MA 437: Modern Algebra I   **Fall 2014**
MWF 11:00-11:50   **3 Credits**
Mathematics Building Room 5

Instructor: Dr. Lee Raney   **e-mail:** lraney@una.edu
Office: Mathematics Building 126   **Phone:** (256) 765-4125
Office Hours: M-F 10:00-11:00, or by appointment
Course Website: http://www.buildingthepride.com/faculty/lraney/ma437

Course Description: Sets, relations, and functions; elementary number theory; group theory including subgroups, cyclic groups, cosets, and LaGrange's Theorem; introduction to rings.

Prerequisite: MA 126 (Calculus II) and MA 325 (Introduction to Discrete Mathematics– a minimum grade of C is highly recommended). In particular, facility in writing proofs is essential.

Textbook: *Contemporary Abstract Algebra, Eighth Edition*, by Joseph A. Gallian.

Course Content: Selected topics from Chapters 0-11 and Part 3. This includes sets and mappings, elementary number theory, groups, subgroups, cyclic groups, permutation groups, group homomorphisms, cosets, normal subgroups and quotient groups, and the Fundamental Theorem of Finite Abelian Groups. Introduction to rings and fields. Time permitting, we will study topics selected from finite fields, polynomial rings, the Sylow theorems, or finite simple groups. A major objective of the course is further *refinement* of the students' proof writing skills.

Calculators: No calculators are permitted. Students will not need them.

Grading Scale: Grades will be assigned according to the following scale.
A: 90-100%   B: 80-89%   C: 70-79%   D: 60-69%   E: 0-59%

Grading Plan:

Two during-term exams	40%
Participation/quizzes	10%
Homework	30%
Final exam	20%
Total	100%

During-Term Exams: There will be two during-term exams. Each exam is graded on a 50-point scale. The exam format is free response, and problems may consist of computations, short answers, or proofs. *Your final exam grade may be used to replace your lowest during-term exam.* The dates of the exams are as follows.

- Exam 1: Monday, September 22
- Exam 2: Friday, October 31

Partipation/Quizzes: Several quizzes will be given in class during the semester. These quizzes will be unannounced and will be open-book, open-notes. Quizzes will typically be given 1-2 times per week.

Homework: Several homework problems will be assigned each week. Problems may come from our textbook or alternate sources, and they will be posted at the course website. A subset of the assigned problems will be collected for grading. Students may elect to re-submit any collected problems for re-grading *no later than one week from the return of the assignment*. Each collected problem will be graded on the following 0/.5/1 scale.

- 0 points: The solution has a major mistake or is not written in acceptable mathematical format.
- .5 points: The solution has only one or two minor mistakes, and would be considered acceptable after they are corrected.
- 1 point: The solution is flawless.

Final Exam: The final examination will be given on *Tuesday, December 9, 10:15-12 Noon* in our classroom. The final exam is mandatory and comprehensive. The format of the final exam is free response.

Makeup Policy: Makeups are given only at the discretion of the instructor and on a case-by-case basis. The only exception is a legitimate, documented excuse in accordance with the University's excused absence policy. In the event of a missed assignment, the student should contact the instructor *immediately*. If you anticipate missing an exam, you must contact the instructor *at least one week in advance*.

E-Mail and Course Website: Students are required to check their University e-mail account regularly, as announcements will often be sent via e-mail. Students must also have access to the course website where additional information will also be posted.

Student Conduct: It is expected that all students will conduct themselves in a professional manner. Students are responsible for keeping track of their own course standing. Students with any questions regarding their course grades should contact the instructor immediately.

Attendance Policy: Regular and punctual attendance is expected of all students. Whenever a student's cumulative absences for any reason - excused or unexcused - exceed the equivalent of three weeks of scheduled classes, no credit may be earned for the course. The student will either withdraw from the course or receive an F for the course grade. Any exceptions to this policy will be in accordance with the University policy.

Extra Help: In addition to the instructor's office hours, additional help is available through the Mathematics Learning Center. Students may schedule a *free* individual session with a Mathematics Consultant at http://www.una.edu/successcenter/mlc.

Accommodations: In accordance with the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973, the University offers reasonable accommodations to students with eligible documented learning, physical and/or psychological disabilities. Under Title II of the Americans with Disabilities Act (ADA) of 1990, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Amendment Act of 2008, a disability is defined as a physical or mental impairment that substantially limits one or more major life activities as compared to an average person in the population. *It is the responsibility of the student to contact Disability Support Services to initiate the process to develop an accommodation plan.* This

accommodation plan will not be applied retroactively. Appropriate, reasonable accommodations will be made to allow each student to meet course requirements, but no fundamental or substantial alteration of academic standards will be made. Students needing assistance should contact Disability Support Services.

Academic Honesty Policy: Students are expected to be honorable and observe standards of conduct appropriate to a community of scholars. Additionally, students are expected to behave in an ethical manner. Individuals who disregard the core values of truth and honesty bring disrespect to themselves and the University. A university community that allows academic dishonesty will suffer harm to the reputation of students, faculty, and graduates. Incidents of possible student academic dishonesty will be addressed in accordance with University guidelines.