Intro to Discrete Math–3450:208--Summer 2017

INSTRUCTOR: Dr. Stefan Forcey EMAIL: sf34@uakron.edu
OFFICE: CAS 275 PHONE: 972-6779

OFFICE HOURS: MTuWF 11:00-12:00. Lots more by appointment!

Text and Coverage: *Discrete Mathematics with Applications* by Epp, **Fourth** edition, Cengage 2011. We will cover various sections from chapters 1 through 9 of this textbook.

Website for schedule, homework problems and announcements:
http://www.math.uakron.edu/~sf34/class_home/discrete.htm

GRADING POLICY:
1000 points possible. For each of these three categories the fraction of points you receive is the same fraction that you earn out of the total possible. So if you get a 49 out of 50 on Test 1 then you earn (49/50)*300 = 294 points.

100 pts: Homework, quizzes (10%)
600 pts: 2 Tests at 300 pts each. (60%)
300 pts: Final Exam (30%)

900 pts. guarantees an A
800 pts. guarantees a B
700 pts. guarantees a C
600 pts. guarantees a D
(+,- at my discretion)

Course Outline with dates:

- June 12: Day one.
- Chapters 1-3
- June 19: Last day to drop.
- TEST 1. (Date TBA)
- Chapter 4-8
- July 7: Last day to w/draw.
- TEST 2. (Date TBA)
- Chapters 9-11
- Final Exam. (Date TBA)
- Aug 4: Last day.

Evaluation Procedure:

- When graded, quizzes and homework will be given a grade out of ten or twenty points, where full credit will be assigned when the graded problems (if any) have correct answers with all correct work shown. Points may be subtracted for each graded problem with an incorrect answer, incorrect work, or not all work shown. The quiz/homework average will be calculated by dropping a total of 15 raw quiz points which means that I'll calculate your percentage by first adding up to 15 points back on to your raw score, limited by the maximum number of hw/quiz points possible. This will have the effect of making a 100% quiz average possible despite missing a homework/quiz.
- There will be 2 in-class closed book tests and the final exam during the semester over the material from lectures, homework and the book. No test may be taken early or late.
- **No calculators, notes, formula sheets or books may be used on the Final or any test.**

Homework may not be copied, but collaboration and research are allowed. All other work is individual. Any incidence of academic dishonesty carries a minimum penalty of a non-removable zero for that work. No active cellular phones, pagers, media players, computers or other electronic communication devices are permitted during the tests. Usage of or an attempt to use any of these devices during exams carries a minimum penalty of a non-removable zero for that exam.

Learning Outcomes for 3450:208 Introduction to Discrete Mathematics

Students are expected to be able to

- communicate mathematical results through the proper use of mathematical notation and words
- use symbolic logic and various proof-writing techniques, including Mathematical Induction
- describe the basic properties and operations of sets, functions and relations
- learn the basics of logic circuits, number systems, set theory, sequences, algorithms, and probability.

Tentative Schedule.

1.1: Variables
1.2: The Language of Sets
2.1: Logical Form and Logical Equivalence
2.2: Conditional Statements
2.3: Valid and Invalid Arguments
2.4: Application: Digital Logic Circuits
2.5: Application: Number Systems and Circuits for Addition
3.1: Predicates and Quantified Statements I
3.2: Predicates and Quantified Statements II
3.3: Statements with Multiple Quantifiers
3.4: Arguments with Quantified Statements
4.1: Direct Proof and Counterexample I: Introduction
4.2: Direct Proof and Counterexample II: Rational Numbers
4.3: Direct Proof and Counterexample III: Divisibility
4.4: Direct Proof and Counterexample IV: Division into Cases and the Quotient-Remainder Theorem
4.6: Indirect Argument: Contradiction and Contraposition
4.7: Indirect Argument: Two Classical Theorems
4.8: Application: Algorithms
5.1: Sequences
5.2: Mathematical Induction I
5.3: Mathematical Induction II
5.4: Strong Mathematical Induction and the Well-Ordering Principle for the Integers
6.1: Set Theory: Definitions and the Element Method of Proof
6.2: Properties of Sets
6.3: Disproofs, Algebraic Proofs, and Boolean Algebras
9.1: Introduction (Counting and Probability)
9.2: Possibility Trees and the Multiplication Rule
9.3: Counting Elements of Disjoint Sets: The Addition Rule
9.5: Counting Subsets of a Set: Combinations
9.7: Pascal's Formula and the Binomial Theorem
• Chapter 10 : Graphs and Trees 1
• Chapter 11 : Analysis of Algorithm Efficiency