

## PURE MATHEMATICS 315 "ABSTRACT ALGEBRA"

**Calendar Description:** H(3-1T)

Integers: division algorithm, prime factorization. Groups: permutations, Lagrange's theorem. Rings: congruences, polynomials.

**Prerequisite:** Mathematics 211 or 221.

**Suggested Text:** "Introduction to Abstract Algebra," by W.K. Nicholson, PWS-Kent, 1993.

### *Syllabus*

<u>Topics</u>	<u>Number of hours</u>
Section 1.1            Induction	1
Section 1.2, 0.4    Divisibility and Prime Factorization	2
Section 1.3           Integers Modulo n	2
Section 1.4           Permutations	2
Section 2.1           Binary Operations	1
Section 2.2           Groups	1
Section 2.3           Subgroups	2
Section 2.4           Cyclic Groups	2
Section 2.5           Isomorphisms	2
Section 2.6           Cosets and Lagrange's Theorem	1
Section 2.8           Normal Subgroups	1
Section 2.9           Factor Groups	2
Section 2.10        Homomorphisms	2
Section 3.1           Examples and Basic Properties of Rings	1
Section 3.2           Integral Domains and Fields	2
Section 3.3           Ideals and Factor Rings	2
Section 3.4           Homomorphisms	2
Section 4.1           Polynomials	2
Section 4.2           Factorization of Polynomials over a Field	2
Section 4.3           Factor Rings of Polynomials over a Field	2
<b>TOTAL HOURS</b>	<b>34</b>

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