

MAT 401 Polynomial equations and Fields

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Spring, 2019

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Office Hours: W 10am Class Hours: M 6-7pm W 3-4:15pm
Location: the 10th floor of Huron Class Room: MC 102

Course Description

This is a first course on ring and Galois theory. Topics in this course include: Commutative rings; quotient rings. Construction of the rationals. Polynomial algebra. Fields and Galois theory: Field extensions, adjunction of roots of a polynomial. Constructibility, trisection of angles, construction of regular polygons. Galois groups of polynomials, in particular cubics, quartics. Insolvability of quintics by radicals.

Textbook

The book we are going to use for this course is Joseph Gallian's Contemporary Abstract Algebra. As an additional material there is Abstract Algebra by David S. Dummit, Richard M. Foote it is much more detailed but maybe a bit dry if you see the topic for the first time.

Prerequisites/Corequisites

Prerequisite: MAT301H1. Exclusion: MAT347Y1.

Course Structure

In order to regular feedback to students during the course we will have eight homeworks, two one hour in-class tests and one two hour midterm.

Tests

All the tests in this course are closed-books, i.e. there are no any aids allowed.
In-class test 1 will be on January 28 at 6-7pm in MP102;
Midterm will be on February 15 at 4-6pm in MS 2170;

In-class test 2 will be on March 11 at 6-7pm in MP102;
Final exam date and place is to be determined.

Grading Scheme

The grade for this course will count the assessments using the following proportions:

- 25% of your grade will be determined by homeworks
- 5% of your grade will be determined by in-class test 1
- 10% of your grade will be determined by in-class test 2
- 20% of your grade will be determined by a Midterm
- 40% of your grade will be determined by the final exam.

The final grade might be curved dependent on overall class scores at the end of the semester. Any curve will only increase your mark.

Course Policies

Missing Term Tests

If you have a legitimate conflict with the term test, please notify the instructors as soon as possible. Missing a test without a valid reason will result in a grade of 0 for that test. There will be no make-up test for the final exam. The following policies apply for missing a test:

You must submit both an electronic copy and a hard copy of a University of Toronto Verification of Student Illness or Injury form: <http://www.illnessverification.utoronto.ca/>. The electronic copy should be submitted within 3 business days after the date of the midterm/quiz, and a hard copy the next available office hours. The form must have all the required fields properly filled out and it must list the doctor's CSPO number.

The form must clearly state that, on the date of the exam you were unable to write. It is expected that, except in extreme circumstances, you will have met your doctor on the date of the exam. Illness before the exam is not sufficient grounds for not writing the exam, nor is the claim that you would have performed sub-optimally. The form cannot just report that you told the doctor after-the-fact that you were previously ill. The form must be original and completed by a qualified medical doctor (not an acupuncturist, chiropractor or other health care professional).

Once you submit your form, it will be reviewed before it is accepted. The review process may include following up with your doctor, your college registrar or the undergraduate chair of the math department. It is an academic offence to feign illness to miss a midterm. If your illness or injury is accepted your test weight will be shifted to the final exam.

Academic Resources

1. Accessibility Needs: The University of Toronto is committed to accessibility. If you require accommodations for a disability, or have any accessibility concerns about the course, the classroom or course materials, please contact Accessibility Services <https://www.studentlife.utoronto.ca/> as soon as possible.

2. Writing and English Language Instruction: For information on campus writing centres and writing courses, please visit <http://www.writing.utoronto.ca/>.

3. Other Resources

ArtSci Student Support Services: <http://www.artsci.utoronto.ca/current/advising/services>.

Student Life Programs and Services: <http://www.studentlife.utoronto.ca>.

Academic Success Centre: <http://www.studentlife.utoronto.ca/asc>.

Health and Wellness Centre: <http://www.studentlife.utoronto.ca/hwc>.

Good 2 talk (a helpline for post-secondary students): <http://www.good2talk.ca/>.

Academic Honesty Policy

In addition to skills and knowledge, University of Toronto aims to teach students appropriate ethical and professional standards of conduct. The Academic integrity exists to remind the students of their obligation to uphold the highest standards of professional and ethical honesty and respect in all forms of interaction so as to ensure that the U of T degree that you earn will be valued as a true indication of your individual academic achievement, and will continue to receive the recognition it deserves. The University of Toronto's code of behaviour on academic matters can be found here: <http://www.governingcouncil.utoronto.ca/policies/behaveac.htm>.

It is the rule book for academic behaviour at the U of T, and you are expected to know the rules. You may also want to consult: <http://www.artsci.utoronto.ca/osai/students>.

The University of Toronto treats cases of academic misconduct very seriously. All suspected cases of academic dishonesty will be investigated following the procedures outlined in the Code. The consequences for academic misconduct can be severe, including a failure in the course and a notation on your transcript. If you have any questions about what is or is not permitted in this course, please do not hesitate to contact me. If you have questions about appropriate research and citation methods, seek out additional information from me, or from other available campus resources like the U of T Writing Website. If you are experiencing personal challenges that are having an impact on your academic work, please speak to me or seek the advice of your college registrar.