DEPARTMENT OF MATHEMATICS
M.S.R.I.T,BANGALORE-54.

MATDIP-301 (Advanced Mathematics – I)

LESSON PLAN

TRIGNOMETRY (6-hours)	
L-1	Definitions, complex numbers as an ordered pair, real and imaginary parts, modulus and amplitude of a complex number
L-2	Equality of a complex number, addition, subtraction, multiplication and division of complex numbers
L-3	Polar form, Argand diagram, Exponential form, Expressing in the form a±ib problems.
DIFFERENTIAL CALCULUS (16-hours)	
L-4	n^{th} derivatives of standard functions, problems.
L-5	Leibnitz theorem, problems.
L-6	Polar curves, Angle between tangent & radius vector, angle between two intersecting polar curves, problems.
L-7	Taylor's series, Maclaurin's series of simple functions for single variable, problems
L-8	Partial Differentiation, Definition, problems
L-9	Euler theorem, Problems
L-10	Total differentiation, Differentiation of composite and implicit Functions, problems
L-11	Jacobians, problems
LINEAR ALGEBRA (10-hours)	
L-12	Elementary row operations, Echelon form, Rank of matrix, Examples
L-13	Consistency of system of Linear equations, Examples, Gauss Elimination Method, problems
L-14	Gauss-Seidel Method, problems
L-15	Eigen values and Eigen vectors, problems
L-16	Power method, problems
DIFFERENTIAL EQUATIONS (10-hours)	
L-17	variable separable methods homogenous equations, examples
L-18	Linear, Bernoulli's and exact differential equations
L-19	Introduction to LDE of second and higher order. Solution of homogeneous LDE, examples
L-20	Finding PI for e^{ax}, $\sin ax$ *or* $\cos ax$
L-21	$x^m, e^{ax}v$, miscellaneous problems

Note: Each lecture hour is for 2 hours.