Flowchart of Prerequisite Classes

Prerequisite

Recommended background

Week 1

Introduction to graph theory

Topics in number theory

Continued fractions

Graph colorings

A pair of fractal curves

Factorizing Large Prime Numbers

Evolution of random graphs

Week 2

Introduction to ring theory

Dirichlet’s class number formula

Noncommutative ring theory (week 1 of 2)

What are your numbers worth?

Noncommutative ring theory (week 2 of 2)

Model theory

Finite fields and how to find them

Lights, camera, group actions!

Week 3

Introduction to group theory

Topography through Morse theory

Using the Cantor set to classify (infinite) surfaces

Kleinian groups and fractals

Finite Fourier analysis

Representation of symmetric groups

Week 4

Introduction to linear algebra

The calculus of variations

The inverse and implicit function theorems

Nowhere differentiable but continuous functions are everywhere!

Functions of a complex variable (week 1 of 2)

The Schwarzschild solution

PDEs part 1: Laplace’s equation

The derivative as a linear transformation

Introduction to analysis

The special theory of relativity

The fundamental theorem of algebra and its many proofs

Multivariable calculus crash course

Note: A prerequisite $\rightarrow$ indicates that taking A is sufficient preparation for B. Often, A covers a lot more than is necessary for B. If you already know some of the subject material of A, consult the specific prerequisites in the class description for B, or talk to the teacher of B and/or your Academic Advisor to find out if you know enough to take B.

A recommended background $\rightarrow$ indicates A is not required for B (you can take B even if you don’t know the content of A), but taking A is likely to improve your understanding of B.