Module Code: MATH-421
Module Title: **Group Theory - III**
Module Rating: 3 Cr. Hours

Solvable Groups

- Solvable groups, definition and examples
- Theorems on solvable groups
- Super-solvable groups

Nilpotent Groups

- Characterisation of finite nilpotent groups
- Upper and lower central series
- Frattini subgroups, free groups, basic theorems
- Definition and examples of free products of groups

Linear Groups

- Linear groups, types of linear groups
- Representation of linear groups
- Group algebras and representation modules

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. H. Marshall, *The Theory of Groups*, (Macmillan, 1967)
4. J. A. Gallian, *Contemporary Abstract Algebra*, 4th edition, (Narosa 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)