Miami-Dade Community College

MTG 2204 Geometry for Educators

Course Description: This course emphasizes Euclidean geometry. The course includes measurement and properties of plane and solid figures, sets, logic, and proofs.

(3 credits/ 3 contact hours)

Prerequisite: MAC 1105 or equivalent

Competency 1: The Student will demonstrate knowledge of angles by:

a. Classifying angles.

b. Recognizing relationships between two angles such as vertical, adjacent, supplementary, complementary, congruent.

c. Recognizing relationships between angles formed by the intersection of parallel lines and a transversal.

Competency 2: The Student will demonstrate knowledge of triangles by:

a. Stating the definition of a triangle.

b. Classifying triangles such as right, obtuse, isosceles.

c. Recognizing relationships between triangles such as congruency and similarity.

d. Solving for parts of right triangles using the Pythagorean Theorem and trigonometric ratios.

Competency 3: The Student will demonstrate knowledge of operations on plane figures by:

a. Recognizing rigid transformations, or isometries (reflections, rotations, translations) on plane figures.

b. Performing rigid transformations, or isometries (reflections, rotations, translations) on plane figures.

c. Performing tessellations.

Competency 4: The Student will demonstrate knowledge of geometric formulas by:

a. Computing perimeters and areas of plane figures.

b. Computing volumes of solids such as prisms, spheres, right circular cylinders, right circular cones.

Competency 5: The Student will demonstrate knowledge of angles, line segments, and lines associated with circles by:

a. Identifying tangent and secant lines.

b. Identifying central and inscribed angles.

c. Identifying arcs, chords, diameters, radii.

Competency 6: The Student will demonstrate knowledge of plane figures by:

a. Classifying figures such as polygons by means of their properties.

b. Solving for unknown sides using properties of similar figures

Competency 7: The Student will demonstrate knowledge of the logical reasoning skills as required by the CLAST by:

a. Explaining and presenting examples in verbal and written form of the concepts of set-inclusion and non-inclusion, compound statements and their negations, equivalence or non-equivalence of statements, valid or invalid arguments.

b. Differentiating between a postulate and a theorem.

c. Applying deductive logic to construct proofs of theorems from geometry.

Competency 8: The Student will demonstrate knowledge of the development of geometry from the ancient to the modern world by:

a. Applying logical reasoning to construct direct and indirect proofs.

b. Citing historical events and identifying individuals who contributed to the development of geometry.

c. Describing, visually and verbally, topics from spherical geometry and topology.