

## COURSE OBJECTIVES AND COURSE OUTCOMES

F. Y. B. Sc. SEMESTER - I

MATHEMATICS PAPER - I

SUBJECT: CALCULUS - I (USMT 101) [w.e.f 2020 - 2021]

Sr. No.	Course Objectives	Course Outcomes
1)	Introduction to real number system, its order properties & LUB axiom	<b>Students will understand</b> Results such as Archimedean property, density theorems, Haudorff property for real numbers with proofs
2)	Introduction to sequences and types of sequences such as bounded, unbounded, Monotone sequences and Cauchy sequence	Relation between convergent sequences and bounded sequences, constructing convergent and divergent sequences and the number “e” as a limit of a sequence
3)	Introduction to differential equations and various types of differential equations	First order first degree differential equations and their solution besides knowing the applications of differential equations to orthogonal trajectories, population growth, and finding the current at a given time

## COURSE OBJECTIVES AND COURSE OUTCOMES

F. Y. B. Sc. SEMESTER - II

MATHEMATICS PAPER - I

SUBJECT: CALCULUS - II (USMT 201)

Sr. No.	Course Objectives	Course Outcomes
1)	Introduction to the concept of Limit and Continuous functions	<b>Students will understand</b> Formal definition of limit of a function and how to calculate it. Several properties of continuous functions such as intermediate value theorem, Bolzano Weierstrass theorem and related applications with proofs
2)	Introduction to the concept of derivative as a limit of a function and geometric interpretation as the slope of the tangent to the curve	Leibnitz rule for finding the derivative of product of two functions and chain rule for composition of functions
3)	Standard theorems such as Rolle 's theorem, LMVT, Cauchy's Mean value theorem, Taylor's theorem with proofs	Several observations using Leibnitz theorem, $f'(x) = 0$ implies $f$ is a constant function, increasing and decreasing functions, second derivative test and sketching of several curves, series expansions of standard functions of $\cos x$ , $\sin x$ etc.