Course Number: 3###
Course Title: Abstract Algebra
Florida Southern College
Date, Time, Location

Professor: **Email:**
Office: **Phone:**
Office Hours:

Course Description:

4 hours. Pre or corequisite: MAT 3205 or by instructor permission. The course will investigate the definition of a group and its properties using specific types of groups (including group presentations, modular arithmetic, permutations, symmetries, and matrices) and the study of relationships between groups via subgroups and homomorphisms. Throughout the course proof writing techniques will be developed and applied to the context of groups.

Course Student Learning Outcomes:

Upon completion of this course, the student should be able to:

- Recite the basic definitions and notions of a group.
- Demonstrate the notions of group structure using specific examples.
- Examine possible relationships between groups and subgroups.
- Compare the similarities and differences among different groups.
- Compose proofs about groups using various proof techniques.
- Express the concepts of groups using examples.

Suggested Text:

- "*A First Course in Abstract Algebra"* by John Fraleigh (or other suitable text approved by the department.)

Additional Resources:

- *"Mathematical Proofs"* by Chartrand, Polimeni, Zhang
- *"Contemporary Abstract Algebra"* by Joseph Gallian

Statement of Engaged Learning:

Engaged learning is an approach to teaching and learning in which students are responsible for developing the skills, attitudes, and knowledge necessary for success in life. The role of the professor is to empower students to achieve these outcomes. The engaged learning method of teaching encourages learners to conduct meaningful inquiry, reflect, think critically, and develop learning strategies for dealing with real-world challenges. Engaged learning may take place in a variety of settings using approaches varying in complexity and tailored to diverse learning styles.

Suggested Means of Assessment: [*Means of assessment may vary. The following list is an example.*]

- **Exams**: 30%
- **Homework**: 15%
- **Writing Projects**: 20%
- **Quizzes**: 5%
- **Participation**: 5%
- **Final Exam**: 25%

Suggested Course Grade Scale: A: 90-100%, B: 80-89%, C: 70-79%, D: 60-69 %, F: 0-59%

STUDENTS WITH DISABILITIES ACCOMMODATIONS STATEMENT

Current college-approved Disabilities Accommodations statement must be included in the syllabus

FLORIDA SOUTHERN COLLEGE HONOR CODE

Current college-approved Honor Code statement must be included in the syllabus

FLORIDA SOUTHERN COLLEGE STATEMENT ON ATTENDANCE

Current college-approved absence statement must be included in the syllabus

Suggested Course Schedule:

Week 1	**Introduction using Examples**
Week 2	**Set Theory and Mappings**
Week 3	**Onto and 1-1 Mappings and Binary Operations (Group Operations)**
Week 4	**Presentations, Relations, and Symmetries (Dihedral Groups)**
Week 5	**Modular Arithmetic and Congruence Classes (Cyclic Groups)**
Week 6	**Bijections and Permutations (Symmetric Groups)**
Week 7	**Operations involving Permutations on a Set**
Week 8	**Matrix Operations (General Linear Groups)**
Week 9	**Homomorphisms and Isomorphisms**
Week 10	**Definition of Group and Consequences**
Week 11	**Definition of Subgroup and Consequences**
Week 12	**Center of a Group and Centralizers**
Week 13	**Group Actions**
Week 14	**Orbits and Stabilizers**
Week 15	**Review and Final Exam**