

# Principles of Mathematics II (3)

(Effective Fall 2019)

**Prerequisite:** Math 191.

**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. Interpret decimal numbers.
2. Explain the algorithms for operations on decimal numbers.
3. Solve proportions and percentage problems.
4. Calculate simple probabilities.
5. Determine permutations and combinations.
6. Find central measures of tendency.
7. Construct circle graphs, bar graphs, line graphs, stem-and-leaf plots, line plots, and box-and-whisker plots.
8. Measure in the metric system.
9. Measure angles in degrees.

10. Calculate the perimeter and area of circles, polygons, and polyhedra.
11. Calculate the volume and surface area of spheres and polyhedra.
12. Apply transformations.
13. Classify regions and figures.

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

| <b>Outline:</b> | Chapter | Title (Sections)                          | Days |
|-----------------|---------|---|------|
|                 | 7       | Decimals and Real Numbers                 | 5    |
|                 | 8       | Statistics: The Interpretation of Data    | 4    |
|                 | 9       | Probability                               | 5    |
|                 | 10      | Geometric Figures                         | 7    |
|                 | 11      | Measurement                               | 4    |
|                 | 12      | Transformations, Symmetries, and Tilings  | 6    |
|                 | 13      | Congruence, Constructions, and Similarity | 6    |
|                 |         | One period tests                          | 4    |
|                 |         | Total days                                | 41   |

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