

Detailed Syllabus for Calculus – II

Week	Ch. Sect	Topics
1	Text-1(10.5, 10.6) Or Text-2(12.5, 12.6)	<u>Pre-Calculus Review</u> Equations of lines in space Cylinders and Quadric Surfaces
2	Text-1(10.7, 12.2) Or Text-2(14.2)	Cylindrical & Spherical coordinates <u>Multivariable functions and partial derivatives</u> Limits and continuity of functions of two variables.
3	Text-1(12.3, 12.4) Or Text-2(14.3)	Partial derivatives. Geometric interpretation of partial derivatives. Absolute, relative and percentage changes using Differentials
4	Text-1(12.4, 12.5) Or Text-2(14.3, 14.4)	Predicating change with differentials and sensitivity to change. The chain rule, tangent planes and normal lines to a surfaces.
5	Text-1(12.8,12.10) Or Text-2(14.7, 14.10)	Extreme values and saddle point Taylor's Theorem for function of two variables.
6	1st One Hour Test	
7	Text-1(13.1, 13.2, 13.3) Or Text-2(15.1, 15.3)	<u>Multiple Integrals</u> Double integrals, areas by double integration using Cartesian as well as Polar coordinates.
8	Text-1(13.4, 13.6) Or Text2(115.4, 15.6)	Volumes in rectangular coordinates using Triple integrals Volumes in cylindrical coordinates using Triple integrals.
9	Text-1(13.6,14.5) Or text-2(15.6,16.5)	Volumes in spherical coordinates using Triple integrals. To find Surface areas using double integrals.
10	Text -3(1.1 ,1.3)	<u>First Order Ordinary Differential Equations.</u> Basic concept and Modeling. Solution by separation of variables.
11	Text-3(1.4, 1.5)	Exact ODEs. Linear ODEs. Bernoulli Equation.
12	Text-3(1.6 , 2.1, 2.2,2.3)	Orthogonal Trajectories <u>Second Order Linear ODEs</u> Homogeneous Linear ODEs of Second Order with constant coefficient using Differential Operators.
13	2nd One Hour Test	
14	Text-3(2.5, 2.7)	Cauchy Euler Equations, Method of Undetermined Coefficients
15	Text-3(2.10, 3.2)	Method of Variation of Parameters. Homogeneous Higher Order ODEs with constant coefficients.
16	Text-3(11.1,11.2)	<u>Fourier Series</u> Fourier Series for periodic functions having period 2π . Derivation of Euler Formulas. Fourier Series for periodic functions having any period.
17	Text-3(11.3,11.4)	Even and Odd Functions and Half-Range Expansions. Complex Fourier Series