

Abstract Algebra, Math2108A, Fall 2011
Algebraic Structures with Computer Applications
Math3101A, Fall 2011

Instructor: Dr. Steven Wang, 4368HP
Tel: (613) 520 2600 (Ext. 2139)
Email: wang@math.carleton.ca
<http://www.math.carleton.ca/~wang>

Lectures: Tuesday, Thursday 4:05pm - 5:25pm, UC280

Tutorials: Wednesday, 1:35am - 2:25pm, UC378

Office hours: Tuesday 10:30am-11:30am; Thursday 3:00-4:00pm.
Other time is available by appointment.

Textbook: *Abstract Algebra: Theory and Applications*, by Thomas W. Judson. Available at <http://abstract.ups.edu/>.

Prerequisites: MATH 1102 or MATH2107, or permission of the School.

Course Objective: The purpose of this course is to introduce students several “abstract” algebraic structures: groups, rings, fields. Applications of these concepts to cryptography will also be discussed briefly.

Evaluation: Tests (45%) and Final Examination (55 %). **Important:** To pass the course you need at least 30% of term work (equivalent to 13.5% out of 45% of the total marks for tests).

Tutorials: Tutorials begin on September 21, 2011. TA’s name and office hour will be announced later.

Tests: There will be four 50 minutes tests held during tutorial time. Each test contributes 15 marks. No make up, early or delayed tests will be given. Medical excuses, other than hospitalization, will not be considered. Best 3 tests out of 4 will be counted. TESTS dates: **Sep. 28, Oct. 19, Nov. 2 and Nov. 16.**

Final Examination: This is a three hour closed-book exam scheduled by the University and will take place sometime during the examination period (Dec. 8- Dec. 21). 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!

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 Student Guide. website: <http://www2.carleton.ca/equity/ccms/wp-content/ccms-files/Student-Guide-card-09.pdf>

Religious 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 Student Guide.

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 deadlines published on PMC website. <http://www1.carleton.ca/pmc/students/dates-and-deadlines>

Note: There are TA opportunities within the School for future terms. Information on how to apply can be found on our School web page. In hiring undergraduate TAs, the priority shall first be given to students who have passed some of the following Honours courses: MATH 1002, 1102, 2000, 2100, STAT 2655, 2559 with grades A- or better.

Math2108/Math3101

Tentative lecture schedule –subject to change

Week	Dates	Sections	Topics
1	Sep. 8	1.2;	sets, mappings, equivalence relations
2	Sep. 12-16	2.1-2.2	induction and division algorithm
3	Sep. 19-23	notes	monoids and applications
4	Sep. 26-30	3.1-3.3	groups Test #1 (Sep. 28)
5	Oct. 3 - 7	4.1-4.3	cyclic groups
6	Oct. 10-14	5.1-5.2	permutation groups
7	Oct. 17-21	6.1-6.3;	cosets and Lagrange's theorem Test # 2 (Oct. 19)
8	Oct. 24-28	7.1-7.2; 9.1-9.2;	cryptology, isomorphisms
9	Oct. 31-Nov. 4	10.1-10.2; 11.1-11.2	homomorphism and factor groups Test # 3 (Nov. 2)
10	Nov. 7-10	16.1-16.2	rings, integral domain and fields
11	Nov. 14-18	16.3-16.4	ring homomorphisms and ideals maximal/prime ideals Test # 4 (Nov. 16)
12	Nov. 21-25	16.5; 17.1	applications, polynomial rings
13	Nov.28-Dec. 2	17.2-17.3; 21.1, 22.1	division algorithms, irreducible polynomials extension fields, constructions of finite fields.
14	Dec. 5		course review.