

OFFICIAL SYLLABUS
MATH 112b – Math for Elementary Teaching:
Probability, Statistics, and Geometry

(Adopted – Spring 2017; Committee: C. Eames, T. Voepel)

Textbook: *Mathematics for Elementary Teachers*, 5th edition, by S. Beckmann

Chapter 10. Geometry

- 10.1 Lines and Angles
- 10.2 Angles and Phenomena in the World
- 10.3 Circles and Spheres
- 10.4 Triangles, Quadrilaterals, and Other Polygons

Chapter 11. Measurement

- 11.1 Concepts of Measurement
- 11.2 Length, Area, Volume, and Dimension
- 11.3 Error and Precision in Measurements
- 11.4 Converting from One Unit of Measurement to Another

Chapter 12. Area of Shapes

- 12.1 Areas of Rectangles Revisited
- 12.2 Moving and Additivity Principles about Area
- 12.3 Areas of Triangles
- 12.4 Areas of Parallelograms and Other Polygons
- 12.5 Shearing: Changing Shapes without Changing Area
- 12.6 Area and Circumference of Circles and the Number Pi
- 12.7 Approximating Areas of Irregular Shapes
- 12.8 Contrasting and Relating the Perimeter and Area of Shapes
- 12.9 Using the Moving and Additivity Principles to Prove the Pythagorean Theorem

Chapter 13. Solid Shapes and Their Volume and Surface Area

- 13.1 Polyhedra and Other Solid Shapes
- 13.2 Patterns and Surface Area
- 13.3 Volumes of Solid Shapes
- 13.4 Volumes of Submersed Objects Versus Weight of Floating Objects

Chapter 14. Geometry of Motion and Change

- 14.1 Reflections, Translations, and Rotations
- 14.2 Symmetry
- 14.3 Congruence
- 14.4 Constructions with Straightedge and Compass
- 14.5 Similarity
- 14.6 Dilations and Similarity
- 14.7 Areas, Volumes, and Similarity

Chapter 15. Statistics

- 15.1 Formulating Statistical Questions, Gathering Data, and Using Samples

- 15.2 Displaying Data and Interpreting Data Displays
- 15.3 The Center of Data: Mean, Median, and Mode
- 15.4 Summarizing, Describing, and Comparing Data Distributions

Chapter 16. Probability

- 16.1 Basic Principles of Probability
- 16.2 Counting the Number of Outcomes
- 16.3 Calculating Probabilities of Compound Events
- 16.4 Using Fraction Arithmetic to Calculate Probabilities

Any instructor should cover all of the material specified.