Course Prefix & Number: MATH 217  
Credit Hours: 3-3-0

Course Title: Elementary Geometry

Course Prerequisites: A grade of “C” or higher in MATH 117.

Textbook(s): BPCC Custom Manipulative Kit, ISBN: 9780321854094

Course Description: This course is designed for elementary education majors. The emphasis of the course is measurement and geometry. Topics include basic notions of Geometry; choosing appropriate units; unit conversions; estimating measurement; measurement of length, circumference, weight, area, temperature, angles and parallels; Geometric constructions; angles of a triangle; polygons; centers and lines of symmetry; congruent figures; similarity; tessellations; area of triangles and polygons; the Pythagorean Theorem; surface area; and volume.

Learning Outcomes:
At the end of the course, the student will:

A. use various concepts of geometry to understand basic geometric notions, plane figures, theorems involving angles, and three-dimensional figures;
B. use the various concepts of congruence and similarity and investigate systems of equations both geometrically and algebraically;
C. use the systems of measurement for length, area, volume, mass, and temperature with the philosophy that students should learn to think within a system; and
D. use the various concepts to understand motions of the plane, symmetries, and tessellations.

To achieve the learning outcomes, the student will or will be able to:
(The letter designations at the end of each statement refer to the learning outcome(s).)

1. know basic geometric terms related to points, lines, and planes; (A)
2. classify angles; (A)
3. measure angles; (A)
4. estimate linear measure; (A)
5. measure length using nonstandard units; (A)
6. convert English units of linear measure; (A)
7. convert metric units of linear measure; (A)
8. use a ruler; (A)
9. apply the triangle inequality theorem; (A)
10. find the perimeter of a plane figure; (A)
11. find the circumference of a circle; (A)
12. determine if a figure is simple and/or closed; (A)
13. determine if a figure is a polygon; (A)
14. determine if a polygon is convex/concave; (A)
15. classify polygons according to their sides; (A)
16. classify polygons as regular or non-regular; (A)
17. classify triangles according to sides and angles; (A)
18. classify quadrilaterals according to sides and angles; (A)
19. determine lines of symmetry, rotational symmetry, and point symmetry; (A)

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20. find the measure of complementary angles; (A)
21. find the measure of supplementary angles; (A)
22. use vertical angles to find missing angle measures; (A)
23. find missing angle measures when two parallel lines are cut by a transversal; (A)
24. find the sum of the interior angles of any convex n-gon; (A)
25. find the sum of the exterior angles of any n-gon; (A)
26. perform geometric constructions using a compass and a straightedge; (B)
27. write triangle congruence statements; (B)
28. use triangle properties to prove congruent triangles; (B)
29. apply properties of quadrilaterals; (B)
30. use a Mira for appropriate constructions; (B)
31. determine if triangles are similar; (B)
32. apply properties to prove triangles are similar; (B)
33. use proportions to find missing measures in similar triangles; (B)
34. applications of similar triangles; (B)
35. use the addition method to find area; (C)
36. convert English units of area; (C)
37. convert metric units of area; (C)
38. find the area of polygons; (C)
39. find the area of circles; (C)
40. solve application problems related to area; (C)
41. apply Pythagorean Theorem; (C)
42. recognize polyhedrons; (C)
43. classify polyhedrons; (C)
44. recognize cylinders and cones; (C)
45. label parts of three-dimensional solids; (C)
46. find the surface area of three-dimensional solids; (C)
47. solve application problems related to surface area of three-dimensional solids; (C)
48. find the volume of three-dimensional solids; (C)
49. convert English units of volume; (C)
50. convert metric units of volume; (C)
51. solve application problems related to volume of three-dimensional solids; (C)
52. perform translations; (D)
53. perform rotations; (D)
54. perform reflections; (D)
55. tessellate a figure across a plane; (D)

Course Requirements: All students are required to take a comprehensive final exam.

Course Grading Scale:
90 – 100  = A
80 – 89   = B
70 – 79   = C
60 – 69   = D
0  – 59   = F

Attendance Policy: The college attendance policy is available at http://www.bpcc.edu/catalog/current/academicpolicies.html

Course Fees: This course is accompanied with an additional non-refundable fee for supplemental materials, laboratory supplies, software licenses, certification exams and/or clinical fees.
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