Course and Number: Conceptual Mathematics for Teachers II - MATH 1126
CREDITS: 5                  CLASS HOURS PER WEEK: 5
PREREQUISITES: MATH 1125 with a grade of “C” or higher

DESCRIPTION OF COURSE (AS IT APPEARS IN THE COLLEGE CATALOG):
A continuation of MATH 1125. This course is designed as an in-depth study of the basic concepts of logic, geometric constructions and proof, transformations, measurement, counting, probability, 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.

GOALS OF THE COURSE:
To introduce the student to a deeper understanding of the concepts, methods and applications of logic, geometry, measurement, counting, probability, and problem solving 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 problems involving logic, geometry, measurement, counting, and probability.

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 the characteristics of inductive and deductive reasoning.
- Classify basic geometric shapes in a variety of ways.
- Construct geometric shapes and justify the constructions.
- Analyze plane figures and examine how to determine perimeters and areas in a variety of ways.
- Write proofs of geometric formulas for area.
- Analyze solids and examine how to determine volumes, surface area, nets, and the number of faces, edges, and vertices.
- Explore the meaning of measurement and be able to perform measurement conversions.
- Analyze transformations and symmetry.
- Analyze congruency and similarity.
- Examine sampling and a variety of ways to display data and use data to make predictions.
- Discover the concepts of combinatorics and use these concepts to determine and interpret probabilities.

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   Ruler
Compass    Calculator
Protractor

UNITS OF INSTRUCTION:
• Logic (supplementary material)
• Geometric Shapes and Proofs (Chapter 10)
• Measurement (Chapter 11)
• Area and Proof (Chapter 12)
• Solid Shapes (Chapter 13)
• Transformations (Chapter 14 and supplementary material)
• Construction and Proofs (Chapter 14)
• Coordinate Geometry (supplementary materials)
• Statistics (Chapter 15 and supplementary material)
• Combinatorics (supplementary material)
• Probability (Chapter 16)

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.