**University of Manitoba**
**Faculty of Science**
**Department of Mathematics**

# 1   Course Details

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| **Course Title & Number** | MATH 3322 A01: Algebra 3 |
| **Number of Credit Hours** | 3 |
| **Class Times** | MWF 11:30-12:20 MH 419 |
| **Course Website** | http://server.math.umanitoba.ca/~claya/math3322_2018.html |

# 2   Instructor Contact Information

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|---:|:---|
| **Instructor(s) Name** | Adam Clay |
| **Office Location** | 473 Machray Hall |
| **Office Hours or Availability** | Thursdays 8:30am-11:20am, by appointment if necessary |
| **Office Phone Number** | 204-474-6849 (Not recommended) |
| **Email** | Adam.Clay@umanitoba.ca (Recommended) |

# 3   Required material

There is no required textbook for this course, however most topics covered will be associated with sections of either:

1. Algebra by Thomas W. Hungerford,

2. Abstract Algebra by Dummit and Foote,

3. Abstract Algebra by Beachy and Blair.

# 4   Course Outline

We will do our best to follow the detailed course description circulated by the math department. This means we will roughly cover:

- Group theory: Direct products (internal and external), free products and free groups, group presentations, nilpotent groups, composition series and the Jordan-Holder theorem.

- Ring theory: Non-commutative rings, ideals and homomorphisms, Noetherian and Artinian rings and the Hilbert Basis theorem.

- Field theory: Algebraically closed fields, separable polynomials, splitting fields, normal extensions, roots of unity, algebraic and transcendental extensions, Galois theory, extensions by radicals and the general equation of degree $n$.

We will not necessarily follow these topics exactly (or in the order listed above), and the books/resources associated with each topic will not be decided in advance, so it is important to come to all lectures.

# 5 Course Evaluation Methods

There will be five equally weighted assignments and a final exam. The assignments will be due no earlier than the dates indicated below, but the due dates may be adjusted slightly depending on the pace of the course. The assignment questions will be posted on the course website at least two weeks in advance of the assignment due date.

| Due Dates | Assessment Tool | Value of Final Grade |
|---|---|---|
| Jan 22, Feb 5, Feb 26, March 19, April 6 | Assignments | 60% |
| TBA | Final Exam | 40% |

# 6 Grading

The following letter grade cutoffs are preliminary and may be adjusted downwards at the end of the course (e.g. an A+ may become 90 and above).

| Letter Grade | Minimum percentage to guarantee | Final Grade Point |
|---|---|---|
| A+ | 95 | 4.5 |
| A | 86 | 4.0 |
| B+ | 80 | 3.5 |
| B | 72 | 3.0 |
| C+ | 65 | 2.5 |
| C | 60 | 2.0 |
| D | 50 | 1.0 |

# 7 Assignment Grading Times

Graded assignments will always be returned before the next assignment is due, provided they are not submitted late. Late assignments will be delayed in their grading.

# 8 Policy on missed or late assignments, quizzes, test

Assignment due dates are flexible, within reason. To be explicit: Every student has 10 "flex days" that they can use throughout the term as they see fit. By this I mean that if assignment $i$ is late by $n_i > 0$ days, then you are restricted to

$$n_1 + n_2 + n_3 + n_4 + n_5 \leq 10.$$

Once a student's flex days are used up, late assignments will receive a score of 0.

# 9  Course Technology

The main resource for this class is the website:

http://server.math.umanitoba.ca/~claya/math3322_2018.html. We will not be using UM learn.

It is the general University of Manitoba policy that all technology resources are to be used in a responsible, efficient, ethical and legal manner. The student can use all technology in classroom setting only for educational purposes approved by instructor and/or the University of Manitoba Student Accessibility Services. Student should not participate in personal direct electronic messaging / posting activities (e-mail, texting, video or voice chat, wikis, blogs, social networking (e.g. Facebook) online and offline "gaming" during scheduled class time. If student is on call (emergency) the student should switch his/her cell phone on vibrate mode and leave the classroom before using it. (© S Kondrashov. Used with permission)

# 10  Recording Class Lectures

Adam Clay and the University of Manitoba hold copyright over the course materials, presentations and lectures which form part of this course. No audio or video recording of lectures or presentations is allowed in any format, openly or surreptitiously, in whole or in part without permission Adam Clay. Course materials (both paper and digital) are for the participant's private study and research.

# 11  Student Accessibility Services

If you are a student with a disability, please contact SAS for academic accommodation supports and services such as note-taking, interpreting, assistive technology and exam accommodations. Students who have, or think they may have, a disability (e.g. mental illness, learning, medical, hearing, injury-related, visual) are invited to contact SAS to arrange a confidential consultation.

Student Accessibility Services http://umanitoba.ca/student/saa/accessibility/
520 University Centre
204 474 7423
Student_accessibility@umanitoba.ca

# 12  Academic Integrity

The Department of Mathematics, the Faculty of Science and the University of Manitoba all regard acts of academic dishonesty in quizzes, tests, examinations or assignments as serious offences and may assess a variety of penalties depending on the nature of the offence.

Acts of academic dishonesty include bringing unauthorized materials into a test or exam, copying from another student, plagiarism and examination personation. Students are advised to read section 7 (Academic Integrity) and section 4.2.8 (Examinations: Personations) in the

General Academic Regulations and Requirements of the current Undergraduate Calendar. Note, in particular, that cell phones and pagers are explicitly listed as unauthorized materials, and hence may not be present during tests or examinations.

Penalties for violation include being assigned a grade of zero on a test or assignment, being assigned a grade of "F" in a course, compulsory withdrawal from a course or program, suspension from a course/program/faculty or even expulsion from the University. For specific details about the nature of penalties that may be assessed upon conviction of an act of academic dishonesty, students are referred to University Policy 1202 (Student Discipline Bylaw) and to the Department of Mathematics policy concerning minimum penalties for acts of academic dishonesty.

All students are advised to familiarize themselves with the Student Discipline Bylaw, which is printed in its entirety in the Student Guide, and is also available on-line or through the Office of the University Secretary. Minimum penalties assessed by the Department of Mathematics for acts of academic dishonesty are available on the Department of Mathematics web-page.