

COURSE OUTLINE

MATH 128

Concepts of Mathematics II

4 Semester Hours

HOWARD COMMUNITY COLLEGE

Course Description

This course is the second course in a sequence intended primarily for students in the elementary education and early childhood education programs. Topics include probability, metric and non-metric geometry, dimensional analysis, congruence and similarity, and coordinate and transformational geometry. Special emphasis is given throughout the course to problem-solving techniques including the appropriate use of calculators and computers. Prerequisite: C or better in MATH 070 or appropriate math placement score. (Concepts I, II may be taken in either order but sequential order is recommended.)

Overall Course Objectives:

Upon completion of this course the student will be able to:

1. Solve a variety of problems using Polya's problem solving techniques.
2. Apply the laws of probability.
3. Use a computer to create, manipulate and measure geometric figures.
4. Identify and apply measurements for length, area, volume, time and weight.
5. Prove simple geometry theorems.
6. Solve geometric problems using coordinate geometry and algebra.
7. Identify, compare and transform geometric figures.
8. Use mathematical symbols correctly.

Major Topics:

- I. Probability
 - A. Probability And Simple Experiments
 - B. Probability And Complex Experiments
 - C. Odds, Conditional Probability, Expected Value And Simulation
- II. Geometric Shapes
 - A. Analyzing Geometric Shapes; Their Definitions And Properties
 - B. Regular Polygons And Tessellations
 - C. Three- Dimensional Shapes
- III. Measurement
 - A. Nonstandard And Standard Units
 - B. Length And Area
 - C. Surface Area
 - D. Volume
- IV. Geometry Using Triangle Congruence And Similarity
 - A. Congruence And Similarity Of Triangles
 - B. Euclidean Constructions
 - C. Geometric Problem Solving Using Triangle Congruence And Similarity

- V. Coordinate Geometry
 - A. Distance And Slope
 - B. Equations
 - C. Geometric Problem Solving Using Coordinates
- VI. Transformations
 - A. Symmetry and Escher-type Patterns
 - B. Congruence and Similarity

Course Requirements

Grading/Exams: Grading procedures will be determined by the individual faculty member within the guidelines of the Mathematics Division and will include several unit exams, projects and a comprehensive departmental final exam.

Required Calculator: TI-83, TI-83 plus or TI-84

Other Course Information

This course is primarily for elementary education and early childhood education majors. Other education majors may also find it appropriate. This is a college-level mathematics course, not a "methods in teaching" course. This course is a Mathematics core course and an Arts and Science elective.