

## UBC MATH 323, Winter 2015 Term 2: *Rings and Modules*

**Instructor:** Miljan Brakocevic, first name at math dot ubc dot ca

**Time/Place:** Tue/Thu 9:30-11:00, in BUCH A202

**Office Hours:** Tue 16:00-17:00, Thu 14:00-15:00 in LSK 300C, or by appointment.

**Course Web:** <http://www.math.ubc.ca/~miljan/math323>

**Textbook:** There is no strictly required textbook for this course. We will post lecture notes. However, a book that we will often refer to is:

*Abstract Algebra* by D. S. Dummit and R. M. Foote.

**Description:** We will cover approximately Chapters 7–10 and 12 of the textbook. The first half of the course will focus on rings. We will talk about ideals and quotient rings, and then about important classes of rings, such as principle ideal domains (PIDs) and unique factorization domains. Polynomial rings will be an important example. In the second half of the course, modules will be introduced. We will talk about torsion modules and free modules, and discuss submodules, direct sums, and time permitting, tensor products of modules. The course will end with classification of modules over a PID, and its applications, in particular, to classification of finite Abelian groups, and to Jordan canonical form of a linear operator.

**Timeline:** The course runs from Jan 4 to Apr 8, 2016. The last day to withdraw without a W standing is Jan 18 and the last day to withdraw with a W standing Feb 12. The exam period is April 12-27, 2016.

**Grading:** Your final course mark will be a **maximum** of the following two schemes:

- Homework 20% + Midterm 30% (**Thu, Feb 25** in class) + Final Exam 50%
- Homework 20% + Midterm 10% (**Thu, Feb 25** in class) + Final Exam 70%

**Policies:** Missing a midterm or submitting homework late normally results in a mark of 0. Exceptions may be granted in two cases: prior consent of the instructor or a medical emergency. In the latter case, the instructor must be notified within 48 hours of the missed item, and presented with a doctor's note immediately upon the student's return to UBC. **The midterm is fixed for Thursday, Feb 25 in class and no make-up midterm will be given.**

**Homework:** There will be a weekly homework assignment **due each Thursday at the end of lecture, starting from Thursday, Jan 14.**

You are allowed and even encouraged to collaborate on homework, but it is definitely not acceptable to copy someone's solution, or to ask for a solution without having tried the problem yourself. Whether you collaborate or not, you have to turn in your own assignment, with the solution to every problem written by yourself, expressing your own understanding of each problem. Identical solutions will be noticed, and treated as cheating. **No e-mail submission is allowed.**

**Academic Integrity:** The UBC official policy on academic misconduct is described here:

<http://www.calendar.ubc.ca/vancouver/index.cfm?tree=3,54,111,0>