

Principles of Mathematics I (3)

(Effective Fall 2019)

Prerequisite: Two years of high school algebra. Math 110 or Math 140 or Math 185 or Math 251. Must be taken in sequence.

Catalog Description: Algorithms for four basic operations, systems of whole numbers and integers. Relations and functions. Greatest common factor and least common multiple. Fractions, decimals, percent, ratio, and proportion. Statistics and probability. Metric system, measurement, area, volume, informal plane and solid geometry. These are manipulative- and activity-based courses.

Notes:

1. All students in this course will take the Department of Mathematics and Statistics final exam.
2. This course requires a graphing calculator. The department recommends a calculator of the TI-83, TI-84 series for this course. Calculators with computer algebra systems built in or downloadable are prohibited.

Student Learning Outcomes: This course is designed to support degree programs in the Department of Educational Studies for students planning to become teachers. As such, this course supports the following student learning outcomes in the Department of Mathematics and Statistics:

- i. Students will be able to apply mathematical concepts and principles to perform numerical and symbolic calculations.
- iv. Students will be able to communicate effectively in both written and oral forms.

In addition, this course supports the following student learning outcomes in the Department of Educational Studies:

InTASC 7: Planning. The teacher plans instruction that supports every student in meeting rigorous learning goals by drawing upon knowledge of content areas, curriculum, cross-disciplinary skills, and pedagogy, as well as knowledge of learners and the community context.

InTASC 8: Instruction. The teacher understands and uses a variety of instructional strategies to encourage learners to develop deep understanding of content areas and their connections, and to build skills to apply knowledge in meaningful ways.

Teaching Objectives: The student will:

1. Use the four-step process for problem-solving.
2. Form the union, intersection, and Cartesian product of two sets.
3. Describe and model the concepts of the four fundamental operations in the system of whole numbers, integers, and rational numbers.
4. Explain the algorithms for the four fundamental operations in the system of whole numbers, integers, and rational numbers.
5. Explain the properties for addition and multiplication in the system of whole numbers, integers, and rational numbers.
6. Perform simple calculations in other bases as a means of emphasizing place value.

7. Apply the tests for divisibility by 2, 3, 4, 5, 9, and 11 and in relation to composite numbers.
8. Write the prime factorization and the prime power factorization of a counting number and determine the number of factors.
9. Find the greatest common divisor and the least common multiple of at least two whole numbers by at least two methods.
10. Interpret fractional and rational numbers.

Text(s): K-9 Math Toolkit (backpack of manipulatives), ETA Hand2Mind, ISBN 978-0-7406-9694-7 (REQUIRED)

Outline:	<table border="0"> <thead> <tr> <th style="text-align: left;">Chapter</th> <th style="text-align: left;">Title (Sections)</th> <th style="text-align: left;">Days</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Thinking Critically</td> <td>5</td> </tr> <tr> <td>2</td> <td>Sets and Whole Numbers</td> <td>8</td> </tr> <tr> <td>3</td> <td>Numeration and Computation</td> <td>6</td> </tr> <tr> <td>4</td> <td>Number Theory</td> <td>6</td> </tr> <tr> <td>5</td> <td>The Integers</td> <td>3</td> </tr> <tr> <td>6</td> <td>Fractions and Rational Numbers</td> <td>9</td> </tr> <tr> <td></td> <td>One period tests</td> <td style="border-top: 1px solid black;">4</td> </tr> <tr> <td></td> <td>Total days</td> <td style="border-top: 1px solid black; border-bottom: 1px solid black;">41</td> </tr> </tbody> </table>	Chapter	Title (Sections)	Days	1	Thinking Critically	5	2	Sets and Whole Numbers	8	3	Numeration and Computation	6	4	Number Theory	6	5	The Integers	3	6	Fractions and Rational Numbers	9		One period tests	4		Total days	41
Chapter	Title (Sections)	Days																										
1	Thinking Critically	5																										
2	Sets and Whole Numbers	8																										
3	Numeration and Computation	6																										
4	Number Theory	6																										
5	The Integers	3																										
6	Fractions and Rational Numbers	9																										
	One period tests	4																										
	Total days	41																										

Disability Services: The University of Tennessee provides reasonable accommodations (academic adjustments and auxiliary aids) to ensure equal access to educational content and university programs for students with disabilities. Any student eligible for and requesting accommodations due to a disability must provide instructors with a letter of accommodation from Disability Services. For additional information, please contact the Disability Services office at 209 Clement Hall, (731) 881-7605.