

Ring Theory

Course: MATH 4320 (Undergraduate), MATH 6321 (Graduate)

Semester: Fall 2023

Instructor: Yorck Sommerhäuser

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Class meetings: Tuesday, Thursday 10:30 am–11:45 am, HH 3015

Office hours: Monday 11:15 am–12:15 pm, Tuesday 12:15 pm–1:15 pm, Thursday 12:15 pm–1:15 pm, Friday 11:15 am–12:15 pm, and by appointment.

Textbook: B. Farb/R. K. Dennis: Noncommutative algebra, Grad. Texts Math., Vol. 144, Springer, Berlin, 1993 (required resource)

Course description: The course discusses factorization in integral domains, the structure theorem for finitely generated modules over a principal ideal domain, artinian and noetherian rings, Wedderburn–Artin theory, Jacobson radical theory, prime and primitive rings, perfect and semiperfect rings, as well as injective, projective and flat modules.

Coverage: We cover at least Chapters 0, 1, 2, and 5 from the textbook. Time permitting, additional chapters may be covered. For topics not treated in the textbook, handouts from other sources will be provided.

Examinations: There will be a midterm examination and a comprehensive final examination. The midterm examination takes place on Tuesday, October 17, during regular class time in our usual classroom. The final examination takes place during the examination period from December 7 to December 15 at a time and in a room determined by the registrar's office.

Homework: Beginning Tuesday of the second week, a weekly exercise sheet will be handed out. This has to be submitted in class on the following Tuesday. There will be no exercise sheet during the week of the midterm examination and no exercise sheets during the last two weeks of the semester. In addition, a reading assignment from the textbook will be given in almost every lecture.

Writing assignments: To distinguish the graduate course from the undergraduate course, the graduate course will have two additional writing assignments. They will be based on chapters of the textbook that were not covered in class and should be written as an essay of about five to ten pages. They must not repeat the textbook verbatim, but rather be independent expositions without literal quotations. The precise description of the first writing assignment will be given out on Thursday, October 19, and the precise description of the second writing assignment will be given out on Thursday, November 16.

Policies: Eating, drinking, and smoking is not permitted in the classroom. You are expected to be present at every class meeting, from the beginning to the end. The use of electronic devices, especially cellphones, calculators, and laptop computers, is not permitted without explicit permission of the instructor. Electronic devices have to be turned off completely.

Memorial University accommodates students with disabilities and demands academic integrity. The corresponding university policies can be found at <http://www.mun.ca/policy/site/policy.php?id=239> and in the Academic Calendar in Paragraph 6.12, respectively.

Prerequisite: MATH 3320 (Abstract Algebra) or equivalent

Marking weights:

Homework:	25 %
Midterm examination:	25 %
Final examination:	50 %