

MAT536 \ AMAT 536	-	Operations Research -II.
MAT537 \ AMAT 537	-	Reaction diffusion theory - II
MAT538 \ AMAT 538	-	Difference Equations –II
MAT539 \ AMAT 539	-	Wavelet analysis and applications - II

**Semester –I****Course No: MAT401/ AMAT 401 Advanced Abstract Algebra- I****Credits: 6****Objective:** To learn some basics from algebra.**Unit- I**

Binary relation, binary operation, function, group, subgroup and their properties. Order of a group. Generator, cyclic group, Lagranges theorem, Fermats and Eulers theorem and their consequences.

**Unit- II**

Normal subgroup, quotient group and their properties and examples. Homomorphism, kernel, image of a homomorphism. Isomorphism and related theorems, Fundamental theorem of group homomorphism, automorphism, conjugacy and G-sets.

**Unit- III**

Permutation groups and related concepts and results. Center, normalizer, commutator of a group, derved group, Cayles theorem.

**Unit – IV**

Normal series, solvable and nilpotent group and their properties, direct products, simplicity of alternating group.

**Unit- V**

Fundamental theorem of finitely generated abelian group, invariants of finite abelite abelian group, Sylow theorems and applications.

**Outcome:** After learning this paper, the student will become familiar with abstract concepts.

**Text Book:**

Basic Abstract Algebra, by P. B. Bhattacharya, S. K. Jain and S. R. NagPaul  
Cambridge (Indian Edition) 2007, Chapter Number:4,5,6,7,8 related topics.

**Reference Books:**

1. Topics in algebra, I. N. Herstein: Wiley (Indian Edition), 1999.
2. Contemporary Abstract Algebra by J.A. Gallian, Narosa, 2010..