DEPARTMENT OF MATHEMATICS M 101 (NR)
ACHARVA NAGARJUNA UNIVERSITY

M.Sc., Maths, I Year, I Semester **M 101: ALGEBRA**
SYLLABUS **(w.e.f.Batch 2011-2013)**

(With effect from the batch of students admitted during 2011-2012)

Unit-I:

Group theory: Definition of a Group - Some Examples of Groups - Some Preliminary Lemmas - Subgroups - A Counting Principle - Normal Subgroups and Quotient Groups - Homomorphisms - Automorphisms - Cayley's theorem - Permutation groups.
(2.1 to 2.10 of the prescribed book J1J)

Unit-II

Group Theory Continued: Another counting principle - Sylow's theorem – direct products - finite abelian groups (2.11 to 2.14 of the prescribed book [1])

Unit-III

Ring Theory: Definitions and Examples of Rings - some special classes of rings - Homomorphisms - Ideals and quotient Rings - More Ideals and quotient Rings - The field of quotients of an Integral domain - Euclidean rings - A particular Euclidean ring.
(3.1 to 3.8 of the prescribed book [l])

Unit-IV

Ring Theory Continued: Polynomial Rings - Polynomials over the rational field - Polynomial Rings over Commutative Rings (3.9 to 3.11 of the Prescribed book [l]).

Vector Spaces: Elementary Basic Concepts - Linear Independence and Bases - Dual spaces (4.1 to 4.3 of the prescribed book [1]).

PRESCRIBED BOOK: |1| Author: I.N. Herstein, Title: Topics in Algebra. Wiley Eastern Limited. New Delhi, 1988.

REFERENCE BOOK: Bhattacharya P.B., Jain S.K., Nagpaul S.R. "Basic Abstract Algebra", Cambridge Press, Second Edition.