Math 2220
Discrete Mathematics
Course Syllabus

Instructor Information: Mr. Nathan Nemire

Office: Room 215

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Office Hours: MWF 2:30-2:50, Other times by appointment

Required Text: Discrete Mathematical Structures 6th Edition by Kolman, Busby, and Ross

Calculator: TI-84 is highly recommended

Prerequisites: "3" or better on AP Calculus Exam

General Description: The main objective of Math 2220 is to introduce mathematical students to Logic, methods of proof, introduction to set theory, relations, functions, algorithms, counting techniques, graph theory, and trees.

Cell Phones: Cell phones need to be silenced during class time. Ringing, vibrating, blinking, dancing, singing etc. is distracting to both the instructor and the other students.

Late Assignments: Late assignments will not be accepted.

Course Attendance and Participation: Class attendance and participation are important elements of student success. Students typically find regular attendance is necessary for success in this course. Students must make regular attendance a priority, devote significant time to studying for this course, and turn in all assignments on time.

Codes of Conduct and Academic Honesty Policy: The instructor and students in this course will adhere to the University's general Codes of Conduct defined in the BGSU Student Handbook. The Code of Academic Conduct (Academic Honesty Policy) requires that students do not engage in academic dishonesty. For details, refer to:

-BGSU Student Handbook
-Student Discipline Procedures.

Department Chair: Dr. Victor Odafe

If a student has a problem with this course, the student should first discuss the problem with the instructor. If the problem persists or is unresolved, the student should then contact the course coordinator. If the problem is still unresolved, the student should finally contact the department chair.

Dropping the Course: During the first 14 calendar days of the semester, students may drop this course with no record on their transcript. After the second week, students must follow the formal withdrawal policy. It is the students' responsibility to obtain the Add/Drop form, ask for the teacher's signature and submit it to the appropriate University office. When a student withdraws from a course, University policy dictates that a grade of "F" will be assigned.

Chapter 1-Fundamentals

- Sets
- Operations on Sets
- Sequences
- Properties of Integers
- Matrices
- Mathematical Structures

Chapter 2-Logic

- Propositions and Logical Operations
- Conditional Statements
- Methods of Proof
- Mathematical Induction
- Mathematical Statements
- Logic and Problem Solving

Chapter 3-Counting

- Permutations
- Combinations
- Pigeonhole Principle
- Elements of Probability
- Recurrence Relations

Chapter 4-Relations and Digraphs

- Product Sets and Partitions
- Relations and Digraphs
- Paths in Relations and Digraphs
- Properties of Relations
- Equivalence Relations
- Data Structures for Relations and Digraphs

Operations on Relations
Transitive Closure and Warshall's Algorithm

Chapter 5- Functions

Functions
Growth of Functions
Permutation Functions

Chapter 6-Order Relations and Structures

Posets
Lattices
Finite Boolean Algebras
Functions on Boolean Algebras

Chapter 7-Trees

Trees
Labeled Trees
Tree Searching
Undirected Trees
Minimal Spanning Trees

Chapter 8-Topics in Graph Theory

Graphs
Euler Paths and Circuits
Hamiltonian Paths and Circuits
Transport Networks
Matching Problems
Coloring Graphs

Learning Outcomes

Upon completion of this course, students will:

-Understand and apply basic set theory
-Have a foundational knowledge of proofs by induction
-Have a foundational knowledge of proofs by contradiction
-Be able to calculate permutation and combination problems, as well as decide which is appropriate to use given a real life situation
-Have an understanding of graph theory and spanning trees
-Have a background in Euler and Hamiltonian paths and circuits

Grading Scale

A	90%-100%
B	80%-89.99%
C	70%-79.99%
D	60%-69.99%
F	0%-59.99%

Homework	25%
Final Exam	25%
Tests (5)	50%
Total	100%

Homework: Homework will be assigned from each section and will be graded.

Tests: 5 tests will be given covering material from class and from the book.

Final Exam: The Final Exam will be cumulative for the entire semester.