

MATH 81/111: ABSTRACT ALGEBRA WINTER 2019

JOHN VOIGHT

COURSE INFO

- **Lectures:** Monday, Wednesday, Friday, block 10 (10:10 a.m.–11:15 a.m.)
- **x-period:** Thursday, block 10X (12:15–1:05 p.m.)
- **Dates:** 3 January 2019 – 6 March 2019
- **Room:** 004 Kemeny Hall
- **Instructor:** John Voight
- **Office:** 341 Kemeny Hall
- **E-mail:** jvoight@gmail.com
- **Instructor's Office Hours:** Monday 4:00–6:00 p.m. and Tuesday 9:00–10:00 a.m., or please make an appointment by email
- **Course Web Page:** <http://canvas.dartmouth.edu/courses/31175>
- **Prerequisites:** Math 71, or Math 31 and permission. If you are unsure about your preparation, please talk to the instructor!
- **Required Texts:** David Dummit and Richard Foote, *Abstract algebra*, 3rd edition, 2004.
- **Grading:** Grade will be based on weekly homework, a takehome midterm exam, and a final exam.

COURSE CATALOGUE DESCRIPTION

This course provides a foundation in core areas in the theory of rings and fields. Specifically, it provides an introduction to commutative ring theory with a particular emphasis on polynomial rings and their applications to unique factorization and to finite and algebraic extensions of fields. The study of fields continues with an introduction to Galois Theory, including the fundamental theorem of Galois Theory and numerous applications.

LEARNING OUTCOMES

By the end of this course, you should be able to:

- (1) Understand of the basic structures of Galois theory: define terms, explain their significance, and apply them in context;
- (2) Solve mathematical problems: utilize abstraction and think creatively.

ACADEMIC HONOR PRINCIPLE

Cooperation on homework is permitted (and encouraged), but if you work together, do not take any paper away with you—in other words, you can share your thoughts (say on a blackboard), but you have to walk away with only your understanding. In particular,

write the solution up on your own. Please write on your assignment the names of any other collaborators you worked with.

Plagiarism, collusion, or other violations of the Academic Honor Principle, after consultation, will be referred to the The Committee on Standards. If you have any questions as to whether some action would be acceptable under the Academic Honor Principle, please speak to me beforehand.

EXPECTATIONS

Mathematics requires active participation.

Before each class period, please read the assigned section and arrive ready to share what you have learned and what remains confusing. Class meetings will involve lecture and other activity in a variety of formats, and you will get the most out of each class day if you arrive ready to ask questions.

In all settings, collaborate thoughtfully and ask questions respectfully: everyone should be able to participate.

GRADING

Your achievement in the course will be assessed through:

- (1) Weekly homework (40%)
- (2) Takehome midterm exam (25%)
- (3) Final exam (35%)

HOMEWORK

The homework assignments will be posted on the course webpage. Late homework is not accepted (absent exceptional circumstances). However, since everyone has a bad week, your lowest written homework grade will be dropped.

Standard weekly homework assignments will be typically due on Wednesdays. Please refer to the course webpage for links and further information.

STUDENT ACCESSIBILITY NEEDS

Students with disabilities who may need disability-related academic adjustments and services for this course are encouraged to see me privately as early in the term as possible. Students requiring disability-related academic adjustments and services must consult the Student Accessibility Services office (205 Collis Student Center, 646-9900, Student.Accessibility.Services@Dartmouth.edu).

Once SAS has authorized services, students must show the originally signed SAS Services and Consent Form and/or a letter on SAS letterhead to me. As a first step, if you have questions about whether you qualify to receive academic adjustments and services, you should contact the SAS office. All inquiries and discussions will remain confidential.

MENTAL HEALTH

The academic environment at Dartmouth is challenging, our terms are intensive, and classes are not the only demanding part of your life. There are a number of resources available to you on campus to support your wellness, including your:

- Undergraduate Dean (<http://www.dartmouth.edu/~upperde/>);
- Counseling and Human Development (<http://www.dartmouth.edu/~chd/>); and the
- Student Wellness Center (<http://www.dartmouth.edu/~healthed/>).

RELIGIOUS OBSERVANCES

Some students may wish to take part in religious observances that occur during this academic term. If you have a religious observance that conflicts with your participation in the course, please meet with me before the end of the second week of the term to discuss appropriate accommodations.

SYLLABUS

A full schedule is available on the course webpage.