Math 282 Course Content and Objectives

COURSE CONTENT AND SCOPE - **Lecture:** Outline the topics included in the lecture portion of the course *(Outline reflects course description, all topics covered in class).*	Hours Per Topic	COURSE OBJECTIVES - **Lecture:** Upon successful completion of this course, the student will be able to...*(Use action verbs - see Bloom's Taxonomy for 'action verbs requiring cognitive outcomes.')*
Sets, mappings, mapping composition, relations, and binary operations.	4	Apply the principles of algebra to sets, mappings, compositions of mappings, relations, and binary operations.
Mathematical induction, divisibility, primes, congruences, and congruence classes.	6	Prove statements using mathematical induction, determine the greatest common divisor of two numbers by the Euclidean algorithm, determine if a number is prime, and solve congruence equations.
Groups, subgroups, cyclic groups.	6	Determine whether a mathematical system is a group, subgroup, or cyclic group.
Isomorphisms, homomorphisms.	6	Determine and prove that two groups are isomorphic or homomorphic.
Finite permutation groups, Cayley's theorem, normal subgroups, and quotient groups.	6	Determine the normal subgroups of a group, and apply Lagrange's theorem.
Rings, integral domains, fields.	6	Determine if a mathematical system is a ring, integral domain, or a field.
Ideals and quotient rings, ring homomorphisms, the characteristic of a ring.	6	Compute ideals and quotient rings, prove ring homomorphisms, and determine the characteristic of a ring.
The field of real numbers, the field of complex numbers.	6	Apply the concepts of the previous topics to the fields of real number and complex numbers.
Polynomials over a ring.	6	Compute with polynomials over a ring.
Final examination	2	Final examination.
Total: Total Lecture Hours In Section I Class Hours:	54 54	