17BSM302 Ordinary Differential Equations										
Teaching Scheme					Examination Scheme					
L	T	P	C	Hrs/Week	Theory			Practical		Total Marks
					MS	ES	IA	LW	LE/Viva	
3	1	--	4	4	25	50	25	--	--	100

OBJECTIVES

1. Learn how differential equations appear in real life and physical phenomena.
2. Demonstrate comprehension and understanding in the topics of the course through symbol and graphs.
3. Model real-life applications using differential equations
4. Learn power series solution method to solve differential equations

SYLLABUS

Unit-I	**10**

Elementary Differential Equations: Definitions of order, degree, linear, nonlinear, homogeneous and non-homogeneous. Solution of first order equations – Variable Separable Form, Linear Differential Equations, Reduction to Linear Differential Equations, Exact Differential Equations, integrating factors

UNIT II	**10**

Second order linear differential equations (homogeneous and non-homogeneous).Linear differential equation with constant coefficients, *n*th Order Ordinary Differential Equations, Complementary function and particular integral, Cauchy-Euler equation, undetermined coefficients

UNIT III	**10**

Second order linear differential equations, Change of dependent and independent variables, variation of parameters. Series solution method.

UNIT IV	**9**

System of ordinary differential equations, Solution of initial value problems. Application to solving ordinary differential equations.

APPROXIMATE TOTAL	**39 Hours**

OUTCOMES

Distinguish between linear, nonlinear, partial and ordinary differential equations.

2. Formation of ordinary differential equations (ODEs).

3. Recognize and solve a variable separable differential equation, homogeneous differential equation, and to solve an exact differential equation.

4. Solve basic application problems described by first order differential equations.

5. Find power series solutions about ordinary and singular points.

TEXTS AND REFERENCES

1. **Simmons, G. F.,** Differential equations with applications and historical notes, 2nd Ed. Mc Graw Hill, 1991.
2. **Raisinghania, M.D.,**Ordinary and Partial Differential Equations by, 8th edition, S. Chand Publication (2010).
3. **Ross, S.L.,** Introduction to OrdinaryDifferential Equations, 4rd Ed., Wiley (1989).
4. **Euler, N.**, A First Course in Ordinary Differential Equations, Bookboon (2015).