SPARTANBURG COMMUNITY COLLEGE

# MATHEMATICS FOR ELEMENTARY EDUCATION I

Revised 08/011/2010

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**COURSE NUMBER:** MAT 211

**PREREQUISITE(S):** MAT 102 with grade of C or better.

**CO-REQUISITE(S):** None

**COURSE DESCRIPTIONS** This college transfer course includes the following topics: logic, set theory, properties and operations on counting numbers, integers, rational numbers, and real numbers.

**TEXTBOOK(S):** Billstein, Libeskind, and Lott. *A Problem Solving Approach to Mathematics for Elementary School Teachers*, 10th Edition Pearson Education, 2010.

Dolan, Williamson, and Muri. *Mathematics Activities for Elementary School Teachers, A Problem solving Approach*, 10th edition., Pearson Education, 2010

Textbooks bundled with MML: ISBN: 0321761359
MyMathLab stand alone: ISBN: 0-32119991X

**REFERENCE(S):** N/A

**OTHER REQUIRED MATERIALS, TOOLS, AND EQUIPMENT:** None

**METHOD OF INSTRUCTION:** This course will be taught by lecture and demonstration and by group problem solving. Student participation will be required. Audio-visual aids will be used when appropriate.

**GRADING SYSTEM:**

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| 90 | - | 100 | = | A |
| 80 | - | 89 | = | B |
| 70 | - | 79 | = | C |
| 60 | - | 69 | = | D |
| Below | - | 60 | = | F |

**GRADE CALCULATION METHOD:**

See instructor's handout.

**ATTENDANCE POLICY:**

The student is responsible for punctual and regular attendance in all classes, laboratories, clinical, practica, internships, field trips, and other required class activities. The College does not grant excused absences; therefore, students are urged to reserve their absences for emergencies. When illness or other emergencies occur, the student is responsible for notifying instructors and completing missed work if approved for late submission by instructors.

Mathematics Department Attendance Policy for Lecture Classes:

- Attendance and participation in class is essential to the learning of mathematics.
- Students are expected to be in class, to be on time, and to stay for the entire class.
- Students are responsible for any missed work.
- Do not expect tutors, lab assistants and/or instructors to re-teach course content you miss. You need to have attempted the assigned materials before asking for help.

Instructors maintain attendance records. However, it is the student's responsibility to withdraw from a course. A student enrolling in and attending at least one course session remains enrolled until the student initiates a withdrawal.

Withdrawal Policy: During the first 75% of the course, a student may initiate withdrawal and receive a grade of W. A student cannot initiate a withdrawal during the last 25% of the course. Extenuating circumstances require documentation and approval by the appropriate department head and academic dean.
Absences for Religious Holidays: Students who are absent from class in order to observe religious holidays are responsible for the content of any activities missed and for the completion of assignments occurring during the period of absence. Students who anticipate their observance of religious holidays will cause them to be absent from class and do not wish such absences to penalize their status in class should adhere to the following guidelines:

1. Observance of religious holidays resulting in three or

fewer consecutive absences: Discuss the situation with the instructor and provide written notice at least one week prior to the absence(s). Develop (in writing) an instructor-approved plan which outlines the make up of activities and assignments.

2. Observances of religious holidays resulting in four or more consecutive absences: Discuss the situation with the instructor and provide the instructor with written notice within the first 10 days of the academic term. Develop an instructor-approved plan which outlines the make up of activities and assignments.

**ACADEMIC CONDUCT:**

**ACADEMIC DISHONESTY**: Students are expected to uphold the integrity of the College's standard of conduct, specifically in regards to academic honesty. All forms of academic dishonesty including, but not limited to, cheating on assignments/tests, plagiarism, collusion, and falsification of information will call for disciplinary action. Disciplinary action imposed may include one or more of the following: written reprimand, loss of credit for assignment/test, termination from course, and probation, suspension, or expulsion from the College. For further explanation of this and other conduct codes, please refer to the Student Handbook.

**CELLULAR PHONES AND PAGERS/BEEPERS**: Cellular phones, pagers and beepers are not permitted to be turned on or used within the classroom. Use of these devices during classroom time will be considered a violation of the student code as it relates to "disruptive behavior."

## SCC MATHEMATICS DEPARTMENT POLICY

**NO ELECTRONIC DEVICES WILL BE USED IN THE CLASSROOM WITHOUT PRIOR APPROVAL OF INSTRUCTOR.**

**Mathematics Departmental Procedure For Violation of Usage of electronic Devices:**

First time violation – Student will cut off electronic device (cell

phone without answering it) and place the device on the instructor's desk until the end of class. The instructor will remind the student of policy and procedure.

