GITAM INSTITUTE OF MANAGEMENT (GIM)
Gandhi Institute of Technology and Management (GITAM)
(Declared as Deemed to be University u/s 3 of UGC Act. 1956)
Visakhapatnam – 45.

Course Code: **MAN 101**	**Course Title**: **Calculus -1**	
Semester: I	**Course Type:** Core	**Credits:** 4
Home Programme(s): BBA(BA)	**Batch/Academic Year**: 2020-2023	
Course Leader:		

Course description and learning objectives

This course is designed to students of business and economics. This course introduces the basic concept of limit and its application to continuity, differentiation, integration, maximization, minimization and partial derivatives. Applications to the social sciences, especially business and economics, are stressed. The calculus of trigonometric functions is not covered.

Learning objectives:

- Analyze limits and the continuity properties of mathematical functions.
- Evaluate derivatives and analyze the properties of mathematical functions by using derivatives.
- Determine and evaluate both definite and indefinite integrals of mathematical functions.
- Use the tools of differentiation and integration to solve applications problems from various disciplines.

On successful completion of this course, students will be able to:

	Course Outcomes	Assessment
CO1	Understanding of a basic knowledge of limits and continuity of mathematical functions	A1,A3
CO2	Apply of the explore the properties of derivatives and their applications	A1,A3
CO3	Analyze enhance problem-solving skills using the tools of differentiation	A2,A3,
CO4	Evaluate of the provide the skills necessary for success in subsequent mathematics courses.	A2,A3,
CO5	Create an edge for the business	A3, A4

Course outline and indicative content

Unit – I(13 sessions) **(CO1, CO2, L2, L3)**
Basic mathematics : Introduction of basic concepts of definition indices and properties , Set, Relation, functions , fundamental of Trigonometric .

Unit – II (12 sessions) **(CO2, CO3, CO4, L2, L3, L4)**
Limits and Continuity : Introduction, Interval and neighborhoods, Limits and Continuity

Unit – III(11 sessions) **(CO2, CO3, CO4, L3, L4, L5)**
Methods of differentiation: Introduction, Derivative as a rate of change, Slopes Derivative of a function , Elementary properties, Some Differentiation Formulas- The Product and Quotient Rules, Higher Order Derivatives, The Chain Rule.

Unit – IV(11 sessions) **(CO1, CO3, L2, L4)**
Differentiation: Successive differentiation- Second order derivatives, derivative of an implicit functions, Partial derivative of first and second order derivatives.

Unit – V (13 sessions) **(CO1, CO4, L2, L4)**

Application of derivatives: Geometrical interpretation of a derivative, Equation of tangents and normal, Lengths of tangent , normal , sub tangent and sub normal , Angles between two curves and condition for orthogonally of curves, problems involving maxima and minima values.

Assessment methods

Task	Task type	Task mode	Weightage (%)
A1. Mid exam	Individual	Written	20
A2. Coursera	Individual	Presentations / Q&A/Viva	10
A3. Class room presentation/Seminars and Case analysis/workshop/training/Assignments/survey/ Project	Groups	Presentations/ Report with Q&A/Viva	10
A4. End-term exam	Individual	Written (short/long)	60

Mapping COs - Blooms levels- Assessment Tools

Knowledge dimension / cognitive dimension	L1. Remember	L2. Understand	L3. Apply	L4. Analyze	L5. Evaluate	L6. Create
Factual Knowledge		CO1 (A1, A3)				
Conceptual Knowledge			CO2 (A1, A3)			
Procedural Knowledge		CO1 (A1, A3)	CO2 (A1, A3)	CO3 (A2,A3)	CO4 (A2,A3)	
Meta Cognitive Knowledge				CO4 (A2,A3)	CO5 (A2, A3,A4)	

Learning and teaching activities

Mixed pedagogy approach is adopted throughout the course. Classroom based face to face teaching, directed study, independent study via G-Learn, case studies, projects and practical activities (individual & group).

Teaching and learning resources

Soft copies of teaching notes/cases etc. will be uploaded onto the G-learn. Wherever necessary, printouts, handouts etc. will be distributed in the class. Prescribed text book will be provided to all. However, you should not limit yourself to this book and should explore other sources on your own. You need to read different books and journal papers to master certain relevant concepts to analyse cases and evaluate projects. Some of these reference books given below will be available in our library.

***Books for Reference*:**

1 The required text is CALCULUS, 9th Edition, by Anton, Bivens, and Davis.

CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO).

0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping							
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**Sum**
CO1	3	2	0	0	2	2	9
CO2	2	2	0	0	2	2	8
CO3	3	3	0	0	1	1	8
CO4	2	2	0	0	2	2	8
CO5	2	2	0	0	2	2	8
Target Level Max.	12	11	0	0	9	9	41

BBA BA -Programme Outcomes (POs)

1 Ability to understand the business problems with their knowledge in different functional areas of management
2 Integrate with structured, semi – structured and unstructured data.
3 Utilize the tools such as Microsoft Excel, SPSS, R, Weka and Tableau to solve business analytics problems.
4 Ability to apply analytics techniques to analyze and interpret the data.
5 Incorporate the descriptive, predictive and prescriptive analytics.
6 Evaluate the necessary skills and understanding to take up advanced topics in the area of analytics and thus enhance their career prospects.