MATH 1350 FUNDAMENTALS OF MATHEMATICS I

COURSE DESCRIPTION (3 credits)(3 lecture hours per week)
Topics and concepts in this course include concepts of sets, functions, numeration systems, number theory, and properties of the natural numbers, integers, rational, and real number systems with an emphasis on problem solving and critical thinking. Prerequisite: Math 1314 or equivalent.

INTRODUCTION
This course is designed to develop the problem solving and critical thinking skills of students and to prepare elementary education majors for further studies in mathematics. Topics of this course include equations and inequalities, number theory, prime numbers, exponents, sets, number systems, functions, relations, and equivalence.

COURSE OBJECTIVES
This course is designed specifically for students who seek middle grade (4-8) teacher certification. Students will develop a deeper understanding of the mathematical concepts covered in this course. The student must demonstrate an understanding of the topics covered in the course through testing.

METHODS FOR ACCOMPLISHING OBJECTIVES
1. Lecture
2. Special Problem Sessions
3. Instructional Media
4. Unit Examinations
5. Peer Tutoring
6. Faculty Tutoring

LEARNING OUTCOMES
Upon successful completion of the course, the student will demonstrate acquisition of the following skills.
1. Finding the sum of the terms in a sequence
2. Finding the compound interest earned on a deposit over a period of time
3. Estimating a sum/difference/product/quotient by rounding
4. Writing an equation relating the variables in the situation described
5. Classifying as true or false statements about properties of whole numbers
6. Finding a requested term in an arithmetic or geometric sequence of terms
7. Using sets and/or Venn diagrams to solve a stated problem
8. Using a proportion to solve a problem
9. Simplifying absolute value expressions
10. Converting numbers among the Hindu-Arabic, Egyptian, and Roman number systems
11. Reading and find approximate values from a given graph
12. Solving percent problems and applications
13. Simplifying fractions
14. Finding the greatest common divisor or least common multiple of a pair of numbers
BIBLIOGRAPHY
Text: A Problem Solving Approach to Mathematics, 10th ed., by Billstein/Lebeskind/Lott

COURSE OUTLINE

A. AN INTRODUCTION TO PROBLEM SOLVING
   1. Mathematics and Problem Solving
   2. Explorations with Patterns
   3. Reasoning and Logic: An Introduction
      Chapter Outline and Review

B. NUMERATION SYSTEMS AND SETS
   1. Numeration Systems
   2. Describing Sets
   3. Other Set Operations and Their Properties
      Chapter Outline and Review

C. WHOLE NUMBERS AND THEIR OPERATIONS
   1. Addition and Subtraction of Whole Numbers
   2. Algorithms for Whole-Number Addition and Subtraction
   3. Multiplication and Division of Whole Numbers
   4. Algorithms for Whole-Number Multiplication and Division
   5. Mental Mathematics and Estimation for Whole-Number Operations
      Chapter Outline and Review

D. ALGEBRAIC THINKING
   1. Variables
   2. Equations
   3. Functions
      Chapter Outline and Review

E. INTEGERS AND NUMBERS THEORY
   1. Integers and the Operations of Addition and Subtraction
   2. Multiplication and Division of Integers
   3. Divisibility
   4. Prime and Composite Numbers
   5. Greatest Common Divisor and Least Common Multiple
   6. Clock and Modular Arithmetic (optional)
      Chapter Outline and Review

F. RATIONAL NUMBERS AS FRACTIONS
   1. The Set of Rational Numbers
   2. Addition, Subtraction, and Estimation with Rational Numbers
   3. Multiplication and Division of Rational Numbers
      Chapter Outline and Review
G. **DECIMALS AND REAL NUMBERS**
   1. Introduction to Decimals
   2. Operations on Decimals
   3. Nonterminating Decimals
   4. Real Numbers
   5. Using Real Numbers in Equations
   **Chapter Outline and Review**

H. **PROPORTIONAL REASONING, PERCENTS, AND APPLICATIONS**
   1. Ratios, Proportions, and Proportional Reasoning
   2. Percents
   3. Computing Interest
   **Chapter Outline and Review**

**EVALUATION PROCEDURES**
1. Unit Exams
2. Class Assignments
3. Quizzes
4. Projects
5. Papers
6. Comprehensive Final Exam

Letter grades will be assigned according to the following scale:
90-100⇒A  80-89⇒B  70-79⇒C  60-69⇒D  0-59⇒F

- **I** Incomplete – An incomplete may be awarded when the instructor determines that minimal work on the part of the student and the instructor will complete the course requirements. An incomplete grade not changed by the instructor to a grade of completion (A, B, C, D, or F) by the end of the following semester will automatically be changed to an F.
- **W** Withdrawal – Students who file withdrawal requests by the published deadline will receive a grade of W.

**Attendance**
Regular attendance in class is expected. If an absence is unavoidable, the student is responsible for completing all work missed during the absence. Any work missed and not subsequently completed will affect the grade of the student regardless of the reason for the absence. It should be noted that ceasing to attend class does not terminate enrollment. It is the student’s responsibility to initiate the withdrawal procedure. Therefore, a student who ceases to attend class without officially withdrawing from that class may receive a failing grade. Note, however, that withdrawal from class may affect enrollment in other courses, insurance eligibility, financial aid, and/or veteran’s benefits.

**Classroom Behavior**
It is expected that students will behave in a mature and courteous manner. Disruptive behavior during class will not be tolerated. Students are expected to be attentive, take notes, ask pertinent questions, arrive on time, and not leave until the class is dismissed. Conflicts which arise between the scheduled class time and the student's personal schedule must be resolved by the student.

Camcorders and any other video recording devices are prohibited in the classroom. Audio recording may be allowed ONLY WITH THE PERMISSION OF THE INSTRUCTOR. **CELL PHONES** are not to be used and are not to ring during class. Cell phones are not to be out during tests. If
there are special circumstances, arrangements must be made with the instructor.

**ADA Compliance**
This college will adhere to all applicable federal, state, and local laws, regulations, and guidelines with respect to providing reasonable accommodations as required to afford equal educational opportunity. It is the policy of ACC to provide reasonable accommodations for qualified individuals who are students with disabilities. It is the student’s responsibility to contact the Counseling Center in a timely manner to arrange for appropriate accommodations.

**Academic Honesty is Assumed:**
A student found guilty of scholastic dishonesty is subject to disciplinary action. Violations such as plagiarism, cheating on tests, and collusion are described in the ACC Student Handbook. Consequences are at the discretion of the instructor and range from receiving zero on the assignment/test to failing the course to expulsion from the College.