MTS-112: Multivariate calculus

General Information

Course Number	MTS-112
Credit Hours	3 hours
Prerequisite	Calculus with analytic geometry/ calculus-1
Course Coordinator	Amjad ali

Course Objectives

Functions of several variables are the main source for finding the optimal result of various problems. The Overall flow of the course will divert the mind of the students to the use of mathematics in real life. In this course our goal will be to master the techniques of calculus in two and three variables, such as finding and analyzing critical points, and evaluating multiple integrals. More broadly, we will attempt to develop an underlying geometric intuition that will allow us to understand the problems on a qualitative (as well as quantitative) level. Throughout the course we will emphasize mathematical writing and proof: we want to ensure that our solutions are presented in a manner that is clear, concise, and complete.

Catalog Description

MTS-112

Course Content

Lecture No.	***Topics***	***Suggested Chapters***
01	Integration by substitution	Chap # 08
02+03	Integration by parts	Chap # 08
04+05	Integration by trigonometric substitution	Chap # 08
06	Integration of rational function by Partial fractions.	Chap # 08
07	Improper Integrals	Chap # 08
	Mid-Term I	
11	Vectors	Chap # 12
12+13	The Dot Product and Cross Product	Chap # 12
14+15	Lines in Plane and Space Cylinder and Quadric Surfaces	Chap # 12
16	Curves in Space and their Tangents	Chap # 13
17+18	Function of several Variables Limits and continuity in higher Dimension	Chap # 14

	Mid-Term II	
19+20	Partial Derivatives, Chain rules and Differentiation	Chap # 14
21+22	Extreme Values and Saddle Points	Chap # 14
23	Double integration	Chap # 15
24	Triple Integration	Chap # 15
	-Revision-	

Text Book

1. Thomas calculus and early transcendental 13th edition

Reference Material

1. Calculus by James Stewart Latest edition

Course Learning Outcomes

	Course Learning Outcomes (CLO)
1	To learn the basic knowledge of advanced differentiation and integrals.
2	To learn and apply the applications of parametric curves and arc length.

CLO-SO Map

	SO IDs										
CLO ID	**a**	**b**	**c**	**d**	**e**	**f**	**g**	**h**	**i**	**j**	**k**
CLO 1	1	0	0	0	0	0	0	0	0	0	0
CLO 2	0	1	1	0	0	0	0	0	0	0	0

Approvals

Prepared By	Amanullah	
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Last Update		