

Fond du Lac Tribal and Community College
COURSE OUTLINE FORM

03/19/19

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 04/13/2021, 11/10/21

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 for Transcripts (25 characters or less): _____

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

9. Number of Credits: Lecture 4 Lab _____

10. Control Number (on site) 30 Control Number (online) 25

11. Catalog/Course description:

This course provides content knowledge and instructional practices that prospective teachers will need to help K-6 students build numeracy and arithmetic knowledge via the most recent research in mathematics education. The overall objective of math education is to help each child understand mathematical concepts, establish a positive mathematical identity, build flexible reasoning, and build mathematical agency. Students will examine Carpenter's problem-type as a foundation for meeting Minnesota mathematics content standards as well as the National Council of Teachers of Mathematics standards. This course includes five (5) hours of field experience hours. (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 Math or instructor permission
Co-requisite:

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

- Boaler, J. (2015) *Mathematical Mindsets*. Wiley
- Ma, L. (2010) *Knowing and Teaching Elementary Mathematics*. Taylor & Francis

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

1. Teacher preparation for all learners in a technological society
2. Mathematics as problem solving, communicating, and reasoning
3. Mathematics for all that includes a broad range of content, a variety of contexts, and deliberate connections

4. Learning mathematics as an active and constructive process
5. Instruction based upon real world problems
6. Assessment and evaluation as a means of improving instruction and learning
7. 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.)

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

Learning Outcomes	Competencies (CAC)	Cultural Standards
Develop and compare contextualized situations from Carpenter’s Problem Type Chart with contexts that are relevant and engaging to all elementary education learners.	C, D	1
Chart and track developmental stages of solving arithmetic operations.	C, D	1
Organize raw data into frequency distributions and various graphs for analysis.	C, D	5
Describe data using measures of central tendency, variation, and position.	C, D	5
Analyze and apply implicit cultural tendencies of teachers, learners, and curriculum to increase student-led classroom discourse and interpret social and behavioral patterns, including Anishinaabeg.	C, D	7
Examine the spatial patterns and geometric	B, D	7

forms of traditional home life and social patterns of Anishinaabe people.		
Analyze and apply information to solve problems using basic skills and operations with the real number system.	C	
Analyze protocols around mathematical errors and misconceptions for primary and intermediate learners.	C	

WINHEC Cultural Standards:

1. **GIKENDAASOWIN – *Knowing knowledge*:** To develop human beings who value knowledge, learning, and critical thinking and are able to effectively use the language, knowledge, and skills central to an Ojibwe-Anishinaabe way of knowing.
2. **GWAYAKWAADIZIWIN – *Living a balanced way*:** To develop balanced human beings who are reflective, informed learners who understand the interrelatedness of human society and the natural environment, recognize the importance of living in harmony with creation, and are able to apply a systems approach to understanding and deciding on a course of action.
3. **ZOONGIDE'EWIN – *Strong hearted*:** To increase the students' capacity to live and walk with a strong heart, humble and open to new ideas and courageous enough to confront the accepted truths of history and society.
4. **AANGWAAMIZIWIN – *Diligence and caution*:** To develop students' capacity to proceed carefully, after identifying, discussing, and reflecting on the logical and ethical dimensions of political, social, and personal life.
5. **DEBWEWIN – *Honesty and integrity*:** To increase students' capacity to think and act with honesty and integrity as they understand and face the realities of increasingly interdependent nations and people.
6. **ZAAGI' IDIWIN – *Loving and Caring*:** To encourage students' acceptance of the diversity within their school, community, and environment by developing healthy, caring relationships built on respect for all.
7. **ZHAWENINDIWIN – *Compassion*:** To expand students' knowledge of the human condition and human cultures and the importance of compassion especially in relation to behavior, ideas, and values expressed in the works of human imagination and thought.

16. **Minnesota Transfer Curriculum (MnTC):** List which goal area(s) – up to two – this course fulfills.

See www.mntransfer.org

Goal Area(s): _____

Provide the specific learning outcomes as listed on the mntransfer.org website that pertain to this course.

17. Are there any additional licensing/certification requirements involved?

 X Yes _____ No

APPENDIX A

MN PELSB: Standards 8710.2000 Standards of Effective Practice (SEP)

Subpart 3. **Standard 2, student learning.** A teacher must understand how students learn and develop and must provide learning opportunities that support a student's intellectual, social, and personal development. The teacher must:

3F. link new ideas to familiar ideas; make connections to a student's experiences; provide opportunities for active engagement, manipulation, and testing of ideas and materials; and encourage students to assume responsibility for shaping their learning tasks;

Subpart 11. **Standard 10, collaboration, ethics, and relationships.** A teacher must be able to communicate and interact with parents or guardians, families, school colleagues, and the community to support student learning and well-being. The teacher must:

11F. understand data practices;

Licensing Rule 8710.3200 Subp. 3. Subject matter standards, elementary education

H. A teacher of children in kindergarten through grade 6 must demonstrate knowledge of fundamental concepts of mathematics and the connections between them. The teacher must know and apply:

(3) *concepts of numerical literacy:*

(a) possess number sense and be able to use numbers to quantify concepts in the students' world;

(b) understand a variety of computational procedures and how to use them in examining the reasonableness of the students' answers;

(c) understand the concepts of number theory including divisibility, factors, multiples, and prime numbers, and know how to provide a basis for exploring number relationships; and

(d) understand the relationships of integers and their properties that can be explored and generalized to other mathematical domains;

(4) *concepts of space and shape:*

(a) understand the properties and relationships of geometric figures;

(b) understand geometry and measurement from both abstract and concrete perspectives and identify real world applications; and

(c) 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;

(5) *data investigations:*

(a) use a variety of conceptual and procedural tools for collecting, organizing, and reasoning about data;

(b) apply numerical and graphical techniques for representing and summarizing data;

(c) interpret and draw inferences from data and make decisions in a wide range of applied problem situations; and

(d) help students understand quantitative and qualitative approaches to answering questions and develop students' abilities to communicate mathematically;

(6) *concepts of randomness and uncertainty:*

(a) probability as a way of describing chance in simple and compound events; and

(b) the role of randomness and sampling in experimental studies;

- (7) mathematical processes:
 - (a) know how to reason mathematically, solve problems, and communicate mathematicseffectively at different levels of formality;
 - (b) understand the connections among mathematical concepts and procedures, as well astheir application to the real world;
 - (c) understand the relationship between mathematics and other fields; and
 - (d) understand and apply problem solving, reasoning, communication, and connections; and
- (8) mathematical perspectives:
 - (a) understand the history of mathematics and the interaction between different cultures andmathematics; and
 - (b) know how to integrate technological and nontechnological tools with mathematics.

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