CS 2800: Discrete structures

- [http://courses.cs.cornell.edu/cs2800/wiki](http://courses.cs.cornell.edu/cs2800/wiki)
- Professor Michael George
- Today:
  - Introduction
  - Key skills overview: definitions, proofs, abstractions
  - Discrete structures overview:
    - Set, functions, relations
    - Number theory
    - Automata
    - Combinatorics
    - Probability
    - Metalogic
  - Course logistics
About Professor George

teaching 2800 for 11 semesters.
Also:

2110, 3110, 4410, 4820

use 2800 in all of these.

Math & CS (programming languages)

Also: pottery, dancing, ...
About this class

key skills:

- Definitions: every word you write should have a meaning.

- Proofs: A proof is an argument.
  - every statement is clear (well defined)
  - every statement is true
  - every statement follows from what came before (defs, other facts that have been proven, earlier steps in proof)

- Abstraction: remove details from problems, highlight & study common structure.
Topics:

- Sets, functions, relations & their properties
  - defs for infinite sets
  - different sizes of infinity
- Number theory (properties of integers)
  - modular numbers
  - cryptography
- Automata
  - models of computers
  - uncomputable functions
- Combinatorics
  - descriptors of processes
  - count # of outputs of process
- Probability
- Meta logic
Course Logistics

Lecture
- No cell phones or vertical screens.
- No crosstalk please
- Yes questions!
- Respect each other
- Feedback (forms linked on Piazza)

Discussions
- Graded on participation
- Quiz + worksheet

Homeworks
- Graded on correct/clear
- Due every two weeks (or so)