Syllabus – Math 322 – Fall 2008

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Office Hours:	Monday & Wednesday 3-4, Tuesday & Thursday 11-12

Time:	Monday, Wednesday & Friday 11:00-11:50
Room:	314 Science Building I
Text:	*Abstract Algebra*, 5^{th} edition, Hillman and Alexanderson, Waveland Press

Catalog Description: Introductory concepts of modern algebra and their applications to the solution of polynomial equations over various fields. Elementary properties of groups, rings, integral domains, fields, and vector spaces; introductory Galois theory and applications including Abel's theorem and compass-straightedge constructions.

Goals: This course introduces the fundamental structures of abstract algebra: groups, rings, fields, and polynomials, and explores their basic properties. We will explore, whenever possible, the application of these powerful and elegant ideas to other areas of mathematics. Most significantly, we will apply abstract algebraic concepts to the study of the solutions of a polynomial in one variable. Specifically, we will study some basic Galois theory, which relates the solutions of a polynomial equation to a certain group in such a way that information about the solutions of the original equation is preserved. We will also discuss H. Abel's famous result on the insolubility of the general quintic, and some applications to classical constructions in plane geometry.

Through the completion of homeworks, quizzes, and exams, the student will achieve the following goals.

- Enhance abstract and critical reasoning skills.
- Communicate mathematical ideas effectively.
- Demonstrate an understanding of key mathematical concepts.

SUNY General Education Attributes: CPA, LA

SUNY Learning Outcome: Students will show competence in the following quantitative reasoning skills: arithmetic, algebra, geometry, data analysis, and quantitative reasoning.

Grading Policy: Your grade will be determined by the following:

- Two midterm exams, each worth 20% of your grade.
- Quizzes, given approximately every two weeks, worth a total of 25% of your grade.
- The final exam, cumulative and worth 25% of your grade.
- Class participation, 10% of your grade.

Your final grade will be assigned according to the following scheme:

A	$92 \leq x \leq 100$	B^-	$80 \leq x < 82$	D^+	$67 \leq x < 70$
A^-	$90 \leq x < 92$	C^+	$77 \leq x < 80$	D	$62 \leq x < 67$
B^+	$87 \leq x < 90$	C	$72 \leq x < 77$	D^-	$60 \leq x < 62$
B	$82 \leq x < 87$	C^-	$70 \leq x < 72$	E	$0 \leq x < 60$

Course Outline: We will cover Chapters 3 through 6 from the text. Below is a tentative schedule.

27 Aug - 26 Sept	Chapter 3: Sets and Mappings
29 Sept	Exam 1 review
1 Oct	**Exam 1**
3 - 8 Oct	Chapter 4: Rings and Fields
10 Oct	**No class**
13 - 31 Oct	Chapter 4: Rings and Fields
3 - 10 Nov	Chapter 5: Polynomials
12 Nov	Exam 2 review
14 Nov	**Exam 2**
17 - 21 Nov	Chapter 5: Polynomials
24 - 28 Nov	**No class**
1 - 12 Dec	Chapter 6: Euclidean Constructions

Attendance: Please come to class regularly and on time. Any material missed due to an unexcused absence is the responsibility of the student.

Students missing 25% or more of class, any time from the second week of class up until the last day to withdraw from an individual course may be removed from the course by the instructor.

Advice: The best way to learn mathematics (or anything else) is to actively engage in the subject, by working out problems and discussing ideas with others. You are strongly encouraged to use our time together in class for this purpose. Read the relevant sections of the book *before* we cover it in class, so that you can ask questions. Not only will this help you learn the material, it will help your grade (see "Grading Policy" above).