COURSE INFORMATION FOR MATH 176
DISCRETE MATHEMATICS

Instructor	Professor Jennifer Johnson-Leung 303 Brink Hall jenfns@uidaho.edu	Office Hours: M 3:30-5pm F 1:30-2:20 Or by appointment
TA	Jiayu Yang B5 Brink Hall jiayu@uidaho.edu	Office Hours: W 12:30-2:20 F 3:30-4:30

Class Times
MWF 2:30-3:20, Renfrew 125

Text Hunter Essentials of Discrete Mathematics Fourth Edition *Inclusive Access*

Course Description

This course introduces discrete structures that are essential in mathematics and computer science as well as the mathematical language and notation necessary to work with these structures rigorously and flexibly. Class attendance and engagement are both necessary for success. We will work on exercises in class to motivate the new material. Reading and comprehension homework will be assigned after each class to reinforce the topic for the day. We will cover a wide variety of topics in the class including:

- Logic and Methods of Proof
- Sets and Functions
- Relations
- Graphs
- Recursion and Induction
- Counting methods
- Basic probability
- Introduction to algorithms

Group Tutoring

Academic Support Services will be providing group tutoring workshops for this class. These sessions will be led by an experienced tutor for this course. Dates and times will be announced in class (likely Tuesday afternoons). You are strongly encouraged to take advantage of this opportunity. In addition, there are drop in tutoring hours for Math 176 in the library and at the JEB Think Tank. You should consult them for availability of tutors who can support Math 176.

Grading Policies:

Homework: Reading assignments and homework exercises will be assigned in each class. These will be on canvas, and the submissions are due 1 hour before the next class begins. In a couple of weeks, you will be invited to form a study group for the course, and there will be several group homework assignments throughout the semester. *Collaboration on homework is allowed and encouraged, but solutions must be written up on your own and in your own words.* Late homework (outside of a possible small grace period) will not be accepted except in extenuating circumstances.

Attendance: Attendance is required and will be counted toward your final grade in the course. If you need to miss a class for any reason, email the instructor to learn what you should do to keep up for that day.

Quizzes: There will be a brief in-class quiz every Wednedesday, followed by the quiz solutions and then further instruction. Quizzes may be made up if the absence is excused, either by prior arrangement or from an illness, according to the standard UI policy (see QR code below). If you have received accommodation to have extra time on exams proctored by CDAR, you may begin the quiz prior to the class period so that you don't miss any instruction, but your exam period must overlap with the in class quiz period. Note that the quizzes are intended to take 5-7 minutes, but 15-20 minutes of class time will be allocated. Most students find that this is sufficient and choose to take the quizzes in class. These quizzes are designed as formative assessments.
Exams: There will be one midterm exam on March 6 and one final exam on December 14. The class schedule will be posted on canvas. No credit will be given for missed examinations. Exception will be made for illness.

Collaboration: You are *encouraged* to collaborate on solving the problems given as homework. However, the solutions should be written on your own and in your own words. *Clearly, there is no collaboration on quizzes or exams.* **Cheating of any type will not be tolerated and will result in a grade of F for the course**.

Point Distribution:

- Homework - 15 points
- Attendance and Participation - 5 points
- Quizzes - 40 points
- Midterm Exam - 15 points
- Final Exam - 25 points

Learning Outcomes for Math 176:

(1) Students will become better at reasoning with and solving problems involving abstract ideas in a quantitative context. In particular, students will learn to:
   - Choose among multiple potential methods for solving a given problem.
   - Distinguish similar but distinct concepts from each other.
   - Apply known concepts and procedures to novel and unexpected situations.
   - Come up with intermediate steps of simple arguments

(2) Students will learn to perform the following procedures and understand why these procedures produce correct answers:
   - Create truth tables for complex propositions.
   - Reduce logical statements to standard forms.
   - Determine the validity of a formal proof.
   - Perform basic operations on statements in predicate calculus
   - Perform basic operations on sets, functions, and relations.
   - Determine if a mathematical object satisfies a recursive definition.
   - Count the number of permutations and combinations of various types for various sets of objects.
   - Count elements of various sets using the Principle of Inclusion-Exclusion.
   - Calculate probability, expected value, and conditional probability on discrete sample spaces.
   - Write basic proofs using various techniques, including direct proof, proof by contradiction, mathematical induction, and the pigeonhole principle.

(3) Students will understand and apply properly the concepts of logical equivalence, logical implication, quantifier, set, probability, expected value, function, relation, equivalence relation, recursion, permutation, combination, .

(4) Students will communicate clearly, effectively, and in an organized fashion their solutions to problems, their reasoning, their understanding of concepts, and their understanding of procedures and their justification.

The remaining UI syllabus language on CETL's syllabus page should be considered as part of this document.