

IMPERIAL COMMUNITY COLLEGE DISTRICT  
IMPERIAL VALLEY COLLEGE

COURSE OUTLINE

DIVISION: Science, Mathematics and Engineering

DATE: September 2000

COURSE TITLE: Number Systems In Elementary Mathematics COURSE NO.: Math 110 UNITS: 3

LEC HRS. 3 LAB HRS. \_\_\_\_\_ HRS. TBA

If cross-referenced, please complete the following

COURSE NO.(s) \_\_\_\_\_ COURSE TITLE

**I. COURSE/CATALOG DESCRIPTION:**

Recommended for students who are working towards a teaching credential in elementary education. Topics discussed are sets and relations, development of the number system from the natural numbers including whole, rational and real numbers, number theory, ratio and proportion.

**II. A. PREREQUISITES, if any:**

Math 090 with a grade of "C" or better

**B. COREQUISITES, if any:**

**C. RECOMMENDED PREPARATION, if any:**

**III. GRADING CRITERIA:**

  X   Course must be taken on a "letter-grade" basis only.

       Course may be taken on a "credit" basis or for a letter grade.

       Course must be taken on a "credit" basis only.

**IV. MEASURABLE COURSE OBJECTIVES AND MINIMUM STANDARDS FOR GRADE OF "C":**

1. The student will analyze mathematical patterns and will solve problems with the calculator as a supporting tool.
2. The student will demonstrate an understanding and comprehension of topics dealing with sets, functions and numeration.
3. The student will demonstrate an understanding and a working knowledge of whole numbers with emphasis placed on various bases.
4. The student will demonstrate an understanding and comprehension of elementary concepts of integer arithmetic.
5. The student will analyze basic number theory.
6. The student will demonstrate an understanding and comprehension of elementary concepts of fractional numbers, and the use of decimals and exponents.
7. The student will demonstrate knowledge of ratios and proportions.

**V. CORE CONTENT TO BE COVERED IN ALL SECTIONS:**

<b>CORE CONTENT</b>	<b>APPROX. % OF COURSE</b>
1. Tools for problem solving A. Exploration with patterns B. Using the problem-solving process C. Using the calculator as a problem-solving tool	10%
2. Sets, functions, and numeration A. Describing sets B. Other set operations and their properties C. Relations and functions D. Venn diagrams and counting	15%
3. Fundamental operations of arithmetic of whole numbers A. Numeration systems B. Addition and subtraction of whole numbers C. Multiplication and division of whole numbers D. Algorithms for whole-number addition and subtraction E. Algorithms for whole-number multiplication and division F. Other number bases	20%
4. The integers A. Integers and the operations of addition and subtraction B. Multiplication and division of integers C. Solving equations and inequalities	15%
5. Number theory A. Divisibility B. Prime and composite numbers C. Greatest common divisor and least common multiple D. Clock and modular arithmetic	15%
6. Rational numbers as fractions A. The set of rational numbers B. Addition and subtraction of rational numbers C. Multiplication and division of rational numbers D. Some properties of rational numbers E. Ratio and proportion F. Exponents	15%
7. Ratio and Proportions A. Ratios B. Rates C. Percents D. Proportions	10%



**VIII. TEXTBOOK(S) AND SUPPLEMENT(S):**

Bassarear , Tom. *Mathematics for Elementary School Teachers*. Boston: Houghton Mifflin, 1997.

Billstein. et. al. *A Problem Solving Approach to Mathematics for Elementary School Teachers*.  
Reading, MA:Addison Wesley, 1997.

Long, DeTemple. *Mathematical Reasoning for Elementary Teachers*. Reading, M.A.: Addison-Wesley, 1996.

O'Daffer. *Mathematics for Elementary Teachers*. Reading M.A.:Addison-Wesley, 1998.

Software as needed:

Logo

Geometor/s Sketchpad

Stat Explorer