Name of Programme   **: EE / ET / CM / IT**

Programme Code   **: 02 / 03 / 06 / 07**

Name of Course   **: Engineering Mathematics**

Course Code   **: SC 362**

Time Allotted:

	Hours/Week	Total Hours
Theory	2	32
Term work /Tutorials	1	16

Evaluation:

	Progressive Assessment	Semester End Examination			
		Theory	Practical	Oral	Term work
Duration	Three class tests of 60 Min. duration	3 Hours	--	--	--
Marks	20	80	--	--	25

Course Aim:

- The student shall learn various techniques in integration and differential equations and use these techniques to their related Engineering problems.

Course Objectives:

At the end of the course student will be able to

1.   Apply the definition of integration as inverse of differentiation to solve problems.

2.   Students will be able to apply various methods of integration..

3.   To apply mathematical principle to solve engineering problems.

4.   To draw and come to a valid conclusion.

5.   To locate the exceptional and critical points in an engineering system.

Course Content:

Sr. No	Name	Periods	Marks
1.	**APPLICATION OF INTEGRATION**	**04**	**08**
	Mean value and RMS value of the functions.		
2.	**DIFFERENTIAL EQUATIONS**	**10**	**24**
	Definition, order and degree of differential equations. Formation of differential equations. Solution of differential equations : (using following methods) i) Variable separable, (ii) Reducible to variable separable, (iii) Homogeneous differential equations, (iv) Exact diff. equations, (v) Linear differential equations.		
3	**COMPLEX NUMBERS**	**06**	**16**
	Definition and algebra of a complex numbers. Geometrical representation, Argand's diagram, modulus and amplitude of a complex number. De Moivre's theorem (without proof), roots of complex number.		
4.	**LAPLACE TRANSFORMS**	**06**	**16**
	Definition, Laplace Transforms of elementary functions, important properties of Laplace Transforms, Inverse of Laplace Transforms, Convolution Theorem and application of Laplace Transform for solving differential equations.		
5.	**NUMERICAL METHODS**	**06**	**16**
	Solution of algebraic equations. Bisection method, Regulafalsi method and Newton – Raphson method. Solution of simultaneous equations containing 2 and 3 unknowns Gauss elimination method. Iterative methods- Gauss Seidal and Jacobi's method		
		32	**80**

Reference Books:

Author	Title	Publisher
Grewal B.S.	Higher Engineering Mathematics	Khanna Publishers, New Delhi
Vishwanath	Engineering Mathematics Vol.II	Satya Prakashan, New Delhi
S.P. Deshpande	Mathematics for Polytechnic students	Pune Vidyarthi Griha Prakashan
H.K. Dass	Engineering Mathematics Part II	S. Chand & Co. Ltd. Delhi

Learning Resources: Chock Board etc.

Specification Table:

Sr. No.	Topic / subtopic	Cognitive Levels			Total
		Knowledge	Comprehension	Application	
1	Application of integration	00	00	08	08
2	Differential Equations	04	12	08	24
3	Complex Numbers	04	04	08	16
4	Laplase Transform	04	04	08	16
5	Numerical methods	04	04	08	16
	Total	16	24	40	80