Course and Number: Conceptual Mathematics for Teachers I - MATH 1125
CREDITS: 5   CLASS HOURS PER WEEK: 5
PREREQUISITES: MATH 1075 with a grade of “C” or higher, MATH 1099 (MATH 1075 modules), or placement by COMPASS

DESCRIPTION OF COURSE:
This course is designed as an in-depth study of the basic concepts of number systems, binary operations, number theory, algebraic thinking, and problem solving as appropriate for primary and middle school teachers. Development of these concepts will be based on the current Common Core State Standards for Mathematics. Instruction will focus on the development of these concepts through demonstration, exploration, and discussion using hands-on manipulatives and appropriate technology.

SPECIAL COURSE REQUIREMENTS:
None

GOALS OF THE COURSE:
To introduce the student to a deeper understanding of the concepts, methods and applications of arithmetic, number theory, algebraic thinking in the context of a primary and middle school teacher. Students should learn and develop an appreciation for mathematical constructs and algorithms and be familiar with a variety of ways to approach and illustrate arithmetic, number theory, and algebra problems.

LEARNING OUTCOMES:
- Persevere in problem solving while using a variety of problem solving strategies.
- Construct viable arguments, express them orally and in writing, and critique the reasoning of others.
- Attend to precision in vocabulary, computation, and symbolization.
- Analyze standard algorithms for basic computation and justify why they work by comparing them to a variety of models.
- Explore the constructs of number theory and use these to solve word problems.
- Translate contexts into appropriate expressions, formulas, equations, and functions and use these translations to solve problems.
- Identify a variety of sequences and series and use them to solve problems.

GENERAL EDUCATION GOALS:
This course addresses the following Columbus State general education goals:
- Critical Thinking
- Effective Communication
- Quantitative Literacy
TEXTBOOK, MANUALS, REFERENCES, AND OTHER READINGS:


Although not required, students may find the following to be useful:
Colored pencils Calculator

UNITS OF INSTRUCTION:
• Number (the Decimal System) (Chapter 1)
• Number (Fractions) (Chapter 2)
• Addition and Subtraction (Chapter 3)
• Multiplication (Chapters 4 and 5)
• Division (Chapter 6)
• Proportional Reasoning (Chapter 7)
• Number Theory (Chapter 8)
• Algebra (Chapter 9)
• Sequences and Series (Chapter 9)

GENERAL INSTRUCTIONAL METHODS:
This course relies heavily on classroom activities and small and large group discussion. A minimal amount of lecture may also be used.

STANDARDS AND METHODS FOR EVALUATION:
Final Exam = 30-35% of course grade (final exam is 100% departmental)
Group Work = 10% of the final grade (graded with a predetermined rubric)
The remaining 55-60% of the course grade will be determined by the instructor.
No more than 20% of the course grade may be determined using non-proctored assessments.

GRADING SCALE:
Letter grades for the course will be awarded using the following scale:

> 90% - A  80-89% - B  70-79% - C  60-69% - D  < 60% - E
Course grades are NOT to be curved, skewed, or otherwise inflated.