CLUSTER UNIVERSITY SRINAGAR
SYLLABUS (FYUP UNDER NEP2020)
Offered By Department Of MATHEMATICS
Semester 1ˢᵗ to 3ʳᵈ (Multi-Disciplinary Course)

Course Title: Fundamentals of Mathematics-I

Course Code: UGMTH22D101   **Max. Marks: 75**
Credits: 3   **External: 55; Min Marks: 22**
Contact Hrs: 45   **Internal (Continuous Assessment): 20 Marks, Min Marks: 08**

Course objectives/Outcome:

After the completion of this course, the students shall be able to:

1. Perform set operations on finite and infinite collections of sets and be familiar with properties of set operations.
2. Understand the idea of functions, limit and continuity of a function.
3. Find the derivatives of various functions and applications of differentiation.

Unit-I   **15 Hrs**

Sets & Relations: Sets, types of sets, subsets, power set, number of subsets of a finite set, universal set, operation on sets, union, intersection, difference, complement of a set, algebra of sets, De-Morgan's laws. Cartesian product of sets, relation, domain and range of a relation, types of relations, Equivalence relation, partial ordering relation.

Unit-II   **15 Hrs**

Function, domain and range of a function, types of functions, even and odd functions, inverse of a function, composition of a functions, equality of functions, Basic concepts of limits and continuity of a function.

Unit-III   **15 Hrs**

Derivative of a function, Derivative of ax^n, $(ax + b)$, $\log$, e^x, a^x, $\sin x$, $\cos x$, $tanx$. Derivative of sum, product and division of two functions. Simple applications of differentiation.

Text Books Recommended:

(1) NCERT Text book of Mathematics prescribed for class 11ᵗʰ & 12ᵗʰ.
(2) A Foundation course in Mathematics by Ajit Kumar,S.Kumaresan and Bhaba Kumar Sarma.