

Course Title	Calculus and Analytical Geometry		
Course Code	GE-162		
Credit Hours	3 (3,0)		
Category	General Education		
Prerequisite	None		
Co-Requisite	None		
Follow Up	MS-253: Multivariable Calculus		
Course Learning Outcomes (CLOs)	At the end of the course, the students will be able to:	BT	PLO
	CLO1: Know the concepts and applications of calculus and analytical geometry.	C1 (Know)	1
	CLO2: Describe functions, limit, continuity chain rule and related techniques.	C2 (Describe)	1
	CLO3: Identify and solve problems related to differentiation and integration.	C3 (Apply)	1,3
	CLO4: Know the concepts analytical geometry.	C1 (Know)	1
Syllabus	Motivation and applications of the course. Introduction to limits: Limits and Continuity, Techniques of finding limits, Indeterminate forms of limits, Introduction to functions: Continuous and discontinuous functions and their applications, Differential calculus: Concept and idea of differentiation, Geometrical and Physical meaning of derivatives, Rules of differentiation, Techniques of differentiation, Rates of change, Tangents and Normal lines, Chain rule, implicit differentiation, linear approximation, Applications of differentiation: Extreme value functions, Mean value theorems, Maxima and Minima of a function for single-variable, Concavity. Integral calculus: Concept and idea of Integration, Indefinite Integrals, Techniques of integration, Riemann sums and Definite Integrals, Applications of definite integrals, Improper integral, Applications of Integration; Area under the curve. Analytical Geometry: Straight lines in R³, Equations for planes.		
Suggested Instructional/ Reading Material	- Howard Anton, Irl C. Bivens and Stephen Davis, Calculus, 11th Edition, Wiley, 2016, ISBN-10: 1119228581, ISBN-13: 978-1119228585. - Thomas and Finney, Calculus and Analytic Geometry, 9th Edition, ISBN-13: 978-0201531749, ISBN-10: 0201531747.		