DISCRETE MATH *Course outline*

1 Basic information

Instructor
Name: Dr. Vince
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Office Hours: Fridays Period 5

Course
Location: 2408
Period: Block 1
Tu (5-6), Th (B1-1)

2 Course description

This course explores mathematical structures that can be considered "discrete" (in the sense that there is a correspondence to the set of natural numbers) rather than "continuous" (in the sense that there is a correspondence to the set of real numbers). We will discuss

3 Topics

In this course, we will explore some subset of the following, subject to time constraints:

1. The language of math
2. Logic (compound statements)
3. Logic (quantified statements)
4. Elementary number theory
5. Sequences, induction, and recursion
6. Set theory
7. Functions
8. Relations
9. Counting and probability
10. Graphs and trees
11. Finite-state automata
12. Algorithm efficiency

4 Readings

There is no required textbook for this course, but you may find the following (free) resources useful:

- *Applied Discrete Structures*, A. Doerr, K. Levasseur, `https://discretemath.org/ads-latex/ads.pdf`
- *Discrete Mathematics: An Open Introduction*, O. Levin, `https://discrete.openmathbooks.org/dmoi3.html`
- *An Introduction to Proof via Inquiry-Based Learning*, D. C. Ernst, `http://danaernst.com/IBL-IntroToProof/IBLIntroToProof-MAAPressSpring2022.pdf`

5 Evaluation

Each topic will have an exercise set and will be concluded with an in-class test.