



Course Summary

Course Instructor	Lecturer Thekra abdul latiff Ibrahim				
E-mail	Thekra_Al@yahoo.in				
Title	Calculus				
Course Coordinator					
Course Objective	Educate the student of the course 1 and course 2 the fundamental concepts in mathematical (in calculus).				
Course Description	The aim of the course 1 is to give student concept definitions of the functions and their graph, limits and continuity, differentiation, application of derivatives and in the course 2 is to give the integral, transcendental functions, techniques of integration and application of definite integrals.				
Textbook	George B.Thomas,Jr.,Maurice D.Weir,Joel Hass"Calculus", Twelfth Edition,2010.				
References	<ol style="list-style-type: none"> 1. George B.Thomas,Jr.,Ross L.Finney"Calculus",Vol.1,Addison-Wesley Publishing Company,1990. 2. Anton Bivens Davis"Calculus",2002. 				
Course Assessments	Term Tests	Laboratory	Quizzes	Project	Final Exam
	30	-	10	---	60

Course Weekly Outlines

Week	Topics Covered	Lab. Experiment Assignments
1	Functions and their graphs. Combining functions; shifting and scaling graphs.	
2	Trigonometric functions. Rates of change and limits. Calculating limits using the limit laws.	
3	Precise definition of a limit. One sided limits and limit at infinite. Infinite limits and vertical asymptotes. Continuity.	
4	The derivative as a function. Differentiation rules. The derivative as a rate of change. Derivatives of trigonometric functions.	
5	The chain rule and parametric equations. Implicit differentiation. Related rates. Linearization and differentials.	
6	Extreme values of functions. The mean value theorem. Monotonic functions and first derivative test. Concavity and curve sketching.	
7	Indeterminate forms and L'Hopital rule.	
8	Applied optimization problems. The definite integral. The fundamental theorem of calculus.	
9	Indefinite integrals and the substitution rule. Substitution and area between curves.	
10	Inverse functions and their derivatives.	
11	Natural logarithms. The exponential functions and logarithm	

	functions	
12	Exponential growth and decay. Relative rates of growth.	
13	Inverse trigonometric functions. Hyperbolic functions.	
14	Basic integration formulas.	
15	Integration by parts. Integration of rational functions by partial functions.	
16	Trigonometric integrals. Trigonometric substitutions.	
17	Integral tables and computer algebra system. Improper integrals.	
18	Volumes by slicing and rotation about an axis. Volumes by cylindrical shells.	
19	Lengths of plane curves. Moments and centres of mass.	
20	Areas of surfaces of revolution and the theorems of pappus. Work,fluid pressures and forces.	