

Module Code: MATH-406
Module Title: **Group Theory - II**
Module Rating: 3 Cr. Hours
Pre-Requisite: Group Theory - I

Automorphisms and Products in Groups

- Characteristic and fully invariant subgroups
- Normal products of groups
- Holomorph of a group

Permutation Groups

- Symmetric or permutation group
- Permutability of permutations
- Transpositions
- Generators of the symmetric and alternating group
- Cyclic permutations and orbits, the alternating group
- Generators of the symmetric and alternating groups
- Simplicity of A_n , $n \geq 5$
- The stabiliser subgroups

Series in Groups

- Series in groups
- Zassenhaus lemma
- Normal series and their refinements
- Composition series

Recommended Books

1. J. Rotman, *The Theory of Groups*, 2nd edition, (Allyn and Bacon, London, 1978)
2. J. B. Fraleigh, *A First Course in Abstract Algebra*, 7th edition, (Addison-Wesley Publishing Co., 2003)
3. I. N. Herstein, *Topics in Algebra*, (Xerox Publishing Company Mass, 1972)
4. J. A. Gallian, *Contemporary Abstract Algebra*, 4th edition, (Narosa Publishers, 1998)
5. J. S. Rose, *A Course on Group Theory*, (Dover Publications, New York, 1994)
6. K. Hoffman, *Linear Algebra*, 2nd edition, (Prentice Hall, 1971)



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