

Syllabus for Math 416

Modern Algebra II

Spring 2020

Sections 200, 500

Instructor: Volodymyr Nekrashevych

Office: Blocker 513c

Office hours: Office hours: Wednesday 2:00 to 3:00 pm and Thursday 11:30 am to 12:30 pm or by appointment.

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Class hours:

TR 9:35–10:50 am BLOC 160

MATH 415 web page: The web page of the course is

<http://www.math.tamu.edu/~nekrash/teaching/20S/M416.html>

Text. “A First Course in Abstract Algebra,” 7th ed., by John B. Fraleigh, Addison-Wesley, 2003, ISBN 0-201-76390-7.

Topics covered. This is a continuation of MATH 415. The topics include field extensions, Galois Theory, and more advanced Group Theory. There will be separate homework assignments and exams for Section 200.

Grading. Your grade will be determined by homework, one midterm exams and a *cumulative* final exam. The weights of each of these are as follows.

Homework	Exam I	Final Exam	Total
30 pt	25 pt	45 pt	100
weekly	≈ Feb 11	end of April	

I may curve any grade and will then compute the course grade by the following rule: *A* for at least 90 points, *B* for at least 80 points, *C* for at least 70 points, *D* for at least 60 points and *F* for less than 60 points.

Plan of lectures.

1/13 Introduction to Extension Fields. Vector Spaces. Finite Extensions.

1/16 Algebraic Extensions

1/21 Geometric Constructions.

1/23 Finite Fields.

1/28 Advanced Group Theory. Isomorphism Theorems.

1/30 Series of Groups.

2/4 Sylow Theorems. Applications of Sylow Theorems.

2/6 Overview

2/11 Exam I

2/13 Free Abelian Groups.

2/18 Free Groups.

2/20 Group Presentations.

2/25 Groups in Topology. Simplicial Complexes and Homology Groups.

2/27 Computations of Homology Groups.

3/3 More Homology Computations and Applications.

3/5 Overview

3/17 Overview

3/19 Exam II

3/24 Automorphisms of Fields.

3/26 The Isomorphism Extension Theorem.

3/31 Splitting Field.

4/2 Separable Extensions.

4/7 Totally Inseparable Extensions.

4/9 Galois Theory.

4/14 Illustrations of Galois Theory.

4/16 Cyclotomic Extensions.

4/21 Insolvability of the Quintic.

4/23 Overview.

Make-up policy: Make-ups for missed quizzes and exams will only be allowed for a university approved excuse in writing. Wherever possible, students should inform the instructor before an exam or quiz is missed. Consistent with University Student Rules, students are required to notify an instructor by the end of the next working day after missing an exam or quiz. Otherwise, they forfeit their rights to a make-up.

Scholastic dishonesty: Copying work done by others, either in-class or out of class, is an act of scholastic dishonesty and will be prosecuted to the full extent allowed by University policy. Collaboration on assignments, either in-class or out-of-class, is forbidden unless permission to do so is granted by your instructor. For more information on university policies regarding scholastic dishonesty, see University Student Rules.

Remember the Aggie Code of Honor: *“An Aggie does not lie, cheat, or steal or tolerate those who do.”*

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I must report (per Texas A&M System Regulation 08.01.01) the following information to other University offices if you share it with me, even if you do not want the disclosed information to be shared:

- Allegations of sexual assault, sexual discrimination, or sexual harassment when they involve TAMU students, faculty, or staff, or third parties visiting campus.

These reports may trigger contact from a campus official who will want to talk with you about the incident that you have shared. In many cases, it will be your decision whether or not you wish to speak with that individual. If you would like to talk about these events in a more confidential setting, you are encouraged to make an appointment with the Student Counseling Service (<https://scs.tamu.edu/>).

Students and faculty can report non-emergency behavior that causes them to be concerned at <http://tellsomebody.tamu.edu>.