

National University



Of Computer & Emerging Sciences

NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES LAHORE CAMPUS

Calculus and Analytical according to OBE



Geometry Course Outline

FALL-2020

<u>Course Moderator</u> :	Dr. Akhlaq Ahmad Bhatti
CS Department Coordinator:	Dr. Mubasher Baig

Department	Department of Computer Science	Dept. Code	CS
Course Title	Calculus and Analytical Geometry	Course Code	MT 101



National University



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Pre-requisite(s)	-	Credit Hrs.	3
Moderator	Dr. Akhlaq Ahmed Bhatti.		
	Dr. Akhlaq Ahmed Bhatti, Dr. Qaisar Mah	mood, Dr. Muha	mmad Nasir Ali,
Course Instructors	Mr. Muzamil Hanif, Dr. Noreen Akram, Ms.	Kinza Mumtaz,	Ms. Quresha
	Hanif. Ms. Iffat Fayyaz.		
Note:	It is a tentative schedule of the course. It may	y vary (if require	d).
Carrier Objective	The course is simed at convining the besi	a taabmianaa af	differentiation and

Course Objective	The course is aimed at acquiring the basic techniques of differentiation and integration of functions of single variable. Stress will be given on the concepts
	of limit continuity and graphing of functions using derivatives. Students will be encouraged to go through the proofs of important theorems and solve some life
	problems as well.

No.	Assigned Program Learning Outcome (PLO)	Leve l	Tool
01			

I = Introduction, R = Reinforcement, E = Evaluation.

A = Assignment, Q = Quiz, M = Midterm, F = Final, L = Lab, P = Project, W = Written Report.

No.	Course Learning Outcome (CLO) Statements	Tools
01	Solve algebraic equations and inequalities by using properties of absolute values.	Q1, M1
02	Analyze the function and sketching the curve by using properties horizontal/ vertical and compressing / stretching	Q1, A1, M1
03	Investigation of continuity through limits analytically / graphically.	A1, M1, F
04	Apply the concept of differentiation in real life problem	A2, M1, M2, F
05	Curve sketching using extrema theory	Q2, M2, F
06	• Riemann sum, evaluation of definite & indefinite integral and their applications to compute lengths of curves / area of regions / volume of solids.	M2, Q3,A3,F
07	• Correctly graphs/formulate the equation of line and plane in R3.	F

Department	Department of Computer Science	Dept. Code	CS
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Course Title	Calculus & Analytical Geometry	Course Code	MT 101
Pre-requisite(s)	- Credit Hrs. 3		3
Moderator	Dr. Akhlaq Ahmed Bhatti		
Course Instructors	Ms. Atroobs Saeed(A), Dr. Uzma Bashir(B, G), Mr. Adnan Malik(C), Ms. Noreen Akram(D), Dr. Akhlaq Ahmad Bhatti(E, F), Mr. Qasim Noor (H)		
Note:	It is a tentative schedule of the course. It may vary (if required).		

Text Book(s)	Title	Thomas Calculus
	Author	G. B. Thomas
	Edition	Latest Edition
Ref. Book(s)	Title	Calculus and Analytic Geometry Kenneth W. Thomas.
	Author	Kenneth W. Thomas.
	Edition	Latest Edition
	Title	Calculus
	Author	William E. Boyce & Richard C. DiPrima
	Edition	Latest Edition
integration of limit co		se is aimed at acquiring the basic techniques of differentiation and n of functions of single variable. Stress will be given on the concepts ontinuity and graphing of functions using derivatives. Students will be ed to go through the proofs of important theorems and solve some life as well.

Wee k	Sectio n	Course Contents	Chapter	CL O
01		Inequalities Rules for inequalities, solving inequalities	From previous edition	1
02	1.1 1.2	Functions Functions and their graphs: Combining functions; Shifting and Scaling graphs	1	2
03	2.1 2.2 2.3 2.4	Limits and Continuity Rates of Change and tangents to curves Limit of a function and limit laws The precise definition of a Limit One sided Limit	2	3
04	2.5 2.6	Continuity Limits involving Infinity; Asymptotes of Graphs	2	3
05	3.1	<u>Derivatives</u> Tangents and derivatives at a point	3	4



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3.3 The derivative as a rate of change Derivatives of trigonometric functions 3.4 Derivatives of trigonometric functions 3.6 Implicit differentiation Derivatives of inverse functions and logarithms Inverse trigonometric functions Related rates			The derivatives as a function		
3.4 Derivatives of trigonometric functions The chain rule Implicit differentiation Derivatives of inverse functions and logarithms Inverse trigonometric functions Related rates					
3.5 The chain rule Implicit differentiation 3.7 Derivatives of inverse functions and logarithms Inverse trigonometric functions Related rates		3.3	· · · · · · · · · · · · · · · · · · ·		
3.6 Implicit differentiation Derivatives of inverse functions and logarithms Inverse trigonometric functions 3.9 Related rates					
3.7		3.5	The chain rule		
3.8 3.9 Related rates		3.6	Implicit differentiation		
10		3.7	Derivatives of inverse functions and logarithms		
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Application of Derivatives		3.9	Related rates		
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S.5 Indefinite integrals and the substitution method Definite integral Substitutions and area between the curves				5	6
S.6 Definite integral Substitutions and area between the curves S.6 Definite integral Substitutions and area between the curves S.6 Application of Definite Integrals S.7 Volumes using cross sections Volumes using Cylindrical Shell Arc length S.7 Arc length S.7 The Logarithm defined as an integral Exponential change and separable differential equations S.7 Hyperbolic Functions S.7 S.7 Using basic Integration formulas Integration by parts Trigonometric integrals Trigonometric substitution S.5 Integration of rational functions by Partial fractions S.6 Reduction formulas Improper integrals Improper integrals S.7 Referenc Total Communication Total Communication S.8 S.8 Reduction formulas S.8 Reduction formulas S.8 Referenc Total Communication Total Communication S.8 S.8 Reduction formulas Total Communication S.8 Referenc Total Communication Total Com					
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Evaluation Procedure & Marks Distribution:

Assessment Tools	Total No.	Weightag e
Quizzes	3	10%
Assignments	3	8 %
Home work	Every week	7%
Mid Term Exam	2 (I+II)	25%
Final Exam	1	50%

Note: No homework/ assignment submission after due date.