

MATHEMATICS

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018

B.SC. III- YEAR , V -SEMSTER

PAPER-V- RINGS, VECTOR CALCULUS

Units: 04

No. of Hours Allotted: 60 Hours

Topics to be covered	No. of Hours
Unit-1 Definitions and basics properties, Fields, Integral domains, divisors of zero and Cancellation laws, Integral domains, the characteristic of a ring, some non-commutative rings, Examples, Matrices over a field, The real quaternion Ring.	20 Hours
Unit-2 Homomorphism of Rings- Definition and elementary properties, Maximal and Prime ideals, Prime fields. Rings of Polynomials in an indeterminate form, The evaluation of homomorphism.	15 Hours
Unit-3 Vector Differentiation, Ordinary Derivatives of Vectors, Space Curves, Continuity, Differentiability, Gradient, Divergence, Curl operators, Formulae involving this operators,	15 Hours
Unit-4 Vector Integration, theorems of Gauss , Stokes and Green's theorem in plane and applications of this theorems.	10 Hours
	60 Hours

Name of the Teacher: Mr. **B. Mallesh**
Signature:

Head, Department of
Signature:

LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018

B.SC.IIIrd YEAR – VI -SEMSTER

PAPER-VII -LINEAR ALGEBRA

Units: 04

No. of Hours Allotted: 60 Hours

Topics to be covered	No. of Hours
<p style="text-align: center;">Unit-1</p> <p>Vector spaces, subspaces, Linear Combinations, Linear Span, Linear Dependence, Linear Independence, Basis and Dimension, Dimension of Subspace.</p>	20 Hours
<p style="text-align: center;">Unit-2</p> <p>Linear Transformation/ Operators, Null spaces and Ranges Rank-Nullity theorem, Composition of Linear Transformations, Invertibility , Isomorphism and , The matrix representation of linear transformation.</p>	15 Hours
<p style="text-align: center;">Unit-3</p> <p>System of Linear Equations, Matrix Operations a Elementary Matrices, The rank of a Matrix , Eigen values and Eigen vectors, Sylvestor’s law of Nullity, Diagonalizability, Cayley Hamilton theorem.</p>	15 Hours
<p style="text-align: center;">Unit-4</p> <p>Inner products, Euclidian and Unitary Spaces, Norm or Length of a Vector, Schwartz Inequality, Orthogonality, Orthonormal Set, Complete orthonormal set, The Gram- Schmidt Orthogonalization Process.</p>	10 Hours
	60 Hours

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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018

I - B.Sc., – I - Semester
Paper - I - DIFFERENTIAL EQUATIONS

Units: 04

No. of Hours Allotted: 60 Hours

Topics to be covered	No. of Hours
<p style="text-align: center;">Unit-1</p> Differential Equations of first order and first degree: Exact differential equations – Integrating Factors – Linear differential equations – Bernoullis equations – Change in variables – Total Differential Equations – Simultaneous Total Differential Equations – Equations of the form $dx/ P = dy/ Q = dz/ R$	20 Hours
<p style="text-align: center;">Unit-2</p> Higher order linear differential equations: Solution of homogeneous linear differential equations with constant coefficients – Solution of non-homogeneous differential equations $P(D)y= Q(x)$ with constant coefficients by means of polynomial operators when $Q(x)= e^{ax}, \sin bx, \cos bx, x^k, e^{ax} V, xv$ where v is a function of x .	15 Hours
<p style="text-align: center;">Unit-3</p> Method of undetermined coefficients – Method of variation of parameters – Linear differential equations with non constant coefficients – The Cauchy – Euler Equation	10 Hours
Partial Differential equations- Formation and solution- Equations easily integrable – Linear equations of first order – Non linear equations of first order – Charpit’s method – Non homogeneous linear partial differential equations – Separation of variables	15 Hours
	60 Hours

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LESSON PLAN FOR THE ACADEMIC YEAR 2017-2018

I - B.Sc., – I - Semester
Paper - I - DIFFERENTIAL EQUATIONS

Units: 04

No. of Hours Allotted: 60 Hours

Topics to be covered	No. of Hours
Unit-1 Successive differentiation- Expansions of Functions- Mean value theorems (Lagrange's, Roll's Cauchy –mean value theorem and Taylor's theorem)	20 Hours
Unit-2 Indeterminate forms – Curvature and Evolutes, Involutives, Curve Tracing in Cartesian co-ordinates	15 Hours
Unit-3 Partial differentiation – Homogeneous functions- Eulers Theorem- Total derivative	10 Hours
Unit-4 Maxima and Minima of functions of two variables – Lagrange's Method of multipliers –Asymptotes- Envelopes	15 Hours
	60 Hours

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