SOUTHERN UNIVERSITY AND A&M COLLEGE
DEPARTMENT OF MATHEMATICS

Math 330
Abstract Algebra I

Course Description: An introduction to the basic concepts of modern algebra. Topics include the nature of proofs, sets and equivalence relations, binary operations, groups and subgroups, cyclic groups and groups of permutations.

Instructor's Emphasis: The instructor will emphasize on basic concepts on groups, and basic skills on proofs.

Intended Audience: This course is designed for students who has completed calculus and linear algebra, and preparing for the higher level abstract algebra

Course Credit: 3 hours

Prerequisite: Linear Algebra (Math 233), Calculus II (Math 265)

Text Book: A First Course in Abstract Algebra
By John B. Fraleigh, 7th Edition, Addison Wesley

Learning Outcomes:

1. Students will be able to understand the set relation by demonstrating Venn diagrams
2. Students will be able to understand the concept of equivalence relation by applying different examples to the definition
3. Students will be able to prove a statement by mathematical induction by using sequence of consecutive integers
4. Students will be able to understand the concept of binary operations by definition and examples
5. Students will be able to determine whether a given binary operation on the given set gives a group structure by applying the axioms
6. Students will be able to determine whether a given group is Abelian by checking the properties
7. Students will be able to prove that a given subset of a group is a subgroup by applying the properties.
8. Students will be able to describe all elements in a cyclic subgroup by using generators.
9. Students will be able to compute the expression of permutation groups by using permutation multiplication
10. Students will be able to understand the homomorphism by using the relationship between groups
11. Students will be able to understand the isomorphism by using the relationship between groups

Course Content:

I: Sets and Equivalence Relations

II: Groups and subgroups
III: More Groups
IV: Homomorphism and Isomorphism

Instructor:

Office:

Office Hours:

THE COURSE GRADE:

3 Tests and Final	500 pts	*there will be **no makeup test**
HW, QUIZZES		
Class participation	up to 100 pts	
TOTAL	up to 600 pts	

FINAL GRADES:

90% - 100%	A
80% - 89%	B
70% - 79%	C
55% - 69%	D
Below 55%	F

Assignment

1. Student Survey … 15 pts

You will be asked to write about you in the following questions as you complete your survey.

- Name, address, telephone(cell) number, e-mail address, where you can be reached.
- What is your major?
- Where are you from?
- What was your last math class(anywhere?)
- What college mathematics classes have you taken?
- What is your current GPA?
- What concerns, if any, you have about this course?
- What is your study plan for this course?
- How many credit hours (or classes) are you taking this semester?
- If you work, where and how many hours per week?
- If you are on scholarship, what kind and how much does it cover for your study?
- What is your future plan?
- What else would you like me to know about you?

2. Portfolio (Optional) … 15 pts.
Due: Before the Final Exam Day

Portfolio is a collection of a student's best work for the course.

1) Copy of the tests with attached correction (i.e. redo the tests)
2) With the summary indicate that
    i) The student's understanding of Mathematics (from the course)
    ii) The student's ability to learn mathematics, and
    iii) The student's ability to apply mathematics to the real-world;
3) Five solved problems from **each chapter**
4) Commentary from the student concerning what (s)he has learned from this work; and
5) Self evaluation

ACADEMIC DISHONESTY:

Adhere to honesty and integrity in work submitted for credit in this course and adheres to SUBR's Code of Conduct. (Refer to current Catalog.)

DISABILITY STATEMENT:

Students that are considered as having a disability are to provide the professor with a letter from the Department of Special Education stating the appropriate accommodations required of this course. If you have a documented disability, then please discuss it with personnel at 771-3950 in Room 125 of Blanks Hall.

SUGGESTED OR REQUIRED READING: See professor.