MATH 3030, Abstract Algebra
Fall/Winter 2012–2013
Toby Kenney

Instructor:	Toby Kenney Department of Mathematics and Statistics Chase Building, Room 251 email: tkenney@mathstat.dal.ca
Course Website:	`www.mathstat.dal.ca/~tkenney/3030/2012`
Office Hours:	Monday 13:30-14:30, Wednesday 13:30-14:30 & Thursday 14:30-15:30
Lectures:	MWF: 14:35-15:25 302 Dunn Building
Topics:	
Textbook:	"A First Course in Abstract Algebra" (Seventh Edition) by John B. Fraleigh published by Addison Wesley, 2003

Course Work and method of assessment

There will be a midterm exam, and a final exam in each term. The Fall midterm will be held in class on Wednesday 31st October, and should cover the material in Chapters I–III. This may be changed, depending on the progress in lectures. The final exam in the Fall term (midyear exam) will be held in class on Monday 3rd December.

There will also be (approximately) weekly homework assignments, which, for the Fall term, must be handed on Fridays (usually) in the lecture. (This might change in the Winter term). After this, I will put the model solutions on the course website. **No credit can be given for late homework.** The overall homework mark will be made up of an average of the weekly homework marks, with the exception of the worst two marks for each student.

The homework sheet will be divided into 2 sections: The *basic questions* are generally more computational, applying the general theory to examples; everyone should be able to do all these questions. The *theoretical questions* generally involve more theoretical work: usually writing out proofs or working through more involved examples. Some people may find these questions difficult at first, but by the end of the course, you should be more comfortable with this type of question. There may also be *bonus questions* which are either more challenging, or else raise interesting or important issues that are not central to this course.

Sometimes a question may be started on one sheet, but continued on the following sheet, after the relevant material has been covered. In this case, the full question will be given on the earlier sheet, but the parts that should only be attempted with the later sheet are clearly marked, and are repeated on the later sheet. For some questions, I may occasionally give out a hint, rather than a complete model solution. Revised answers to these questions may then be submitted with the following week's homework.

Grades will be determined by performance in the exams and the weekly homeworks. The midyear exam counts for 25%, the final counts for 40%, the two midterm exams count for 10% each, while the homework counts for the remaining 15%. You must pass the final exam to obtain a passing grade in the course.

Weekly Readings

Since class time is limited, I will be using it for explaining concepts and going over examples, rather than reading through the textbook. You should therefore read through the relevant sections of the textbook *before* the lecture, in order to gain the full benefit from the lecture. The sections of the textbook that will be covered each lecture will be listed on the website. This list may be updated from time to time, depending on the progress made in earlier lectures. Here is the current plan.

Week beginning	Monday	Wednesday	Friday
3rd September			Introduction
10th September	0. Sets and Relations	2. Binary Operations	3. Isomorphic Binary Structures
17th September	4. Groups	4. Groups (continued), 5. Subgroups	5. Subgroups (continued), 6. Cyclic groups
24th September	6. Cyclic groups (continued), 7. Generating sets and Cayley Digraphs	8. Groups of Permutations	8. Groups of Permutations (continued), 9.Orbits, Cycles and Alternating Groups
1st October	9. Orbits, Cycles and Alternating Groups (continued)	10. Cosets and Lagrange's Theorem	10. Cosets and Lagrange's Theorem (continued)
8th October	Thanksgiving	11. Direct Products and Finitely Generated Abelian Groups	13. Homomorphisms
15th October	13. Homomorphisms (continued),14. Factor Groups	14. Factor Groups (continued)	15. Factor Group computations and Simple Groups
22nd October	15. Factor Group computations and Simple Groups (continued)	Revision	Revision
29th October	Revision	MIDTERM EXAM	18. Rings and Fields
5th November	18. Rings and Fields (continued),19. Integral Domains	19. Integral Domains (continued)	20. Fermat and Euler's theorems
12th November	Remembrance Day	20. Fermat and Euler's Theorems (continued)	21. The Field of Quotients of an Integral Domain
19th November	21. The Field of Quotients of an Integral Domain (continued)	22. Rings of Polynomials	22. Rings of Polynomials, 23. Factorisation of Polynomials over a Field
26th November	23. Factorisation of Polynomials over a Field (continued) 24. Non-commutative Examples (if time).	Revision	Revision
3rd December	MIDYEAR EXAM	END OF LECTURES	

Sections of the text covered

We expect to cover most of the sections in the textbook, with the exception of those marked with a "†" symbol. The exception is Chapter VII, which we will mostly be skipping. We expect to cover Chapters I–IV in the Fall term, and the remaining chapters in the Winter term.

Students with disabilities

Students with disabilities are encouraged to register as quickly as possible at the Student Accessibility Services if they want to receive academic accommodations. To do so, plese 'phone 494-2836, email access@dal.ca, drop in at the Killam, G28, or visit our website at www.studentaccessibility.dal.ca.

Plagiarism

Plagiarism is a serious academic offense which may lead to loss of credit, suspension or expulsion from the university. Please read the Policy on Intellectual Honesty contained in the Calendar or on the Dalhousie web site at: http://www.registrar.dal.ca/calendar/ug/UREG.htm#12.

Dalhousie Writing Centre

Writing expectations at university are higher than you will have experienced at high school (or if you are entering a master's or PhD program, the expectations are higher than at lower levels). The Writing Centre is a Student Service academic unit that supports your writing development. Make an appointment to discuss your writing. Learning more about the writing process and discipline-specific practices and conventions will allow you to adapt more easily to your field of study.