Department of Mathematics   **Faculty of Science**

MATH 425 (206425)   CONCEPTS OF ABSTRACT ALGEBRA   3(3/3-0/0)

Abbreviation   CONCEPTS OF ABST ALGEBRA

Prerequite   MATH 311 (206311) or MATH 313 (206313) and consent of the instructor

Course Description

       Basic theory of groups, rings, integral domain and fields. Isomorphism and automorphism. Polynomial over fields. Ideals. Basic concept of nonhomomorphism. Commutative ring and residue class ring.

Course Contents	**No. of Lecture Hours**
1. Basic properties of the integers	9
- Well ordering principle	
- Mathematical induction	
- The division algorithm	
- Unique factorization theorem	
2. Groups	18
- Division of a group	
- Example of groups	
- Some elementary properties of groups	
- Supgroups, cosets and Lagrange's theorem	
- Normal supgroups and quotient groups	
- Homomorphisms	
- Isomorphism theorems	
- Permutation groups	
3. Rings and fields	18
- Definition of a ring, integral domain, division ring and field	
- Elementary properties of a ring	
- Ideal and quotient rings	
- Homomorphisms	
- Polynomial rings	
- Fields of quotients	
Total	**45**