



North Central Michigan College Master Course Syllabus

PART 1:

Course Name: Mathematics for Elementary Teachers I

Course Number: MATH 125

Credit Hrs. 3 Lecture Hrs. 3 Lab Hrs. 0 Clinical Hrs. 0 Variable Hrs. 0

Total Hours of Instruction: 3 Total Contact Hours: 52.8

(Total Contact hour's formula: (lecture hrs. + lab hrs. + clinical hrs) x 17.6)

Course Description:

The first of a two-course sequence designed for students majoring in elementary education. Topics include problem solving, sets, numeration systems, fractions, decimals, and the development of our number system from the set of natural numbers through the set of real numbers. Emphasis is placed on the use of physical representations (manipulatives) for teaching mathematics. Field trips may be part of this class.

Prerequisite (s): MATH 112 (or equivalent) with a grade of "C" or higher or placement determined by ACT, SAT and/or North Central Assessment/Placement scores.

Co-requisite (s): None

Course Objectives:

Upon completion of this course students will be able to

- Use problem solving and algebraic modeling skills in applications.
- Solve arithmetic problems using different number systems.
- Demonstrate mental, written, and electronic computations.
- Identify the basic properties of arithmetic operations in the subsets of real numbers.
- Solve problems involving decimals, ratios, proportions and percentages.
- Use manipulatives in a collaborative learning environment to better understand mathematical concepts and utilize those concepts for problem solving.

Reasonable accommodations can be provided for students with documented disabilities. Please contact Learning Support Services to arrange for these (231)348-6687 or (231)348-6817, Room 533 SCRC.



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PART 2:

Course Objectives and Linked Lumina DQP Outcomes

See **PART 3** of this syllabus for the complete language of each Lumina DQP outcome.

*Please identify the Lumina DQP outcome(s) supported by the course objectives. List each course objectives (from **PART 1**), followed by the corresponding Lumina DQP Outcome number(s) in parentheses.*

- Use problem solving and algebraic modeling skills in applications. (DQP 2, 10, 11, 13)
- Solve arithmetic problems using different number systems. (DQP 2, 13)
- Demonstrate mental, written, and electronic computations. (DQP 13)
- Identify the basic properties of arithmetic operations in the subsets of real numbers. (DQP 2)
- Solve problems involving decimals, ratios, proportions and percentages. (DQP 10, 13)
- Use manipulatives in a collaborative learning environment to better understand mathematical concepts and utilize those concepts for problem solving. (DQP 10)



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Suggested Methods of Instruction:

Lecture, class discussion, student presentations of topics, use of manipulatives to demonstrate mathematical concepts.

Suggested Methods of Assessment and Evaluation:

Classroom assessment through problem solving, i.e. quizzes and tests. Individual reading and research projects. Individual and group projects utilizing manipulatives. Class homework and participation. Paper or presentation based on field study. Comprehensive final examination.

Adopted Text at Time of Course Adoption/Revision:

Mathematical Reasoning for Elementary Teachers 7e; Long, DeTemple, Millman; Pearson Education, Inc., 2015

OPTIONAL SUPPLEMENTARY MATERIALS:

Topics Covered During the Semester:

Sequence of topics and time allowance are at the discretion of the instructor

Week 1	Problem Solving
Week 2	Problem Solving
Week 3	Problem Solving
Week 4	Sets and Numeration Systems
Week 5	Sets and Numeration Systems
Week 6	Whole Numbers; Operations, Properties and Computation
Week 7	Whole Numbers; Operations, Properties and Computation
Week 8	Number Theory
Week 9	Number Theory
Week 10	Integers
Week 11	Integers
Week 12	Rational Numbers
Week 13	Rational Numbers
Week 14	Decimals & Percents
Week 15	Decimals & Percents
Week 16	Final Exam

Part 1 & Part 2 approved by CRDAP on: 02 03 17

Part 2 approved by AD:

Date:

Part 2 approved by CRDAP Chair:

Date:

Rev02/15



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PART 3:

LUMINA DQP OUTCOMES – Use this reference sheet for **PART 2** of Master Course Syllabus.

Specialized Knowledge

1. Describes the scope and principal features of the field of study, citing at least some of its core theories and practices, and offers a similar explication of at least one related field.
2. Illustrates contemporary terminology used in the field.
3. Generates substantially error-free products, reconstructions, data, juried exhibits or performances as appropriate to the field.

Broad Integrative Knowledge

4. Describes how existing knowledge or practice is advanced, tested and revised
5. Describes and examines a range of perspectives on key debates and their significance both within the field and in society.
6. Illustrates core concepts of the field while executing analytical, practical or creative tasks.
7. Selects and applies recognized methods of the field in interpreting characteristic discipline-based problems.
8. Assembles evidence relevant to characteristic problems in the field, describes the significance of the evidence, and uses the evidence in analysis of these problems.
9. Describes the ways in which at least two disciplines define, address and interpret the importance of a contemporary challenge or problem in science, the arts, society, human services, economic life or technology.

Intellectual Skills – Analytic Inquiry

10. Identifies, categorizes and distinguishes among elements of ideas, concepts, theories and/or practical approaches to standard problems.

Intellectual Skills – Use of Information Resources

11. Identifies, categorizes, evaluates and cites multiple information resources necessary to engage in projects, papers or performance in his or her program.

Intellectual Skills – Engaging Diverse Perspectives

12. Describes how knowledge from different cultural perspectives would affect his or her interpretations of prominent problems in politics, society, the arts and/or global relations.

Intellectual Skills – Communication Fluency

13. Presents accurate calculations and symbolic operations, and explains how such calculations and operations are used in either his or her specific field of study or in interpreting social and economic trends.
14. Presents substantially error-free prose in both argumentative and narrative forms to general and specialized audiences.

Applied Learning

15. Describes in writing at least one substantial case in which knowledge and skills acquired in academic settings are applied to a challenge in a non-academic setting; applies that learning to the question; and analyzes at least one significant concept or method related to his or her course of study in light of learning outside the classroom.
16. Locates, gathers and organizes evidence on an assigned research topic addressing a course-related question or a question of practice in a work or community setting; offers and examines competing hypotheses in answering the question.

Civic Learning

17. Describes his or her own civic and cultural background, including its origins and development, assumptions, and predispositions.
18. Describes diverse positions, historical and contemporary, on selected democratic values or practices, and presents his or her own position on a specific problem where one or more of these values or practices are involved.
19. Takes an active role in a community context (work, service, co-curricular activities, etc.), and examines the civic issues encountered and the insights gained from the community experience.

The Degree Qualifications Profile was adopted by CRDAP: April 11, 2012