

## PMATH 347 – Fall 2017

### Groups and Rings

Instructor: Rahim Moosa	Lectures: MWF 9:30–10:20 RCH 204
Email: rmoosa@uwaterloo.ca	Office Hours: Tuesdays 10 – 12
Phone: 519-888-4567 x32453	Midterm: Oct. 27, 7:30–9pm, QNC 2502
Office: MC 5018	Final Exam: TBA, Dec. 7–21

TAs: Christopher Hawthorne	Renzhi Song
Email: cdchawth@uwaterloo.ca	r2song@uwaterloo.ca
Phone: 519-888-4567, ext. 35574	519-888-4567, ext. 33910
Office: MC 5321	MC 5013

**Objective:** This course is an advanced-level introduction to groups, rings and some of the theory underlying their structure. In group theory students will be exposed to examples of finite groups, group actions, quotient groups, the isomorphism theorems, and the fundamental theorem of finite abelian groups. In ring theory the focus, beyond the foundational material, will be on factorization properties in integral domains in general and in polynomial rings in particular. Upon completion of this course, students will be prepared to take PMATH 348, Fields and Galois Theory.

**Marking scheme:** Homework 25%, Midterm Test 10%, Final Exam 65%

**Text:** There is no required book for the course, but I will for the most part follow *Abstract Algebra* by Dummit and Foote, 3rd ed., John Wiley and Sons, 2004. A copy is available at the reserve desk in the Davis Center Library.

**Homework Assignments:** There will be 8 – 10 short homework assignments, assigned on Fridays and due on the Friday of the following week. Assignments must be turned in by the time I leave the lecture room at the end of Friday’s lecture. Late assignments will be marked only at my discretion, and always incurring a penalty. I will drop the lowest assignment mark for each student.

**Web:** This course does NOT have a web page, assignments will be handed out on paper in class.

Academic Integrity: In order to maintain a culture of academic integrity, members of the University of Waterloo community are expected to promote honesty, trust, fairness, respect and responsibility.

[Check [www.uwaterloo.ca/academicintegrity/](http://www.uwaterloo.ca/academicintegrity/) for more information.]

Grievance: A student who believes that a decision affecting some aspect of his/her university life has been unfair or unreasonable may have grounds for initiating a grievance. Read Policy 70, Student Petitions and Grievances, Section 4, <http://www.adm.uwaterloo.ca/infosec/Policies/policy70.htm>. When in doubt please be certain to contact the department's administrative assistant who will provide further assistance.

Discipline: A student is expected to know what constitutes academic integrity to avoid committing academic offenses and to take responsibility for his/her actions. A student who is unsure whether an action constitutes an offense, or who needs help in learning how to avoid offenses (e.g., plagiarism, cheating) or about "rules" for group work/collaboration should seek guidance from the course professor, academic advisor, or the undergraduate associate dean. For information on categories of offenses and types of penalties, students should refer to Policy 71, Student Discipline, <http://www.adm.uwaterloo.ca/infosec/Policies/policy71.htm>. For typical penalties check Guidelines for the Assessment of Penalties, <http://www.adm.uwaterloo.ca/infosec/guidelines/penaltyguidelines.htm>.

Appeals: A decision made or penalty imposed under Policy 70, Student Petitions and Grievances (other than a petition) or Policy 71, Student Discipline may be appealed if there is a ground. A student who believes he/she has a ground for an appeal should refer to Policy 72, Student Appeals, <http://www.adm.uwaterloo.ca/infosec/Policies/policy72.htm>.

Note for students with disabilities: The Office for Persons with Disabilities (OPD), located in Needles Hall, Room 1132, collaborates with all academic departments to arrange appropriate accommodations for students with disabilities without compromising the academic integrity of the curriculum. If you require academic accommodations to lessen the impact of your disability, please register with the OPD at the beginning of each academic term.