Math 1480 Math for Elem Teachers I University of Memphis

Course Description: (3 credit hours.) Examination of mathematics taught in grades K-6 focusing on the Tennessee Academic Standards Domains of Counting and Cardinality, Operations and Algebraic Thinking, Number and Operations in Base 10, Number and Operations - Fractions, and Expressions and Equations.

Prerequisites: Math 1420 or Math 1710 with a minimum grade of C-, or a minimum score of 46 on the ALEKS math assessment test.

Student Population: Students in the college of education *Teaching All Learners* program.

Required Course Materials:

Elementary Mathematics for Teachers Parker/Baldridge
Primary Mathematics: 3A, 4A, 5A, 6A and Workbook 5A
Note: There are six separate books required for this course.

Main skill acquired, and what's not expected:

This course examines elementary mathematics from the perspective of the level needed for teaching. The goal of this course is to prepare students to teach mathematics by equipping them with conceptual knowledge, a solid grasp of algorithms, and a variety of ways to present mathematical topics.

This course is not designed to be a review of elementary mathematics, but rather an examination of elementary mathematics from the level needed for teaching. However, given the need to revisit topics, there is considerable time spent reviewing key algorithms and arithmetic rules. Students need to have addition and multiplication facts memorized as a prerequisite for this course.

What do students actually learn?

Place Value and Models for Arithmetic – Understanding our base 10 system and how place value is essential to addition, subtraction, multiplication algorithms.

Word Problems – How to form a teacher's solution that includes a bar diagram (other representations as well), arithmetic, and a stated conclusion.

Pre-algebra – Translating ideas to algebraic expressions, algebraic identities and properties, understanding exponent rules.

Factors, primes proofs – Divisibility tests, primes, greatest common factor and least common multiple.

Fractions – Fraction basics, operations with fractions and teacher's solutions for fraction word problems.

Tutoring: Free tutoring is available through the University's Education Support Programs. They offer a drop-in tutoring service in the Math Learning Center in DH 341and online assistance.

Academic Integrity: Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly, through participation or assistance, are immediately responsible to the instructor of the class in addition to other possible disciplinary sanctions which may be imposed through the regular institutional disciplinary procedures. The University's policy for academic misconduct is available at http://www.memphis.edu/studentconduct/academic-misconduct/index.php.

Email Rules: ***All*** email correspondence must be made through your University of Memphis email account. Check your email daily.

Disabilities: Any student who anticipates physical or academic barriers based on the impact of a disability should contact Disability Resources for Students (DRS) at 110 Wilder Tower, 901.678.2880 at the earliest opportunity. DRS coordinates access and accommodations for students with disabilities. You must give your instructor a copy of any accommodation memos provided by the DRS **within the first week of class.**

Attendance: Attendance will be taken every class meeting and reported to the University periodically during the semester. Every student is required to be in attendance, on time, and stay for the entire class period for each class session.

Grading: Grades will be calculated based on homework, quizzes, tests, and the final exam. Grading scale is determined by the instructor. Homework is an essential part of the learning process for any math course and is vital to success in this course. Final Schedule: http://www.memphis.edu/registrar/calendars/.

Calculator/Cell Phone: Specific policies will be detailed by the course instructor.
The instructor reserves the right to make changes in the syllabus if necessary due to time constraints or other unforeseen events. If this is necessary, members of the class will be notified as soon as possible.

Course Content:
Elementary Mathematics for Teachers

1. Place Value and Models for Arithmetic
   - 1.1 Counting
   - 1.2 Place Value
   - 1.3 Addition
   - 1.4 Subtraction
   - 1.5 Multiplication
   - 1.6 Division
   - 1.7 Addendum on Classroom Practice
2. Mental Math and Word Problems
   - 2.1 Mental Math
   - 2.2 Word Problems
   - 2.3 The Art of Word Problems

3. Algorithms
    3.1 The Addition Algorithm
    3.2 The Subtraction Algorithm
    3.3 The Multiplication Algorithm
    3.4 Long Division by 1-digit Numbers
    3.5 Estimation
    3.6 Completing the Long Division Algorithm
4. Pre-algebra
    4.1 Letters and Expressions
    4.2 Identities, Properties, Rules
    4.3 Exponents
5. Factors, Primes, and Proofs
    5.1 Definitions, Explanations and Proofs
    5.2 Divisibility Tests
    5.3 Primes and the Fundamental Theorem of Arithmetic
    5.4 More On Primes
    5.5 Greatest Common Factors and Least Common Multiples
6. Fractions
    6.1 Fraction Basics
    6.2 More Fraction Basics
    6.3 Multiplication of Fractions and a Review of Division
    6.4 Division of Fractions
    6.5 More Division Word Problems
    6.6 Fractions as a Step Toward Algebra