

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

GEOMETRY
MTH 0900

Class Hours: 3.0

Credit Hours: 3.0

Laboratory Hours:
0.0

Date Revised: Fall 1998

Catalog Course Description:

This basic geometry course includes the study of two- and three-dimensional figures and their properties, construction of plane geometrical figures, and the use of geometry in problem solving. This course removes a high school unit deficiency in geometry and will not count toward fulfillment of general education hours in mathematics.

Entry Level Standards:

Must be able to read at the college level.

Prerequisite:

Two years of high school algebra and ACT math score of at least 19, or DSM 0840 or equivalent math placement score.

Textbook(s) and Other Reference Materials Basic to the Course:

Textbook:

Jurgensen, Brown, Jurgensen. *Geometry*. McDougal Littell/Houghton Mifflin, Evanston, IL, 1997.

References:

Modern Elementary Geometry. James M. Moser. Prentice-Hall, Inc.

Descriptive Geometry. Pare/Loving/Hill, MacMillian.

Geometry. Moise/Downs. Addison-Wesley Publishing Co.

Personal Equipment:

A protractor, a compass, and a basic scientific calculator are required.

I. Week/Unit/Topic Basis:

Week	Topic
1	Measure of Line Segments, 1.1; Points, Lines, and Planes, 1.2; Segments, Rays, and Distance, 1.3; Angles, 1.4; Theorems relating points, lines, and planes, 1.5.
2	Special Pairs of Angles, 2.4; Perpendicular Lines, 2.5; Planning a Proof, 2.6
3	Test 1/2; Constructions with Segments and Angles, 10.1; Definitions, 3.1; Properties of Parallel Lines, 3.2; Proving Lines Parallel, 3.3
4	Angles of a Triangle, 3.4; Angles of a Polygon, 3.5; Review; Constructions with

- Perpendiculars and Parallels, 10.2; Test 3
- 5 Congruent Figures, 4.1; Ways to Prove Triangles Congruent, 4.2; Using Congruent Triangles, 4.3; The Isosceles Triangle Theorems, 4.4; Other Methods of Congruence, 4.5; Medians, Altitudes, and Perpendicular Bisectors, 4.7; Review; Constructions with Concurrent Lines, 10.3
- 6 The Pythagorean Theorem, 8.2; The Converse of the Pythagorean Theorem, 8.3; Special Right Triangles, 8.4; Review
- 7 Test 4/8; Properties of Parallelograms, 5.1; Ways to Prove Parallelograms, 5.2; Theorems involving Parallel Lines, 5.3; Special Parallelograms, 5.4
- 8 Trapezoids, 5.5; Review; Ratio and Proportion, 7.1; Properties of Proportions, 7.2; Similar Polygons, 7.3
- 9 Postulate for Similar Triangles, 7.4; Theorems for Similar Triangles, 7.5; Proportional Lengths, 7.6; Review
- 10 Test 5/7; Basic Terms involving Circles, 9.1; Tangents, 9.2
- 11 Arcs and Central Angles, 9.3; Arcs and Chords, 9.4; Inscribed Angles, 9.5; Other Angles, 9.6; Circles and Lengths of Segments, 9.7
- 12 Review; Constructions with circles, 10.4; Test 9; Areas of Rectangles, 11.1; Areas of Parallelograms, Triangles, and Rhombuses, 11.2
- 13 Areas of Trapezoids, 11.3; Areas of Regular Polygons, 11.4; Circumferences and Areas of Circles, 11.5; Arc Lengths and Areas of Sectors, 11.6
- 14 Prisms, 12.1; Pyramids, 12.2; Cylinders and Cones, 12.3; Spheres, 12.4
- 15 Review; Test 11/12; Review for Final
- 16 Final Exam

II. Course Objectives*:

- A. Master the logic necessary to prove elementary geometric theorems and constructions. I, II, IV
- B. Master constructions skills. III, IV
- C. Master classifications of triangles and polygons. III
- D. See and be able to use patterns in mathematics and life. II
- E. Learn geometric figures and their measures. II, V
- F. Master geometric concepts that come up in the home and in work. II, IV

*Roman numerals after course objectives reference goals of the Math department.

III. Instructional Processes*:

Students will:

1. Work on teams to analyze and discuss ideas on solving proofs by applying given theorems and

- definitions. *Communication Outcome, Numerical Literacy Outcome, Active Learning Strategy*
2. Use library resources to find information about class projects such as relating art to geometry. *Information Literacy Outcome*
 3. Practice personal integrity by being punctual, dependable, and cooperative. *Personal Development Outcome*
 4. Express ideas using the language and notation of mathematics. *Numerical Literacy Outcome*
 5. Use critical thinking skills to: interpret and apply theorems, use the laws of logic, draw conclusions, state conclusions clearly in sentences. *Problem-Solving and Decision Making Outcome, Communication Outcome, Transitional Strategy*
 6. Apply knowledge of geometric figures and their properties to real-life situations. *Numerical Literacy Outcome, Transitional Strategy*
 7. Use calculators to solve algebraic equations. *Technological Literacy Outcome*

*Strategies and outcomes listed after instructional processes reference Pellissippi State's goals for strengthening general education knowledge and skills, connecting coursework to experiences beyond the classroom, and encouraging students to take active and responsible roles in the educational process.

IV. Expectations for Student Performance*:

Upon successful completion of this course, the student should be able to:

1. Describe points, curves, and planes. E
2. Measure line segments and angles. D, E, F
3. Construct and bisect angles. A, B, D, F
4. Understand basic definitions of triangles and their classifications. C, D, E, F
5. Understand and use the Pythagorean Theorem. C, D, E, F
6. Construct triangles. A, B, D, F
7. Understand what congruence means and how to prove triangles are congruent. A, D, F
8. Understand the basic definition of parallel lines and transversals. A, E
9. Understand what similar triangles are and be able to prove that triangles are similar. A, D, F
10. Understand basic definitions of quadrilaterals and their classifications. C, D, E, F
11. Utilize basic definitions of quadrilaterals, parallel lines, transversals, and triangles for proofs. A, C, D, E, F
12. Find the perimeter and area of parallelograms, triangles, trapezoids, regular polygons, and composite figures. D, E, F
13. Use straight-edge and compass to construct perpendicular and parallel lines, bisect angles, transformations, quadrilaterals, and polygons. B, D, E
14. Use numerical relationships to similar figures, ratios and proportions, and triangles. C, D, F

15. Understand basic definitions of circles. E
16. Utilize basic definitions of angles and circles in proofs. A, D, E, F
17. Understand basic definitions of three-dimensional geometry. D, E
18. Find surface area and volume of prisms, pyramids, cylinders, cones, and composite figures. D, E, F

*Letters after performance expectations reference the course objectives listed above.

V. Evaluation:

A. Testing Procedures:

Students are evaluated on the basis of tests, quizzes, and/or constructions. A minimum of six major tests is recommended.

B. Laboratory Expectations: None

C. Field Work: None

D. Other Evaluation Methods: None

E. Grading Scale:

93 - 100	A
83 - 92	B
70 - 82	C
Below 70	F

VI. Policies:

A. Attendance Policy:

Pellissippi State Technical Community College expects students to attend all scheduled instructional activities. As a minimum, students in all courses must be present for at least 75 percent of their scheduled class and laboratory meetings in order to receive credit for the course. Individual departments/programs/disciplines, with the approval of the vice president of Academic and Student Affairs, may have requirements that are more stringent.

B. Academic Dishonesty:

Individual instructors must distribute their policy on academic dishonesty during the first week of class.