



INTRODUCTION TO ABSTRACT GROUP THEORY

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INTENDED AUDIENCE : BSc, MSc students studying mathematics

PRE-REQUISITES : Any BSc student who is familiar with high school mathematics can take this course

COURSE OUTLINE :

This course will introduce abstract groups. We will start with definitions, basic properties and constructions and cover many important theorems in basic group theory, such as Lagrange's theorem, Cauchy's theorem and Sylow theorems. A major emphasis of the course will be to present numerous worked-out examples and problems. A part of the lecture every week will be devoted to explicit calculations.

ABOUT INSTRUCTOR :

Prof. Krishna Hanumanthu is an Associate Professor of Mathematics at Chennai Mathematical Institute (CMI). He studied BSc and MSc in CMI during 1998-2003 and did his PhD in mathematics at University of Missouri during 2003-2008. He joined CMI as a faculty member in 2011 after working for 3 years at University of Kansas. His main areas of research are algebraic geometry and commutative algebra. He has been teaching for almost 15 years and taught introductory courses on abstract algebra (including group theory) many times.

COURSE PLAN :

Week 01 : Motivation, definition, examples and basic properties

Week 02 : Subgroups, subgroups of integers, homomorphisms

Week 03 : Quotient groups, isomorphism theorems

Week 04 : Group operations, counting formula

Week 05 : Symmetric groups

Week 06 : Operations of a group on itself, class equation

Week 07 : Sylow theorems I

Week 08 : Sylow theorems II