

Course Outline

MATH 312: Abstract Algebra I [12232]

Instructor(s)

Lecturer Dr. Heath Emerson

Research Area Operator algebras and Noncommutative Geometry

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General Course Information

Number of Units 1.5

Pre-requisites MATH 212 or MATH 233C, and one of: MATH 110, 133, 211, 233A,

Class Meetings

Mondays and Thursdays, 10:00-11:20, in DSB C108.

Office Hours and Assistance

Mondays and Thursdays 8:00-9:00

The Mathematics & Statistics Assistance Centre is a large space where students can go to work, on their own or in groups, and to discuss math & stats problems. The Centre is staffed with talented Teaching Assistants who are happy to discuss primarily first and second year course material with you. Please see <http://www.math.uvic.ca/~msassist/index.html> for more information.

Math Club Students in Undergraduate Mathematics and Statistics (SUMS) was founded in 2014 as the reincarnation of a previous undergraduate course union that had been inactive for a few years. Please see <http://www.uvic.ca/science/math-statistics/current->



students/undergraduate/sums/index.php for more information.

Course Materials and Online Resources

Textbook *Contemporary Abstract Algebra (9th ed.)*, by Joseph A. Gallian.

Specific Topics

Math 312 is an introduction to some important abstract concepts in algebra, especially the idea of a quotient group (or ring). Students will have already met the idea of an abstract group in Math 212 or Math 233C. In Math 312 will discuss subgroups, normal subgroups, and quotient of a group by a normal subgroup, also called a *factor group*, and the classification of finite abelian groups (up to about the end of Chapter 11 in the text.) We will then introduce *rings*, the simplest kinds of algebraic structures having not just one but two algebraic operations: an abelian group operation, and a (possibly non-abelian) multiplication operation. As time permits, we will study the basic examples (e.g. polynomial rings), integral domains, ideals, and factor rings.

Evaluation and Grading

Your final percentage grade will be computed according to the following scheme.

Homework Assignments	Midterm	Final Exam
4-5	Oct. 22	TBA
30%	20%	50%

Missing work

No late assignments will be accepted except in case of illness, in which case a doctor's note will be required. Midterms missed by illness also require a doctor's note. If a midterm is missed due to illness, the missing 20 points will be awarded half on the basis of cumulative homework score, and half on the basis of the Final Exam score.



Accessibility Students with diverse learning styles and needs are welcome in this course. In particular, if you have a disability/health consideration that may require accommodations, please feel free to approach me and/or the Centre for Accessible Learning (CAL) as soon as possible. The CAL staff are available by appointment to assess specific needs, provide referrals and arrange appropriate accommodations <https://uvic.ca/cal>. The sooner you let us know your needs the quicker we can assist you in achieving your learning goals in this course.

Grading Percentage scores will be converted to letter grades according to the university-wide standard table

(Undergraduate: <http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/grading.html#>
Graduate: <http://web.uvic.ca/calendar2016-09/grad/academic-regulations/grading.html#>)

Final Examination Off-schedule final examinations (i.e., deferred examinations) are given only in accordance with the university policy as outlined in the Calendar. If you are unable to write a final examination due to illness, accident or family affliction, please refer to the following webpages for detailed instructions how to proceed: <http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/concessions.html#>
Students are strongly advised not to make plans for travel or employment during the final examination period as special arrangements will not be made for examinations that conflict with such plans.

Supplemental Examinations. The Department of Mathematics and Statistics does not award 'E' grades or offer Supplemental Examinations in any of its courses.

Policies and Ethics

Attendance The university Calendar states 'Students are expected to attend all classes in which they are enrolled.' Our courses are conducted on that basis. If you miss an announcement (information concerning midterms, corrections to assignment, etc.) because you did not attend class, you must accept the consequences of not having learned of the change. (see <http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/attendance.html#>).

Guidelines on Religious Observances Where classes or examinations are scheduled on the holy days of a religion, students may notify their instructors, at least two weeks in advance, of their intention to observe the holy day(s) by absenting themselves from classes or examinations. Instructors will provide reasonable opportunities for such students to make up work or missed examinations.

Academic Integrity Academic integrity is intellectual honesty and responsibility for academic work that you submit individual or group work. It involves commitment to the values of honesty, trust, and responsibility. It is expected that students will respect these ethical values in all activities related to learning, teaching, research, and service. Therefore, plagiarism and other acts against academic integrity are serious academic offenses.

The responsibility of the institution

Instructors and academic units have the responsibility to ensure that standards of academic honesty are met. By doing so, the institution recognizes students for their



hard work and assures them that other students do not have an unfair advantage through cheating on essays, exams, and projects.

The responsibility of the student

Plagiarism sometimes occurs due to a misunderstanding regarding the rules of academic integrity, but it is the responsibility of the student to know them. If you are unsure about the standards for citations or for referencing your sources, ask your instructor. Depending on the severity of the case, penalties include a warning, a failing grade, a record on the students transcript, or a suspension.

It is your responsibility to understand the University's policy on academic integrity:

<http://web.uvic.ca/calendar2016-09/undergrad/info/regulations/academic-integrity.html#>

How to Succeed in This Course

Students must follow the text with attention, the lectures support the textbook and are intended as a discussion around material introduced there. The text provides many exercises, and it is recommended that the students work on them as much as possible, to gain facility with the techniques.

