

# Minnesota State University Moorhead

## MATH 210: Concepts from Discrete Mathematics

### A. COURSE DESCRIPTION

Credits: 3

Lecture Hours/Week: 5

Lab Hours/Week: 0

OJT Hours/Week: \*.\*

Prerequisites:

This course requires any of these four prerequisite categories

1. MATH 127 - College Algebra

Or

2. MATH 127L - College Algebra with Lab

Or

3. MSUM Math Above MATH 127

Or

4. A score of 1 on test Transfer Equivalent to MATH 127

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

Logic and truth tables, sets, mathematical induction, graphs, trees, and related topics from the field of discrete mathematics. MnTC Goal 4.

**B. COURSE EFFECTIVE DATES:** 02/01/2015 - Present

### C. OUTLINE OF MAJOR CONTENT AREAS

1. Euler and Hamilton circuits and shortest path problems
2. Graph isomorphisms and connectivity
3. Graph models and terminology
4. Mathematical induction
5. Predicates and quantifiers, including nested quantifiers
6. Propositional equivalencies
7. Propositional logic and truth tables
8. Sets and set operations
9. Trees, tree traversal, and spanning trees

### D. LEARNING OUTCOMES (General)

1. Solve problems using basic graph theory.
2. Model applied problems with graphs or trees.
3. Know the basics of set theory.
4. Determine the truth of a compound proposition using a truth table.
5. Analyze logical statements.
6. Be able to do proofs using mathematical induction.
7. Be able to compute with binary numbers.

## **E. Minnesota Transfer Curriculum Goal Area(s) and Competencies**

Goal 04 - Mathematical/Logical Reasoning

1. Illustrate historical and contemporary applications of mathematical/logical systems.
2. Clearly express mathematical/logical ideas in writing.
3. Explain what constitutes a valid mathematical/logical argument(proof).
4. Apply higher-order problem-solving and/or modeling strategies.

## **F. LEARNER OUTCOMES ASSESSMENT**

As noted on course syllabus

## **G. SPECIAL INFORMATION**

None noted