REAL ANALYSIS I

PROF. JAIKRISHNAN J
Department of Mathematics
IIT Palakkad

TYPE OF COURSE   : New | Core | UG
COURSE DURATION : 12 weeks (20 Jul' 20 - 9 Oct' 20)
EXAM DATE   : 18 Oct 2020

PRE-REQUISITES : 12th Standard Mathematics

INTENDED AUDIENCE : UG Students of Mathematics, the Sciences or Engineering

INDUSTRIES APPLICABLE TO : Google, DeepMind, Microsoft Research

COURSE OUTLINE :
This is an introductory course on Real Analysis designed for undergraduate students of Mathematics. The only pre-requisite is a knowledge of Calculus at high school level so students of the Sciences or Engineering who want a deeper understanding of Calculus or want to pursue subjects such as Theoretical Physics, Computational Complexity, Statistics, etc. would also benefit from this course

ABOUT INSTRUCTOR :
Prof. J. Jaikrishnan is an Assistant Professor at IIT Palakkad. He specializes in Complex Analysis.

COURSE PLAN :

Week 1**:** Introduction, Set Theory and Logic

Week 2**:** The Real Numbers as an Ordered Field

Week 3**:** Completeness of the Reals and Consequences

Week 4**:** Sequences and Series

Week 5**:** Sequences and Series continued

Week 6**:** A Taste of Topology

Week 7**:** Limits and Continuity

Week 8**:** Continuity and Topological Properties

Week 9**:** Differentiation and Basic Properties

Week 10**:** Differentiation Continued and Definition of Riemann Integral

Week 11**:** The Fundamental Theorem of Calculus

Week 12**:** Uniform Convergence, Power Series and Taylor Series