BASIC CALCULUS 1 AND 2

PROF. PARASAR MOHANTY

Department of Mathematics

IIT Kanpur

TYPE OF COURSE : New | Core | UG
COURSE DURATION   : 8 weeks (18 Jan' 21 - 12 Mar' 21)
EXAM DATE   : 21 Mar 2021

PRE-REQUISITES : Grade XII

INTENDED AUDIENCE : 1st year B.Tech, Mathematics Honours

COURSE OUTLINE :

Topics of continuity, differentablity, integrability of a real valued function will be discussed with their applications. Also series representations of some functions will be discussed.

ABOUT INSTRUCTOR :

Prof. Parasar Mohanty is an associate professor in Dept. of Mathematics and Statistics at IIT Kanpur. His area of Specialisation: Harmonic Analysis.

COURSE PLAN :

Week 1**:** Algebra of Real Numbers, set of Axioms,Completeness,Density, decimal representation of real numbers

Week 2**:** Convergence of sequences, properties of limit, Sandwich Theorem, Monotonic sequences, Cantor's completeness Principle, Bolzano-Weierstrass Theorem, Cauchy's completeness

Week 3**:** Convergence of series, comparison test, Root test, Ratio test , Power series, Leibniz's condition

Week 4**:** Continuity, Intermediate Value theorem, Properties of continuous functions

Week 5**:** Differentiation, Rolle's Theorem, Mean Value theoremHigher derivatives Taylor theorem

Week 6**:** Curve tracing, Applications of derivatives

Week 7**:** Integrations

Week 8**:** Applications of Integration