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| <p style="text-align: center;">MATHEMATICS 191 PRINCIPLES OF MATHEMATICS (3) (EFFECTIVE FALL 2008)</p> |
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PREREQUISITE Two years of high school algebra. Math 140 or 185 or 251. Must be taken in sequence.

NOTE:

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.

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.

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.

TEXTBOOKS: Title: Mathematical Reasoning for Elementary Teachers (Fifth Edition)
Author: Calvin T. Long, Duane W. DeTemple, Richard Millman.
Publisher: Addison Wesley. ISBN 978-0-321-46084-4.
REQUIRED

Title: Activities for Elementary Mathematics Teachers, (Fifth Edition)
Author: Dolan, Williamson, & Muri.
Publisher: Pearson Addison Wesley. ISBN 978-0-321-52862-9.
REQUIRED

OUTLINE:

| CHAPTER | TOPIC | DAYS |
|---------|--------------------------------------|----------|
| 1 | Thinking Critically (1-5) | 5 |
| 2 | Sets and Whole Numbers (1-4) | 8 |
| 3 | Numeration and Computation (1-4) | 6 |
| 4 | Number Theory (1-3) | 6 |
| 5 | The Integers (1-3) | 3 |
| 6 | Fractions and Rational Numbers (1-4) | 9 |
| | Exams | <u>4</u> |
| | | 41 |