MATH 205 – Geometry for the Middle Level Teacher – SYLLABUS
Department of Mathematics
Millersville University

Description

This course is designed to equip middle level (4-8) mathematics specialists with sufficient knowledge and mathematical experiences for teaching geometry and measurement effectively. The course includes the study of two-dimensional and three-dimensional figures, geometric constructions, congruence, similarity, angle measure, distance, area and volume. Connections between geometry and other mathematics topics, nature and art are addressed. (3 credits)

This course may be taken for general education credit (G2)

Prerequisites

MATH 104 (C or better) or department permission.

Course Objectives

By the conclusion of this course the successful student will be able to:

- Apply fundamental rules of logic to form coherent written and oral mathematical arguments.
- Perform standard geometric constructions using paper folding, compass & straightedge, MIRA, and dynamic geometry software.
- Identify, define, and apply properties of two-and three-dimensional figures.
- Apply rigid motions to the study of congruent figures.
- Apply dilations and other size transformations to the study of similar figures.
- Apply measurement techniques and formulas to geometric figures.
- Demonstrate spatial reasoning skills in two- and three-dimensional settings.
- Demonstrate/apply connections of geometric topics to other disciplines.

Assessment

Assessment of student achievement of the course objectives will vary from one instructor to another. Typical assessment will be made through work in class, homework, and examinations.

Use of Technology

Technology use will vary by professor.

Topics

- Logic and deductive reasoning
- 2-D figures (e.g., definition; properties; classification of angles, triangles, quadrilaterals,

other polygons, and circles; congruent triangles; length, angle measure, and area; relevant geometric constructions)

- 3-D figures (e.g., definition and properties of polyhedrons, prisms, pyramids, spheres, etc.; surface area and volume; spatial reasoning)
- Rigid motions (e.g., translation, reflection, rotation, and glide reflection; congruence; symmetry)
- Similarity (e.g., dilations and other types of similarities; similar triangles, polygons, and other figures; Pythagorean theorem)