Math 1481 Math for Elem Teachers II University of Memphis

Course Description: (3 credit hours.) Examination of mathematics taught in grades K-6 focusing on the Tennessee Academic Standards Domains of Ratios and Proportional Reasoning, Number System, Measurement and Data, Expressions and Equations, Geometry, and Statistics and Probability.

Prerequisites: Math 1480 with a minimum grade of C-.

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

Required Course Materials:

Elementary Mathematics for Teachers Parker/Baldridge Elementary Geometry for Teachers Parker/Baldridge Primary Mathematics 3A, 4A, 5A, 6A, 3B, 5B, 6B, Workbook 5A New Elementary Mathematics Syllabus D 1 Sin Kwai Meng Protractor, ruler and compass Note: There are eleven separate books required for this class – six of which are from Math 1480.

Course Objectives:

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 geometry and related material, and a variety of ways to present mathematical topics.

This course is not designed to be a review of elementary geometry, 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 basic geometry and other material. Students need to have addition and multiplication facts memorized as a prerequisite for this course.

Skills to be learnt:

Ratios, Percentages and Rates – How to form a teacher's solution that includes a bar diagram, arithmetic, and a stated conclusion.

Negative numbers, Integers, Decimals – arithmetic with integers, understanding integer operations and relationships between decimals and fractions.

Measurement Word Problems involving Length, Weight and Capacity and corresponding teacher's solutions including a bar diagram, arithmetic and a stated conclusion.

Geometric Figures – Triangles, quadrilaterals, and polygons, unknown angle facts, parallel and perpendicular lines.

Area and Perimeter of rectangles and composite figures, area and perimeter of triangles, area and circumference of circles, volume of solids, and corresponding word problems with teacher's solutions.

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

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 <u>University of Memphis</u> email account. Check your email daily.

Disabilities: Any student who anticipates physical or academic barriers based on the impact of a disability should contact <u>Disability Resources for Students (DRS)</u> 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 Exam Schedule: see 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

- 7. Ratios, Percentages, and Rates
 - 7.1 Ratios and Proportions
 - 7.2 Changing Ratios and Percentages
 - 7.3 Solving Percent Problems by the Unitary Method
 - 7.4 Rates, Speed, and Dimensional Analysis

- 8. Negative, Numbers and Integers
 - 8.1 Negative Numbers
 - 8.2 Arithmetic with Integers
 - 8.3 Integers as a Step Towards Algebra
- 9. Decimals, Rational and Real Numbers
 - 9.1 Decimals
 - 9.2 Rational Numbers and Decimals
 - 9.3 Real Numbers and Decimals

Elementary Geometry for Teachers

- 1. Learning to Measure
 - 1.1 Measurement Problems
 - 1.2 Measuring Length
 - 1.3 Measuring Weight and Capacity
 - 1.4 Measuring Angles
- 2. Geometric Figures
 - 2.1 Fundamental Geometric Ideas
 - 2.2 Triangles
 - 2.3 Symmetry and Triangles
 - 2.4 Parallelograms, Rhombuses and Trapezoids
 - 2.5 Geometric Constructions
- 3. Finding Unknown Angles
 - 3.1 Unknown Angle Problems
 - 3.2 Finding Angles Using Parallel Lines
 - 3.3 Angles of a Polygon
- 5. Area
 - 5.1 Area Units
 - 5.2 Rectangles and Area Properties
 - 5.3 Area of Triangles, Parallelograms and Trapezoids
- 8. Area Concepts and Circles
 - 8.1 Converting Area Units and Scaling
 - 8.2 Circles and Pi
 - 8.3 Area of Circles and Sectors
- 9. Volume and Surface Area
 - 9.1 Introducing Volume
 - 9.2 Metric Volume
- 10. Data Displays, Probability and Statistics
 - 10.1 Data Displays
 - 10.2 Center and Dispersion of Data Sets