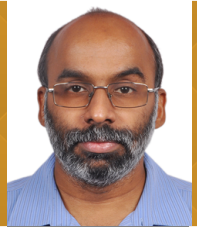

MEASURE THEORY

PROF. E. K. NARAYANAN
Department of Mathematics
IISc Bangalore

TYPE OF COURSE : Rerun | Core | PG
COURSE DURATION : 12 weeks (18 Jan' 21 - 09 Apr' 21)
EXAM DATE : 24 Apr 2021

PRE-REQUISITES : A course in real analysis and topology

INTENDED AUDIENCE : First year MSc students in Mathematics

COURSE OUTLINE :

This course covers measure and integration. We start with abstract measures and their integration theory. Next, we construct the Lebesgue measure and follow it with a detailed study of Borel measures on locally compact Hausdorff spaces. Lp spaces and product measures along with Fubini's theorem is taken up next. We finish with several classical reasul, Radon-Nikodym theorem, Ries representation theorem and Lebesgue differentiation theorem.

ABOUT INSTRUCTOR :

Prof.Narayanan is currently working as a professor at the Department of Mathematics, Indian Institute of Science, Bangalore. His primary research area is harmonic analysis.

COURSE PLAN :

Week 1**:** Abstract measures and integration
Week 2**:** Abstract measures and integration(continued)
Week 3**:** Outer measure on Rn and properties
Week 4**:** Lebesgue measure and integration
Week 5**:** Borel measures on locally compact spaces
Week 6**:** Lp – spaces and properties
Week 7**:** Product measures
Week 8**:** Product measures (continued)
Week 9**:** Complex measures and Radon-Nikodym theorem
Week 10**:** Dual of Lp –spaces
Week 11**:** Riesz representation theorem
Week 12**:** Lebesgue differentiation theorem and absolutely continuous functions