Linear Algebra,New Central Book Agency .
- (3) A Ramchandra Rao ,P.Bhima shankaram , Linear Algebra , Tata MacGraw-Hill Pub.

SARDAR PATEL UNIVERSITY, VALLABH VIDYANAGAR
PROPOSED SYLLABUS FOR B.Sc.(APPLIED MATHEMATICS) SEMESTER - 4
PAPER-2(T)(PARTIAL DIFFERENTIAL EQUATIONS)
THREE HOURS PER WEEK (3 CREDIT) VS04CAMT02
Effective from June 2018
Marks:-100 (30 Internal + 70 External)

UNIT- 1

Surfaces and Curves in Three Dimensions , Methods of Solving $\frac{dx}{P} = \frac{dy}{Q} = \frac{dz}{R}$, Orthogonal Trajectories of a System of Curves on Surface , Pfaffian Forms and Equations , Solution of Pfaffian Differential Equations in Three Variables

UNIT- 2

Partial Differential Equations , Origin of First Order Partial Differential Equations , Linear Equations of the First Order , Integral Surfaces Through a Given Curve , Surfaces Orthogonal to a Given System of Surfaces .

UNIT - 3

Non-linear Partial Differential Equations of First Order , Compatible Systems of First Order Equations , Charpit's Method , Special Types of First Order Equations , Solutions Satisfying Given Conditions

UNIT - 4

Jacobi's Method , Applications of First Order Equations , The Origin of Second Order Equations , Linear Partial Differential Equations With Constant Coefficients , Equations With Variable Coefficients , Solution of Equation by Separation of Variable .

Recommended texts:

I.Sneddon, Elements of Partial Differential Equations, McGraw Hill Book Company, International Student Edition.

Chapter 1 (1.1, 1.3, 1.4, 1.5 (excluding Thm.6), 1.6), Chapter 2 (2.1, 2.2, 2.4 (Thm.3 without proof), 2.5, 2.6, 2.7, 2.9, 2.10, 2.11, 2.12, 2.13, 2.14), Chapter 3 (3.1, 3.4, 3.5, 3.9)

Reference Books :

- (1) T. Amaranath, An Elementary Course in Partial Differential Equations, Narosa Publishing House, New Delhi .
- (2) Nita Shah, Ordinary and Partial Differential Equations-Theory and Applications, PHI Learning Pvt. Ltd. , New Delhi.
- (3) Zafar Ahsan , Differential Equations and Their Applications , Prentice - Hall of India Pvt. Ltd., New Delhi .
- (4) M.D.Raisinghania, Ordinary and Partial differential equations, S.Chand & Company Ltd., New Delhi.

SARDAR PATEL UNIVERSITY , VALLABH VIDYANAGAR
PROPOSED SYLLABUS FOR B.Sc.(APPLIED MATHEMATICS) SEMESTER - 4
PAPER-3(P) (PROBLEMS AND EXERCISES IN MATHEMATICS)

SIX HOURS PER WEEK (3 CREDIT)

Effective from June 2018

Marks:-100 (30 Internal + 70 External)

US04 CAMT03

- (1) Vector Spaces , Subspaces
- (2) Linear Dependence and Independence
- (3) Basis and Dimension for Vector Space
- (4) Linear Transformations
- (5) Modules , Structure Theorem
- (6) Matrices , Matrix associated with a Linear Map , Linear Map associated With a Matrix
- (7) Trace and Transpose , Rank
- (8) Characteristic Roots , Canonical Form
- (9) Inner Product Spaces
- (10) Unitary , Hermitian and Orthogonal Matrices

Reference texts:

- (1) University Algebra , N S Gopalakrishnan , Revised Second Edition , New Age International Publishers,New Delhi.
- (2) I.N.Herstein, Topics in algebra ,Wiley Eastern Limited, India
- (3) Joseph A. Gallian , Contemporary Abstract Algebra , Narosa Pub.House , New Delhi .
- (4) John B. Fraleigh , A First Course in Abstract Algebra , Pearson,
- (5) M. Artin ,Abstract Algebra, Pearson,
- (6) S. Kumaresan , Linear Algebra- A Geometric Approach ,Prentice-Hall of India
- (7) S.Lang ,Introduction to Linear Algebra ,Springer
- (8) V.Krishnamurthy , An introduction to Linear Algebra ,
- (9) P.B.Bhattachary,S.K.Jain,N.R.Nagpaul,First Course in Linear Algebra , Wiley - Eastan Ltd.
- (10) Dr.Gundadhar Paria , Linear Algebra,New Central Book Agency .
- (11) A Ramchandra Rao ,P.Bhima shankaram , Linear Algebra , Tata MacGraw-Hill Pub.