Rob Gross
MATH2216.01: Introduction to Abstract Mathematics
MWF 1PM, 205 Gasson Hall
Fall, 2022

Office: 515 Maloney Hall, 617-552-3758
Office Hours: Monday, Wednesday, and Friday 2–3 and 4–5, and by appointment.
E-mail: gross@bc.edu
Class home page: http://fmwww.bc.edu/gross/MATH2216
Alternative: https://sites.bc.edu/rob-gross/MATH2216
Texts: *MATH2216 notes*, by Benjamin Howard and Robert Gross, and *Introduction to Mathematical Arguments*, by Michael Hutchings. The texts are available at the class web site.

The goal of this course is to teach you how to read and write mathematical proofs. We will explore the language, structures, and concepts of abstract mathematics, and lay the foundations for the study of abstract algebra and real analysis. Topics will include:
- Properties of the integers
    - Induction
    - Binomial coefficients
    - The Euclidean algorithm
    - Unique prime factorization
- Equivalence relations and partitions
- Sets, functions and cardinality
- Introduction to complex numbers
- Polynomials over a field
- Other topics as time permits

## Academic Integrity

You may discuss ideas when working on homework assignments, but you should write up your solutions individually. Sharing inspiration is good; copying someone else's work is plagiarism. Any violations of the College's policy on academic integrity will be dealt with severely. For more information, see

https://www.bc.edu/content/bc-web/academics/sites/university-catalog/
policies-procedures.html#tab-academic_integrity_policies

## Homework

Homework will be assigned and collected frequently. If you wish to turn in any homework longer than one page, **you must use a stapler**. Folding the edges of the pages over is unacceptable, and paper clips are unreliable. I will be grading your homework myself, and appreciate your cooperation. I typically will distribute an answer key when homework is due, and cannot give credit for work submitted after the answers are available.

All homework submitted in this class must be typeset in some way. Google Docs, Microsoft Office, and similar word processors are acceptable, but not 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`. Macintosh and Windows users can download MikTeX at `http://miktex.org`. There is plentiful documentation included in either of those downloads, but it is buried deep in various folders. One helpful guide is *The Not So Short Introduction to LaTeX 2$_\varepsilon$*, available at `http://tobi.oetiker.ch/lshort/lshort.pdf`. The Wikipedia entry for LaTeX has links to many other introductory articles, including an excellent Wikibook at `http://en.wikibooks.org/wiki/LaTeX`. An interface called LyX is available at `http://www.lyx.org`.

As you prepare your solutions, I suggest that you store a copy on Google Drive, and also mail a copy to yourself every time you made any changes. Flash drives have been known to fail, and hard drives, particularly on laptops, are also less reliable than you might think.

## Examinations

There will be three examinations during the semester, tentatively scheduled for Wednesday, October 5; Monday, November 7; and Wednesday, December 7. The final examination for MATH2216.01 is scheduled for Wednesday, December 14, at 12:30PM. Note that this time is fixed by the Registrar, and cannot be altered.

## Grades

Homework will account for 20% of your grade. The three examinations during the semester account for 13%, 15%, and 17% respectively. The final will account for the remainder of your grade.

## Note

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 the Disability Services Office, (617-552-3470, `disabsrv@bc.edu`) regarding other types of disabilities, including temporary disabilities. Advance notice and appropriate documentation are required for accommodations.