Mathematics MT216
Introduction to Abstract Mathematics
Fall 2013

Instructor: Eli Grigsby
                        357 Carney
                        grigsbyj@bc.edu

Course Meetings: (Section 1) MWF 10-11
                        (Section 2) MWF 11-12
                        Stokes 131N

Office hours: M 12:30-1:30, W 2:30-3:30, Th 2:30-3:30
(357 Carney)   or by appointment

Course Outline: The primary goal of this course is to learn how to read and write mathematical proofs. Along the way, we will gain exposure to as much cool and useful mathematics as possible. Topics covered will include:

- Standard methods of proof (induction, contradiction)
- Number theory and arithmetic (binomial theorem, prime decomposition, divisibility, Euclid's algorithm, modular arithmetic)
- Elementary set theory (logic, functions, cardinality)
- Other topics, as time permits

Course Material: We will primarily follow the course notes (in PDF form) entitled *Introduction to Abstract Mathematics* prepared by Professors Gross and Howard. These notes, as well as other useful reference materials (e.g., Thomas W. Judson's *Abstract Algebra: Theory and Applications* and Michael Hutchings' *Introduction to Mathematical Arguments*) are available on the BB vista site.

All additional course handouts, announcements, homework and reading assignments, exam review problems, etc. will be made available on the BB vista site as the semester progresses. The calendar on the BB vista site will warn you of reading assignments (*note that all assigned reading is fair game for the exams, whether explicitly mentioned in class or not*), homework assignments, upcoming exams, etc. Please check in frequently.

Homework: The only way to get comfortable writing proofs is to practice as much as possible. I will assign frequent homework, with the first assignment due Friday, September 13. **Homework in this class must be typeset**. Microsoft Office, Open Office, or similar word processors are acceptable, but not (by a long shot) the best way to type mathematics. I strongly suggest that you install some version of LaTeX on your computer and learn how to use it.

Macintosh users can download MacTeX at http://www.tug.org/mactex. Windows users can download MikTeX at `http://miktex.org`.

There are many useful resources for learning LaTeX. One of my favorites is *The Not So Short Introduction to LaTeX*, available at `http://tobi.oetiker.ch/lshort/lshort.pdf` and also on the BB vista site. The Wiki entry for LaTeX has links to many other introductory articles, including an excellent Wikibook

at `http://en.wikibooks.org/wiki/LaTeX`. If you have a Mac, then the compiler TEXShop, available at `http://pages.uoregon.edu/koch/texshop/` is great. LATEXit, available at `http://www.chachatelier.fr/latexit/` allows you to compile individual equations and drag/drop in other documents (though this is not a good long-term solution for HW assignments).

Once you have installed LATEXand a compiler on your computer, download the source file (HW*.tex) from the BB Vista site and edit it directly. All solution sets must be compiled, printed, and handed in at the beginning of class. I will not accept source files or solution sets submitted over e-mail.

Late homework will not be accepted for any reason. Your lowest homework score will be dropped. Do not allow computer or printer problems to prevent homework submission! Back up often.

Class participation: In addition to written homework, I will assign problems during each class that I expect you to think about outside of class. A significant portion of your homework grade for the course will be calculated based on your contribution to class discussion about these problems.

Midterms: Three 50-minute midterm exams will be held during the normal class time (in our normal classroom) on Sep. 30 (Monday), Oct. 28 (Monday), and Nov. 22 (Friday). *Makeup exams will not be offered except in extreme situations.* Please inform me as soon as possible if you must miss a midterm.

Final Examination: There will be a two-hour final exam at the end of the term. *All students must take the final at the time scheduled by the University:*

Section 1 (MWF 10-11)	9:00 AM-11:00 AM	Dec. 19 (Th)	Stokes 131N
Section 2 (MWF 11-12)	12:30 PM-2:30 PM	Dec. 18 (W)	Stokes 131N

If there is a conflict with the scheduled time, you must inform me as soon as possible. Alternate arrangements will only be made in extreme circumstances.

Calculators: No calculators will be permitted or needed for any of the exams.

Academic integrity: I strongly encourage you to work together on problem sets for the course. Talking about math is the easiest, most efficient, (and most fun!) way to learn math. However, each student must write up solutions to homework problems individually. Copying (or even paraphrasing) someone else's solutions or solutions found on-line or in a solution manual is cheating. I have a zero-tolerance policy for academic dishonesty, both in problem sets and on exams. If you are caught cheating on a problem set, you will receive a zero on the problem set. If you are caught cheating on an exam, you will be reported to the dean's office and your case reviewed by the College's Committee on Academic Integrity. This could result in failure in the course or even more severe sanctions. I encourage you to read BC's policy on academic integrity at www.bc.edu/integrity.

Grading: Homework 25%, Each Midterm 15%, Final 30%.

Accommodations: If you are a student with a documented disability seeking reasonable accommodations in this course, please contact:

- Kathy Duggan, (617) 552-8093, dugganka@bc.edu, at the Connors Family Learning Center regarding learning disabilities and ADHD, or
- Paulette Durrett, (617) 552-3470, paulette.durrett@bc.edu, in the Disability Services Office regarding all other types of disabilities, including temporary disabilities.

Advance notice and appropriate documentation are required for accommodations.