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**COURSE INFORMATION**  
**MATH 3GR3 (Abstract Algebra) – Fall 2017**

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**I. Course Objectives.** MATH 3GR3 is a mathematical introduction to abstract algebra. Some of the topics covered in this course are groups, subgroups, normal subgroups, quotient groups, group homomorphisms, First Isomorphism Theorem for groups, symmetric and alternating groups, rings, subrings, ideals, quotient rings, ring homomorphisms, and the First Isomorphism for rings. The main objectives of this course are

- to learn the basic terminology and results concerning abstract algebra,
- to learn proof writing skills, and
- when applicable, use computer software.

The prerequisite for this course is MATH 2R03. An anti-requisite for this course is MATH 3E03.

**II. Administrative Details.**

Time Class: MWTh 1:30-2:20, Tutorial: W 12:30-1:20  
Place Class: Hamilton Hall 305 Tutorial: Hamilton Hall 305  
Instructor Adam Van Tuyl  
Office: Hamilton Hall 419  
Office Hours: TBA (see my webpage)  
Text [Required] *Abstract Algebra: Theory and Applications* by Tom Judson  
[Optional] *Mathematical Writing* by Franco Vivaldi  
Email [vantuyl@math.mcmaster.ca](mailto:vantuyl@math.mcmaster.ca)  
Web Page [http://ms.mcmaster.ca/~vantuyl/courses/2017\\_fall\\_math3GR3.html](http://ms.mcmaster.ca/~vantuyl/courses/2017_fall_math3GR3.html)

The best way to contact me is via email. The class webpage is also a good source of information. I update the webpage after every class.

**III. Course Assessment.** The final grade is composed of three components.

1. **Homework (5 assignments 4% each = 20%)** There will be five homework assignments, given biweekly. A homework assignment will be given out biweekly on Thursday, and due the following Thursday at the beginning of class. All of the homework questions (with some possible exceptions) will be taken from the text book. Three to four questions will be marked carefully, and the rest of questions will be marked for completion only.

Exercises will usually involve proving statements using the results and concepts from the corresponding section. Exercises will also be graded on how the proof has been written. These problems will be graded out of 5 points as follows:

- 5 pts A correct solution and a well written proof.
- 4 pts Most of the required ingredients are present, but there are a few technical problems with the solution.
- 3 pts Some of the needed ideas are present. However, the solution either lacks the final conclusion or has some problems in the exposition.
- 2 pts The proof has at most one or two of the needed ideas and/or the proof is poorly written.
- 1 pt An attempt to the solution has been made, but there is a major flaw in the logic of the proof, or the proof is not well written.
- 0 pts Little or no progress is made toward the solution.

**Homework Presentation:** Since an important part of this course is writing proofs, I am going to be very picky about your write up. In particular, you must use the following guidelines when writing your solutions:

- Every assignment must contain the course number, the assignment number, your name, and your student ID, and the instructor's name.
- Always include the question in your write up. In addition, please use only one side of the paper so there is room for comments.
- Homework must **always** be stapled together (no paper-clips, folding the pages, folders, etc. will be accepted). Failure to do this will result in **10 points deducted** from the assignment. (Paper-clipped assignments have the tendency to fall apart; assignments in folders make more work for the grader.)
- Late homework will have **10 points deducted** for every day (the weekend is counted as one day) that is late.
- The copying of assignments will result in a mark of 0 for both assignments.
- Homework may be handed in early by either giving it to me or by placing it under my office door. Do **not** bring your assignment to the math office.

Homework will have **10 points deducted** if any of the above style guidelines are not met.

2. **Quizzes (5 Quizzes 2% each =10%)** There will be five short quizzes tentatively scheduled for the following dates:

September 13 - Quiz 1  
 September 27 - Quiz 2  
 October 25 - Quiz 3  
 November 8 - Quiz 4  
 November 22 - Quiz 5

Each quiz will be held in the tutorial and will be approximately 20 minutes long.

3. **Exams (2 Midterms 15% each = 30%, Final Exam 40%)** There will be two midterms and a cumulative final exam (2.5 hours). Both midterms will be held during class time (50 minutes). I will give more details about the tests nearer to the test dates. The tentative dates of the midterm are:

October 18, 2017 - Midterm 1  
 November 16, 2017 - Midterm 2

For all midterms and the final, you must bring your student ID. Prior to the midterm and/or final, I will inform you if a calculator will be allowed.

**IV. Class Policies.** Though attendance is not mandatory, I would appreciate the fact that you show up on time if you do decide to come to class. I highly recommend that you do come to class. Some of the topics can be quite complicated.

#### **V. Important Dates.**

Sept. 5, 2017 - First semester classes begin  
 Oct. 9-13, 2017 - Fall break (no classes)  
 Oct. 18, 2017 - Midterm 1  
 Nov. 10, 2017- Last day for canceling courses without failure by default  
 Nov. 16, 2017- Midterm 2  
 Dec. 6, 2017 - First semester classes end  
 Dec. 8-21, 2017 - Final Exams

*A friendly piece of advice:* do not book your plane ticket home until you are certain about the exam schedule. A flight is not an acceptable excuse for missing an exam.

## OFFICIAL McMASTER POLICIES

**1. Policy on Academic Ethics.** You are expected to exhibit honesty and use ethical behaviour in all aspects of the learning process. Academic credentials you earn are rooted in principles of honesty and academic integrity.

Academic dishonesty is to knowingly act or fail to act in a way that results or could result in unearned academic credit or advantage. This behaviour can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: "Grade of F assigned for academic dishonesty"), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various types of academic dishonesty please refer to the Academic Integrity Policy, located at:

<http://www.mcmaster.ca/academicintegrity/>

The following illustrates only three forms of academic dishonesty: (1) plagiarism, e.g. the submission of work that is not one's own or for which other credit has been obtained. (2) improper collaboration in group work, and (3) copying or using unauthorized aids in tests and examinations.

**2. Policy regarding missed work.** If you have missed work, it is your responsibility to take action.

If you are absent from the university for medical and non-medical (personal) situations lasting fewer than 3 days, you may report your absence, once per term, without documentation, using the McMaster Student Absence Form (MSAF). Please see

[http://academiccalendars.romcmaster.ca/content.php?catoid=13&navoid=2208#Requests\\_for\\_Relief\\_for\\_Missed\\_Academic\\_Term\\_Work](http://academiccalendars.romcmaster.ca/content.php?catoid=13&navoid=2208#Requests_for_Relief_for_Missed_Academic_Term_Work)

Absences for a longer duration or for other reasons must be reported to your Faculty/Program office, with documentation, and relief from term work may not necessarily be granted. **In Math 3GR3, the percentages of the missed work will be transferred to the final examination.** Please note that the MSAF may not be used for term work worth 25% or more, nor can it be used for the final examination.

In the event of an absence for medical or other reasons, students should review and follow the Academic Regulation in the Undergraduate Calendar Requests for Relief for Missed Academic Term Work. Please note these regulations have changed beginning Fall 2015.

**3. Student Accessibility Services.** Students who require academic accommodation must contact Student Accessibility Services (SAS) to make arrangements with a Program Coordinator. Academic accommodations must be arranged for each term of study. Student Accessibility Services can be contacted by phone 905-525-9140 ext. 28652 or e-mail [sas@mcmaster.ca](mailto:sas@mcmaster.ca). For further information, consult McMaster University's Policy for Academic Accommodation of Students with Disabilities.

**4. Important Message.** The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.