

MAT 499: Abstract Algebra – Spring 2009 Syllabus

Mission Statement: Union's mathematics program seeks to further students in their quest for increased understanding of Creation and the created order and to equip students to serve God, church, and society through excellence in thinking and the use of mathematics. We do this through a curriculum that develops the student's ability to think logically, analytically, and abstractly; to pursue a body of knowledge whose basis is largely independent of both empirical observation and culture; and to learn humility and a sense of wonder at the complexity, beauty, and applicability of mathematics.

I. Basic Information

MAT 499: Seminar in Abstract Algebra II, Three (3) credit hours.

Time: TBA

Prerequisites: MAT 415.

II. Course Instructor

Instructor: Dr. Matt Lunsford

Office: C – 47

Office Hours: TBA

Office Phone: 661- 5222

email: mlunsfor@uu.edu

III. Course Description and Objectives

This course is a continuation of MAT 415 Abstract Algebra. The main **objective** of the course is the development of "mathematically mature" students, i.e. students who study the techniques, the logic, the thought patterns, and the theory behind solutions to problems instead of focusing on the solution itself. In the context of this course, the main objective will be realized by those students who

- 1) are actively involved in doing mathematics and participating in classroom discussion;
- 2) learn to read and to write correct mathematical proofs or solutions;
- 3) gain an appreciation of the axiomatic structure of mathematics; and
- 4) gain knowledge of elementary ideas in abstract algebra (see outline below).

IV. Method of Instruction

This course will be taught in a seminar-style setting in which the instructor and the students will share in demonstration, discussion, and problem solving.

V. Required Text

Modern Algebra: An Introduction (fifth edition) – Durbin

VI. Assigned Readings and Research

The student will be required to read and to discuss selected parts of the above text.

VII. Special Projects and/or Activities

Problem solving assignments from the text and possibly from other available resources will be made throughout the course.

VIII. Method of Evaluation

1) Exams: The student will be evaluated partially by his/her performance on a midterm and a comprehensive final exam. The exams may be written and/or oral in nature. The midterm exam will be worth approximately 100 points and the final exam will be worth approximately 125 points.

2) Assignments: Assignments from the text or using *Mathematica* will be given. Some of these assignments will be graded. This component will consist of the total number of points possible from all graded assignments during the semester.

3) Classroom Participation: This component, which includes the oral and written presentations of assigned problems by each student as well as participation in discussions that develop in the classroom, will be worth approximately 25 points.

The student's final letter grade in the course will be determined by calculating the ratio of the total points earned to the total points possible and using the following grading scale:

A 92 - 100; B 83 - 91; C 74 - 82; D 65 - 73; F 0 - 64

IX. Attendance Policy

Due to the nature of mathematics and the method of instruction used in this particular course, regular attendance is necessary in order for the student to successfully complete the course. Any student who misses an excessive number of times will be reported to the Academic Center. Any student who misses an exam must bring to the instructor a written explanation of the reason for the absence and supporting documents within two days of the exam. A make-up exam will not be scheduled unless the above procedure is followed.

X. Cheating and Plagiarism

No forms of cheating will be tolerated. If the instructor observes cheating by a student during an exam, the student will receive a grade of zero for that exam and subsequently will be reported to the Office of the Provost.

XI. Drop Date

The last day to drop the course without special permission of the Registrar is March 10.

XII. Outline of the Course

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| A. Review of Rings and Fields | D. Field Extensions |
| B. Polynomial Rings | E. Introduction to Galois Theory |
| C. Quotient Rings and Ideals | |

XIII. Miscellaneous

In class use of cell phones, PDAs, MP3 players, laptops, and other similar electronic equipment without prior instructor approval is strictly prohibited. Calculators **must** be standalone devices for the purpose of calculation only.