

Mathematics for Elementary Teachers II

MATH128

Spring 2016

This course provides a conceptually based, comprehensive study of the mathematical content of geometry, measurement, probability, and statistics at the deep level required for successful elementary school teaching. Topics are examined in ways that are meaningful to pre-service elementary teachers. Topics include: two- and three-dimensional Geometry, measurement, data analysis, single variable statistics, probability. Prerequisite: D- or higher in MATH003 Preparation for College Math III or MATH012 Intermediate Algebra; waiver by placement testing results; or departmental approval.

COURSE OUTCOMES	OUTCOMES ACTIVITIES
At the end of this course, students will be able to	
Understanding and applying concepts of measurement:	<ol style="list-style-type: none">1. Estimating and calculating measurements using customary, metric, and nonstandard units of measurement. (CT, QS, R, TS)2. Using unit conversions and dimensional analysis to solve measurement problems. (CT, QS, R, TS)3. Deriving and use formulas for calculating the lengths, perimeters, areas, volumes, and surface areas of geometric shapes and figures. (CT, QS, R, TS)4. Determining how the characteristics (e.g., area, volume) of geometric figures and shapes are affected by changes in their dimensions. (CT, QS, R, TS)5. Solving a variety of measurement problems (e.g., time, temperature, rates, average rates of change) in real-world situations. (CT, QS, R, TS)
Understanding and applying concepts of geometry:	<ol style="list-style-type: none">1. Classifying and analyzing polygons using attributes of sides and angles, including real-world applications. (CT, QS, R, TS)2. Classifying and analyzing three-dimensional figures using attributes of faces, edges, and vertices. (CT, QS, R, TS)3. Analyzing and applying geometric transformations (e.g., translations, rotations, reflections, dilations); relate them to concepts of symmetry, similarity, and congruence; and using these concepts to solve problems. (CT, QS, R, TS)4. Matching three-dimensional figures and their two-dimensional representations (e.g., nets, projections, perspective drawings). (CT, QS, R, TS)5. Recognizing and applying connections between algebra and geometry (e.g., the use of coordinate systems, the Pythagorean theorem). (CT, QS, R, TS)
Understanding descriptive statistics:	<ol style="list-style-type: none">1. Using measures of central tendency (e.g., mean, median, mode) and range to describe and interpret real-world data. (CT, QS, R, TS)

	<ol style="list-style-type: none"> 2. Selecting appropriate ways to present data and communicate statistical information (e.g., tables, graphs, line plots, Venn Diagrams). (CT, QS, R, TS) 3. Analyzing and interpret various graphic and nongraphic data representations (e.g., frequency distributions, percentiles). (CT, QS, R, TS) 4. Comparing different data sets. (CT, QS, R, TS)
<p>Understanding and applying basic concepts of probability:</p>	<ol style="list-style-type: none"> 1. Calculating the probabilities of simple and compound events and of independent and dependent events. (CT, QS, R, TS) 2. Recognizing and apply the concept of conditional probability. (CT, QS, R, TS) 3. Recognizing the difference between experimentally and theoretically determined probabilities in real-world situations. (CT, QS, R, TS) 4. Applying knowledge of combinations and permutations to the computation of probabilities. (CT, QS, R, TS)

**Indicate the Core Competencies that apply to the outcomes activities and assessment tools: Critical Thinking (CT); Technology Skills (TS); Oral Communications (OC); Quantitative Skills (QS); Reading (R); Writing (W).