



COURSE OUTLINE OF RECORD

Number: MATH A106

TITLE: Geometry for Elementary Teachers

ORIGINATOR: Instructor Placeholder AAA

EFF TERM: Fall 2011

FORMERLY KNOWN AS:

DATE OF

OUTLINE/REVIEW: 10-06-2010

CROSS LISTED COURSE:

TOP NO: 1701.00

CID:

SEMESTER UNITS: 3.0

HRS LEC: 54.0

HRS LAB: 18.0

HRS OTHER: 0.0

CONTACT HRS TOTAL: 72.0

STUDY/NON-CONTACT HRS RECOMMENDED: 90.0

CATALOG DESCRIPTION:

Designed for prospective teachers, the course emphasizes elementary school applications of geometric shapes, tessellations, measurement, congruence and similarity, coordinate and transformational geometry. Instructional delivery design techniques and technological applications will be explored. May be taken for grades or on a pass-no pass basis. Transfer Credit: CSU; UC.

JUSTIFICATION FOR COURSE:

State teachers licensing and/or certification

PREREQUISITES:

- MATH A104: Mathematics for Elementary Teachers with a minimum grade of C or better
- MATH A104: Mathematics for Elementary Teachers with a minimum grade of C or better
- CCC Math Placement Level of 70 or higher.
- or
- MATH C104: Mathematics for Elementary Teachers with a minimum grade of C or better
- or
- GWC Math Placement Level of 60 or higher.
- or
- MATH G104: Mathematics For Elementary Teachers with a minimum grade of C or better
- or

COREQUISITES:

ADVISORIES:

ASSIGNED DISCIPLINES (FSA):

MATERIAL FEE: Yes [] No [X] Amount: \$0.00

CREDIT STATUS: Noncredit [] Credit - Degree Applicable [X] Credit - Not Degree Applicable []

GRADING POLICY: Pass/No Pass [X] Standard Letter [X] Not Graded []

OPEN ENTRY/OPEN EXIT: Yes [] No [X]

TRANSFER STATUS: CSU Transferable[] UC/CSU Transferable[X] Not Transferable[]

BASIC SKILLS STATUS: Yes [] No [X] **LEVELS BELOW TRANSFER:** Not Applicable

OCCUPATIONAL (SAM) CODE: E

REPEATABLE ACCORDING TO STATE GUIDELINES: No [X] Yes [] **NUMBER REPEATS:**

REQUIRED FOR DEGREE OR CERTIFICATE: No [X] Yes []

GE AND TRANSFER REQUIREMENTS MET:

IGETC Area 2: Mathematical Concepts and Quantitative Reasoning

2A: Mathematic

CSU GE Area B: Physical and its Life Forms(mark all that apply)

B4 - Mathematics/Quantitative Thinking

OCC AA Gen Ed

AREA A2: LANGUAGE AND RATIONALITY - Communication and Analytical Thinking

OCC AS Gen Ed

AREA A2 – ENGLISH COMMUNICATION - Communication and Analytical Thinking

COURSE LEVEL STUDENT LEARNING OUTCOME(S) Supported by this course:

Illustrate geometric ideas through model building, use of manipulatives, verbal explanation and written representation.

Use mathematical understanding to create connections between basic geometric ideas.

Work cooperatively, explore, discover, make conjectures and formulate conclusions based on geometric concepts.

Apply mathematical thinking and modeling to solve problems.

COURSE OBJECTIVES:

1. Use appropriate mathematical vocabulary related to geometry and measurement.
2. Relate characteristics of common two-and three-dimensional figures, such as triangles, quadrilaterals, and spheres.
3. Create and describe different forms of symmetry, translations, rotations, and reflections.
4. Use manipulatives, drawings, and coordinate geometry to represent geometric objects.
5. Construct basic geometric figures using a compass and straightedge.
6. Estimate and measure time, length, angles, area, volume, weight/mass, and temperature through appropriate units and scales.
7. Calculate perimeters and areas of two-dimensional objects and surface areas and volumes of three-dimensional objects.
8. Express geometric ideas algebraically
9. Demonstrate and explain algorithms and problem solving techniques.

COURSE CONTENT:

LECTURE CONTENT:

Each of these topics is presented in terms of how and why to explain concepts to elementary school students. While the emphasis is on content there will also be demonstrations of ways to present topics. Students may be required to observe an elementary school math class interview and elementary school teacher read and summarize articles in mathematics teaching journals design mathematics manipulative and/or prepare and present a classroom lesson designed for elementary students.

A. Introductory geometry

1. Characteristics and properties of polygons
2. Characteristics and properties of circles
3. Point line and angle properties
4. Construction of geometric shapes
5. Three-dimensional geometry

B. Congruence and Similarity

1. Congruence properties
2. Similarity properties

C. Motion Geometry

1. Translations rotations and reflections
 2. Size transformations
 3. Symmetries
 4. Tessellations
- D. Measurement
1. Units of length types of measures and units used
 2. Standard and nonstandard units of measure
 3. Pythagorean relationship
 4. Perimeter and area of polygons
 5. Surface area and volume of solids
- E. Coordinate Geometry
1. Variables expressions and equations
 2. Cartesian coordinate system
 3. Equations of lines and slope
 4. Systems of linear equations
- F. Problem solving with geometry
1. Spatial reasoning
 2. Modeling
 3. Algebraic solutions

LABORATORY CONTENT:

See Course Content

METHODS OF INSTRUCTION:

- A. Lecture:
- B. Lab:
- C. Independent Study:

INSTRUCTIONAL TECHNIQUES:

Grades are determined by student performance on unit tests which evaluate problem solving techniques, as well as written responses to essay questions; a comprehensive final exam whose structure is similar to that of the unit test; written reports which may include journal article summaries, interviews, and/or classroom observations. In addition, evaluations may include classroom presentation performance, as well as peer evaluation.

COURSE ASSIGNMENTS:

Reading Assignments

As assigned from text

Out-of-class Assignments

Written answers are required on test questions, documentation of activities and conclusions, which require analysis and critical thinking.

Writing Assignments

Written responses to essay questions, comprehensive final exam, written reports.

METHODS OF STUDENT EVALUATION:

- Midterm Exam
- Final Exam
- Short Quizzes
- Written Assignments
- Essay Examinations
- Objective Examinations

Report
Problem Solving Exercises
Skills Demonstration

Demonstration of Critical Thinking:

Grades are determined by student performance on unit tests which evaluate problem solving techniques as well as written responses to essay questions; a comprehensive final exam whose structure is similar to that of the unit test; written reports which may include journal article summaries, interviews, and/or classroom observations. In addition, evaluations may include classroom presentation performance, as well as peer evaluation.

Required Writing, Problem Solving, Skills Demonstration:

Written responses to essay questions, comprehensive final exam, written reports.

TEXTS, READINGS, AND RESOURCES:

TextBooks:

1. Long, Calvin T. and DeTemple, Duane W. . *Mathematical Reasoning for Elementary Teachers*,, 4TH ed. New York: Addison Wesley,, 2006

LIBRARY:

Adequate library resources include: Print Materials
Non-Print Materials
Online Materials
Services

Comments:

Attachments:

[Attached Files](#)