

**Fond du Lac Tribal and Community College
COURSE OUTLINE FORM**

Updated 11/25/14

Please return this form to the college vice president of academic affairs and the chairperson of the Academic Affairs and Standards Council (AASC)

1. Prepared by: _____

2. Date submitted: _____

3. Date approved: _____ Date revised 05/05/2016, 1/31/2020

4. Department/discipline: Mathematics

5. Department(s) endorsement(s): _____

(Signatures of the person(s) providing the endorsement are required.)

6. Course Title: Mathematics for Elementary Teachers

Abbreviated course title (25 characters or less): _____

7. Course Designator: MATH 8. Course Level: 1050

9. Number of Credits: Lecture 3 Lab 1

10. Control Number (on site) 35 Control Number (online) _____

11. Catalog/Course description:

The purpose of this course is to develop mathematical reasoning, problem solving, and communication through performing and interpreting experiments, thinking analytically, and incorporating practical applications that are important aspects of real world phenomena. This course is intended for the elementary education majors. (Prerequisite: MATH 1025 or instructor permission).

12. Course prerequisite(s) or co-requisite(s): Accuplacer scores/ Other courses

Prerequisite(s): MATH 1025 Introduction to Contemporary Mathematics or instructor permission.

Co-requisite: None.

13. **Course Materials** (Recommended course materials and resources. List all that apply, e.g. textbooks, workbooks, study guides, lab manuals, videos, guest lecturers).

Miller C., Heeren V., and Hornsby J., Heeren C., (2014). Mathematical Ideas, 11 th edition.

14. **Course Content** (Provide an outline of major topics covered in course)

1. The Art of Problem Solving.
2. Basic Concepts of Set Theory: Venn diagrams.
3. Numeration and mathematical systems.
4. Number theory.
5. Real numbers and their representations.
6. Patterns.
7. Probability.
8. Graph theory.
9. Data collection and Statistics

10. Rational Numbers.
11. Alternative Algorithms for all Operations.
12. Inclusion of the Anishinaabe perspective into mathematics

15. Learning Goals, Outcomes, and Assessment

At FDLTCC we have 4 Competencies Across the Curriculum (CAC) areas. They are as follows:

- A. Information Literacy (the ability to use print and/or non-print tools effectively for the discovery, acquisition, and evaluation of information)
- B. Ability to Communicate (the ability to listen, read, comprehend, and/or deliver information in a variety of formats.)
- C. Problem Solving (the ability to conceptualize, apply, analyze, synthesize, and/or evaluate information to formulate and solve problems.)
- D. Culture (knowledge of Anishinaabe traditions and culture, knowledge of one's own traditions and culture, knowledge of others' traditions and cultures, culture of work, culture of academic disciplines and/or respect for global diversity.)

Course Learning Outcomes will fulfill the identified competencies.

Course Learning Outcomes

Upon completion of this course, the student will be able to:

1. Demonstrate mastery of number sense by examining reasonableness of answers in a variety of applications. (C)
2. Recognize patterns and relationships in number theory and integers. (C)
3. Describe various algorithms for whole number operations. (C)
4. Demonstrate use of geometric modeling tools, both hands-on and computer based to investigate space and shape. (C)
5. Collect, organize, and analyze data in a wide range of applied problem situations. (C)
6. Find probability of simple and compound events. (C)
7. Compare various historical and cultural groups and their interactions with mathematics. (C, D)

16. Minnesota Transfer Curriculum (MnTC): If this course fulfills an MnTC goal area, state the goal area and list the goals and outcomes below:

See www.mntransfer.org

Goal Area(s): _____

Attachment A:

Minnesota Board of Teaching Learning Standards: 8710.3200 Subject Matter standards:

- **8710.3200 Subject Matter standards:**
 - **H3: Apply these ideas and methods in settings as diverse as the mathematics of finance, population dynamics, and optimal planning;**
 - **H3a: concepts of numerical literacy**

- **H3b:** possess number sense and be able to use numbers to quantify concepts in the students' world
 - **H3c:** understand a variety of computational procedures and how to use them in examining the reasonableness of the students' answers
 - **H3d:** understand the concepts of number theory including divisibility, factors, multiples, and prime numbers, and know how to provide a basis for exploring number relationships
- **H4: Understand the relationships of integers and their properties that can be explored and generalized to other mathematical domains;**
 - **H4c:** understand the concepts of number theory including divisibility, factors, multiples, and prime numbers, and know how to provide a basis for exploring number relationships
- **H5: Know how to use geometric learning tools such as geoboards, compass and straight edge, ruler and protractor, patty paper, reflection tools, spheres, and platonic solids**
 - **H5a:** data investigations
 - **H5b:** use a variety of conceptual and procedural tools for collecting, organizing, and reasoning about data
 - **H5c:** apply numerical and graphical techniques for representing and summarizing data
 - **H5d:** interpret and draw inferences from data and make decisions in a wide range of applied problem situations
- **H6: Help students understand quantitative and qualitative approaches to answering questions and develop students' abilities to communicate mathematically**
 - **H6a:** concepts of randomness and uncertainty
 - **H6b:** probability as a way of describing chance in simple and compound events
- **H8: Understand and apply problem solving, reasoning, communication, and connections**
 - **H8a:** mathematical perspectives
 - **H8b:** understand the history of mathematics and the interaction between different cultures and mathematics
 - **H8c:** know how to integrate technological and non-technological tools with mathematics