Subsequent violation – Student will cut off electronic device (cell phone without answering it) and place the electronic device on the instructor's desk until the end of class. Student will be referred to the Chief Student Services Officer for disciplinary action and not allowed to return to class without written notification from the Chief Student Services Officer whose office is located in the Student Services Building.

**DAY EMERGENCY NUMBER**
**RECORDS (864) 592-4681**

**EVENING EMERGENCY NUMBER**
**EVENING SERVICES (AFTER 4:30 PM)**
**(864)592-4830**

**CLASS/LAB PROCEDURES:** N/A

**ACCOMMODATIONS:** Students who need special accommodations in this class because of a documented disability should notify Student Disability Services. You may contact Student Disability Services by calling, (864) 592-4811, toll-free 1-800-922-3679; via email through the Spartanburg Community College web site at www.sccsc.edu/SDS/; or by visiting the office located in the Dan Lee Terhune Student Services Building, room 112 of the Spartanburg Community College campus. By contacting Student Disability Services early in the semester, students with disabilities give the College an opportunity to provide necessary support services and appropriate accommodations.

**COURSE COMPETENCIES & OBJECTIVES:**

**Upon satisfactory completion of this course, the students should be able to demonstrate competency in the General Education Outcome listed as "their ability to express themselves effectively in quantitative and qualitative terms" in the following competencies and objectives:**

I. Use appropriate strategies for problem-solving (6 hrs.)
   1. Solve problems by discovering patterns and using inductive reasoning.
   2. Use Polya's four-step process for solving problems
   3. Use the calculator as a problem-solving tool.

II. Use sets, whole numbers and functions to develop operations (7 hrs.)
   1. Use correct terminology in describing sets.
   2. Perform operations on sets.
   3. Draw and analyze Venn diagrams.
   4. Distinguish between relations and functions and perform operations.

III. Solve applications of logic problems (2 hrs.)
   1. Determine the validity of arguments.
   2. Solve a logic problem through reasoning and elimination.

IV. Develop models and algorithms to complete operations with whole numbers (8 hrs.)
   1. Write numbers in other numeration systems.
   2. Use models to demonstrate addition, subtraction, multiplication, and division of whole numbers.
   3. Add, subtract, multiply, and divide whole numbers using various algorithms.
   4. Write numbers in different bases and convert between these bases and base ten.

V. Develop models and algorithms to complete operation with integers. (6 hrs.)
   1. State the properties of integers and recognize their use in solving problems.
   2. Use models and rules to add, subtract, multiply, and divide integers.
   3. Perform calculations on integers using the order of operations.

VI. Explore topics in number theory (6 hrs.)
   1. Use the common tests for divisibility.
   2. Write composite numbers as a product of their prime factors.
   3. Find the greatest common divisor and least common multiple of numbers.

VII. Perform operations on real numbers, with emphasis on rational numbers. (10 hrs.)
   1. Build a set of equivalent fractions and write fractions in simplest form.
   2. Add, subtract, multiply, and divide rational numbers.
   3. Use the order and denseness properties to build a set of rational numbers.
   4. Solve problems involving exponents.

**SYLLABUS ADDENDUM**
**MAT 211**
Revised 01/2009

**Chapter 1 An Introduction to Problem Solving 10 hours**

1.1 Explorations with Patterns
1.2 Mathematics and Problem Solving
1.3 Reasoning and Logic: An Introduction

**Chapter 2 Numeration Systems and Sets 8 hours**

2.1 Numeration Systems
2.2 Describing Sets
2.3 Other Set Operations and Their Properties

**Chapter 3 Whole Numbers and Their Operations 6 hours**

3.1 Addition and Subtraction of Whole Numbers
3.2 Algorithms for Whole Number Addition and Subtraction
3.3 Multiplication and Division of Whole Numbers
3.4 Algorithms for Whole Number Multiplication and Division
3.5 Mental Mathematics and Estimation for Whole Number Operations

**Chapter 4 Algebraic Thinking 3 hours**

4.1 Variables
4.2 Equations
4.3 Functions

**Chapter 5 Integers and Number Theory 6 hours**

5.1 Integers and the Operations of Addition and Subtraction
5.2 Multiplication and Division of Integers
5.3 Divisibility
5.4 Prime and Composite Numbers
5.5 Greatest Common Divisor and Least Common Multiple
5.6 Clock and Modular Arithmetic (optional, if time permits)

**Chapter 6 Rational Numbers and Fractions 9 hours**

6.1 The Set of Rational Numbers
6.2 Addition and Subtraction of Rational Numbers
6.3 Multiplication and Division of rational Numbers