TYPE OF COURSE: New | Core | PG
COURSE DURATION: 12 Weeks (18 Jan’ 21 - 09 Apr’ 21)
EXAM DATE: 25 Apr 2021

PRE-REQUISITES: Algebra I (highly recommended)
INTENDED AUDIENCE: Any Interested Learners

COURSE OUTLINE:
Second part of Foundational PG level course in algebra, suitable for M.Sc and first year PhD students in Mathematics.

ABOUT INSTRUCTOR:
S Viswanath is a Professor in the department of Mathematics. He did his M.Sc (Integrated), Mathematics, IIT Kanpur, 1999, Ph.D, Mathematics, UC Berkeley, 2004. He teaches Algebra I, II & Lie Algebras. His research interests are Lie algebras and their representations, Algebraic combinatorics

Amritanshu Prasad is a Professor in the department of Mathematics. He did his B.Stat., Indian Statistical Institute, Kolkata, 1995, M.S., The University of Chicago, 1996 & Ph.D., The University of Chicago, 2001. His research interests are Combinatorics, Representation Theory, Harmonic Analysis & Automorphic Forms

COURSE PLAN:
Week 1: Fields, equations, extensions
Week 2: Ruler and compass constructions,
Week 3: Finite Fields
Week 4: Galois Theory - 1
Week 5: Galois Theory - 2
Week 6: Categories, functors, natural transformations - 1
Week 7: Categories, functors, natural transformations - 2
Week 8: Tensor products of modules
Week 9: Jordan-Holder theorem
Week 10: Krull-Schmidt theorem
Week 11: Semisimple rings, Artin-Wedderburn theorem
Week 12: Multilinear Algebra