National University
Of Computer & Emerging Sciences

Course Instructor	FAREEHA SULTAN,ASMA MASOOD,UROOJ, USAMA ANTULEY,NADEEM KHAN	**Semester**	FALL
Batch/Section(s)	Batch 2022(BSCS,BSSE,BSAI,BSCY)	**Year**	2022

Department	Department of Computer Science	**Dept. Code**	CS
Course Title	Calculus and Analytical Geometry	**Course Code**	MT 1003
Pre-requisite(s)	None	**Credit Hrs.**	3

PLO	Program Learning Outcome (PLO) Statement	Level	Tools
01	An ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems	E	Q, A, M, F

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 and identify the function and sketching the curve by using tools of calculus.	Q1, A1, M1
03	• Express the ideas of rate of change, derivatives and anti-derivatives using the concept of limits and continuity.	A1, M1, F
04	• Apply derivatives and integrals for solving different problems arising in daily life.	Q2, A2, M2, F
05	• Identify and determine the behavior of sequence and series.	Q3, A3, F

Text Book(s)	**Title**	Calculus Early Transcendental 10th Edition
	Author	Howard Anton, IRL Bivens, Stephen Davis
	Publisher	JOHN WILEY
Ref. Book(s)	**Title**	Thomas Calculus 14 Edition
	Author	George. B. Thomas
	Publisher	Pearson

Tentative Weekly Lectures Schedule BOOK: Calculus Early Transcendental 10th Edition

Week	Contents/Topics	Exercises/Questions	CLO
1 (22/8 to 26/8)	Interval, Inequality, Relation and Functions, One-One and onto function.	Appendix E (23-44) Appendix F (17-36)	**01**
2 (29/8 to 2/9)	vertical line test, Piecewise, Absolute value, Introduction to functions, Domain and Range, Symmetry, Even/odd function, Asymptote	**0.1** (1-04, 7-10, 27,28) **0.2**(27-34,5363,66,67) **0.3**(17 to 19) **0.4**(9 to 16)	**02**
3 (5/9 to 9/9)	Concepts of limit. Evaluation of limits. Continuity and points of discontinuity. Types of discontinuity.	**1.1** (1-16) **1.2** (1-32) **1.5** (1-6,11-22, 29,30,35,36)	**03**
4 (12/9 to 16/9)	Rules and techniques of differentiation. Product and quotient rule. Derivative of trigonometric and logarithm function,	**2.3** (1-24, 41-47) **2.4** (1-24) **2.5** (1-24)	**03**
5 (19/9 to 23/9)	Chain rule Implicit differentiation. Indeterminate forms, L' Hospital Rule	**2.6** (7-40) **3.1** (3-18,25-28) **3.6** (7-45)	**03** **04**
6 (26/9 to 30/9)	**SESSIONAL EXAM 1**		
7 (3/10 to 7/10)	Application of derivatives, Role's and Mean Value's Theorem	**3.4** (10-20), **4.8** (1-8)	**04**
8 (10/10 to 14/10)	Concavity, Increasing and Decreasing. Relative Extreme (1^{st} and 2^{nd} derivative test) Absolute Maxima and Minima	**4.1** (15-30) **4.2** (7-12, 25-36)	**04**
9 (17/10 to 21/10)	Riemann sums	**5.4** (35-48)	
10 (24/10 to 28/10)	Techniques of integration, Basic Integration, Integration by parts Reduction formula, Trigonometric substitution	**7.1** (1-30), **7.2** (1-30, 61,62,63) **7.4** (1-25,37-48)	**03**
11 (31/10 to 4/11)	**SESSIONAL EXAM 2**		
12 (7/11 to 11/11)	Area bounded by the curves. Volume by Disk and washer method	**6.1** (1-18), **6.2** (1-26)	**04**
13 (14/11 to 18/11)	Integration of Rational function by Partial fraction, u= tan(x/2) substitution, Improper integrals.	**7.5** (9-30), **7.6** (65-70) **7.8** (3-32)	**03**
14 (21/11 to 25/11)	Infinite Sequences and Series, Introduction to Sequences Infinite series, The integral test	9.1(7 to 19) 9.4(9 to 22)	**05**
15	Comparison tests, Absolute convergence, The ratio and root	9.5(5 to 20)	**05**

(28/11 to 2/12)	test		
16 (5/12 to 9/12)	**Revision**		

Marks Distribution:

Particulars	**% Marks**
1. Assignments	**15**
2.Quizzes	**05**
3.SESSIONAL EXAM 1	**15**
4.SESSIONAL EXAM 2	**15**
5. Final Exam	**50**
Total:-	**100**

Important Instructions to be followed for this Course

- Be in classroom on time. Any student who arrives more than 5 minutes late in the class would be marked LATE. Anybody coming to class more than 15 minutes late will be marked ABSENT.
- Turn off your cell phones or any other electronic devices before entering the class.
- Maintain the decorum of the class room all the time.
- Avoid a conversation with your classmates while lecture is in progress.
- Submit your assignments on time, no assignment will be accepted after the deadline.

Instructions / Suggestions for satisfactory progress in this course:

- On average, most students find at least three hours outside of class for each class hour necessary for satisfactory learning.
- Chapters should be read and homework should be attempted before class.
- Do not get behind. You are encouraged to work with other students. Plus, I am always available during office hours to help you.
- The homework assigned is a minimum. You may always work extra hours on your own.
- Use the few minutes you usually have before the start of each class to review the prior meetings' notes and homework. This will save us valuable in-class time to work on new material.
- Develop a learning habit rather than memorizing. Work in groups, whenever appropriate.
- Apply the learned principles and gained knowledge.
- Be creative in thinking, but stick to the topic assigned for discussions, assignments and presentations.
- Always bring your **Work Book** and **Calculator** with you in the class.

Note: Students are welcome all the time in office to get help from the Teacher.

Signature: _____ Date: _____