

CLASS: B. Sc (Information technology)		Semester – I
SUBJECT: Applied Mathematics I (USIT102)		
Periods per week	Lectures - 5	3 Credits

Unit – I	Matrices: Minors and Cofactors, Adjoint of a square matrix, Inverse of a matrix. Rank of a matrix, Solution of Homogeneous and non homogeneous linear Equations using Matrix method.	8 Lectures
Unit- II	Eigen Values and Eigen Vectors: Vectors, linear combination of vectors, Inner Product of two vectors, characteristic equation, Eigen Vector, Cayley- Hamilton Theorem, Similarity of Matrices, Derogatory and Non-derogatory matrices, Complex Matrices: Hermitian, skew-Hermitian and Unitary matrices and their properties.	8 Lectures
Unit -III	Vector Calculus: Vector Differentiation: Vector Operator Del, Gradient, and Geometrical Meaning of gradient, Divergence and Curl.	8 Lectures
Unit - IV	Differential Equations: Differential Equations of 1 st order and 1 st degree and applications	8 Lectures
Unit - V	Linear Differential Equations: Linear Differential equations with constant coefficient, Differential equations of higher order and applications.	8 Lectures
Unit -VI	Successive differentiation, Mean Value theorems, Partial differentiation, Euler's Theorem, Approximation and errors, Maxima and Minima	8 Lectures

Text Books:

Engineering Mathematics A tutorial approach by R. R. Singh and Mukul Bhatt, TMH 2010
Text Book of Applied Mathematics Vol I and Vol II. P.N. Wartikar & J.N. Wartikar, Pune Vidyarthi Griha Prakashan

References:

Higher Engineering Mathematics by B. V. Ramana, McGrawHill
Differential Calculus by Shanti Narayan. S. Chand.
Higher Engineering Mathematics by B.S. Grewal, Khanna Publications
Vector Analysis by Murray Spiegel, McGrawHill
Matrices by Vashistha, S. Chand

Term Work for USIT102

- i) Assignments: Should contain at least 2 assignments covering the Syllabus.
- ii) Class Tests: One. Also Known as Unit Test or In-Semester Examinations
- iii) Tutorial : Minimum Three tutorials covering the syllabus

Practical USIT1P2

Problem Solving	3 Lectures per week(1 Credit)
<p>List of Problems</p> <ul style="list-style-type: none">i) Problem solving based on matricesii) Problem solving based on Eigen Values and Eigen Vectorsiii) Problem solving based on Vector Analysisiv) Problem solving based on Differential Equationsv) Problem solving based on Linear Differential Equationsvi) Problem solving based on Successive Differentiationvii) Problem solving based on Mean Value theoremsviii) Problem solving based on Partial differentiationix) Problem solving based on Euler's Theoremx) Problem solving based on Approximation and errorsxi) Problem solving based on Maxima and Minima	