

Rings and Fields Math3158A, Winter 2014

Instructor: Dr. Steven Wang, 4368HP
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Lectures: Tuesday, Thursday, 2:35am - 3:55pm, Tory Building 217

Tutorials: Thursday, 4:05pm - 5:25pm, SA 314.

Office hours: Monday, Wednesday 1:30pm-2:30pm.

Recommended Textbooks:

“*Algebra.*”, by Michael Artin, Prentice Hall, 2nd edition, 2010.

“*Galois Theory*”, by David A. Cox, Wiley, 2nd edition, 2012.

“*Algebra with Galois Theory*”, by Emil Artin, New York University, American Mathematical Society, 2007.

“*Field Theory and Galois Theory*”, by Steven H. Weintraub, Universitext, Springer Science & Business Media, Inc., 2006.

“*Fields and Galois Theory*”, by John M. Howie, Springer Undergraduate Mathematics Series 2006.

Prerequisites: MATH 2100 (Minimum Grade of C-), or permission of the School.

Course Objective: The purpose of this course is to introduce students Galois theory of fields extensions. List of topics include algebraic and transcendental elements, minimum polynomials, symbolic root adjunction, degree of a field extension, multiplicativity of degree, constructions with a compass and straightedge, homomorphism of field extensions, finite fields, Frobenius map, counting irreducible polynomials over \mathbb{Z}_p , function fields, transcendental extensions and bases, algebraically closed fields, normal extensions, separable extensions, splitting fields, primitive elements, characterization of normal fields, action of Galois group on roots, Galois correspondence, cyclotomic fields, Kummer extensions, solvability in radicals, Galois groups. Exact topics may be revised as the term progresses.

Evaluation: Quizzes (10%), Tests (30%) and Final Examination (60 %).

Tutorials: Tutorials begin on the week of January 20, 2014. In each tutorial you will be given a 30-minute quiz.

Tests: There will be two tests held during tutorial time. Each test contributes the same marks. The total is 30%. TESTS dates: **Feb. 13 and Mar. 20.**

Final Examination: This is a three hour closed-book exam scheduled by the University and will take place sometime during the examination period (April 11-26, 2014). Students wishing to see their examination papers must make an appointment within three weeks of the examination. This privilege is for you to learn where you went wrong and is not an opportunity to argue about the marking!

Calculators: You may use only simple non-programmable, non-graphing calculators for the tests and the final examination in this course. I reserve the right to disallow any calculators.

Academic Accommodation

You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:

Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details visit the Equity Services website: http://carleton.ca/equity/accommodation/student_guide.htm

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Students with disabilities requiring academic accommodations: in this course must register with the Paul Menton Centre for Students with Disabilities (PMC) for a formal evaluation of disability-related needs. Documented

disabilities could include but are not limited to mobility/physical impairments, specific Learning Disabilities (LD), psychiatric/psychological disabilities, sensory disabilities, Attention Deficit Hyperactivity Disorder (ADHD), and chronic medical conditions. Registered PMC students are required to contact the PMC, 613-520-6608, every term to ensure that I receive your Letter of Accommodation, no later than two weeks before the first assignment is due or the first in-class test/midterm requiring accommodations. If you only require accommodations for your formally scheduled exam(s) in this course, please submit your request for accommodations to PMC by the last official day to withdraw from classes in each term. For more details visit the PMC website: http://www.carleton.ca/pmc/students/acad_accom.html