Applied Abstract Algebra– MA 294
Summer II – 2026
June 29 – August 7

Instructor: Timothy Kohl

Office: CDS 511

E-mail: tkohl@bu.edu **(**the best way to reach me!)

Office Hours: M,W 4-5

Lecture: CAS 326 M-Th 11:00 AM - 1:00 PM

Text: *Discreet Mathematics (2^{ndh} Ed.)* – Norman L. Biggs (Oxford University Press).

Remarks: The main prerequisites for this course are the topics covered in MA 293 or any similar introductory discrete math class, namely combinatorics, set theory, and logic, as well as basic probability and number theory. In this course we shall discuss the fundamentals of group theory and ring/field theory, as well as other topics such as graph automorphisms and generating functions, with a view towards applications.

Outline of topics to be covered:
(Note: Not all sections in a given chapter are covered.)

Chapter 13 Modular Arithmetic
Chapter 20 Groups
Chapter 21 Groups of Permutations
Chapter 22 Rings, Fields and Polynomials
Chapter 23 Finite Fields
Chapter 24 Error Correcting Codes
Chapter 25 Generating Functions
Chapter 26 Partitions

Exams: During the semester there will be three exams worth 100 points each. Moreover, since the topics in this class are fairly independent of each other, each exam will cover different material. So, in particular, the third exam at the end will not be cumulative.

Homework: During the term, I will generally assign homework on a daily basis. This homework is your primary means of learning the material, even more so than the lectures. Indeed, it is only by actually working out the solutions to problems that one really learns this material. Not doing homework is a *bad* idea and will result in a poor performance in the course.

Additionally, there will be, throughout the course of the semester, 5 turn-in homework assignments, each worth 20 points, for a total possible maximum of 100 points *if you complete each perfectly.* Each turn-in assignment will generally be assigned at the end of each week and be due on the following Monday.

Grading: Your grade in the course will be based on the combined sum of 5 turn-in homework assignments, as well as the three exams, out of a maximum possible total of 400 points.

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Cheating: I consider cheating and plagiarism to be very serious offenses, and any cases of it will merit action by the University Academic Standards Committee.

Important Dates:

Exam 1: Thursday July 9
Exam 2: Thursday July 23
Exam 3: Thursday August 6

The **last lecture** will be Wednesday August 5.

Web Page: There is a web page for the course where you can find the homework assignments listed, as well as the syllabus and other materials that will be made available during the course.

The URL is: **http://math.bu.edu/people/tkohl/teaching/current/**