1/18-05

MATH 2020 DISCRETE MATH ~ H. VERRILL : 210 LOCKETT

OFFICE HRS: TUES & THURS : 1210 - 130 BREAK 1215 - 1255

TUE: 930 - 1100

WED: 2-4

THURS: 2-4

8-1603

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Aims of course:

- to introduce you to a range of areas of discrete mathematics
- help you learn to think like a mathematician
  - ~ cover basic logic
  - ~ develop analytical thinking
  - ~ develop algorithmic techniques
  - ~ learn proof techniques ~ proof by contradiction
    " induction

Examples of topics in discrete math:

- ~ logic
- ~ set theory
- ~ number theory, cryptography
- ~ counting, combinatorics, coding theory
- ~ game theory, election & voting theory
- ~ symmetry ~ group theory
- ~ sequences of numbers
- ~ algorithms, e.g. sorting

Some typical discrete math problems:

Q1 (counting) If you have 5 different kinds of pizza toppings, how different pizzas are there w/ 3 different toppings?

$\binom{5}{3}$ ~ 5 choose 3 = 10

$\frac{5 \times 4}{2 \times 1} = \frac{5!}{3! \times 2!}$