PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE  
MASTER SYLLABUS  
GEOMETRY/STATISTICS  
MATH 1420

Class Hours: 3.0  Credit Hours: 3.0  Laboratory Hours: 0.0  Date Revised: Spring 03

Catalog Course Description:

This course helps students to make connections within mathematics and between math and other areas of life, to gain a conceptual understanding of math, and to be involved in inquiry learning, hands on activities, and communication. Topics include elementary probability and statistics (experiment, sampling/surveys, descriptive statistics), plane and three-space geometry, congruence and similarity, transformations, area, volume, surface area and measurements.

Entry Level Standards:

Students must be able to read at the college level.

Prerequisites:

High school algebra I and algebra II and geometry and ACT math score of at least 19; or DSPM 0850 or equivalent math placement score

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

Textbook:  

Required Supplies:  
Scientific calculator with statistical capabilities/fractional capabilities is required. A graphing calculator such as the TI-83 Plus is recommended.

I. Week/Unit/Topic Basis:

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<th>Week</th>
<th>Topic</th>
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<tbody>
<tr>
<td>1</td>
<td>Introduction, Statistical Graphs</td>
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<tr>
<td>2</td>
<td>Analyzing Data: Measures of Central Tendency, Measures of Variation and Normal Distributions</td>
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<td>3</td>
<td>Abuses of Statistics, How Probabilities Are Determined, and More on Probabilities</td>
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<td>4</td>
<td>Multistage Experiments with Tree Diagrams, Using Simulations in Probability, and Odds</td>
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<td>5</td>
<td>Review, Test #1</td>
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<td>6</td>
<td>Recognizing and Analyzing Shapes, and Polygonal Curves</td>
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<td>7</td>
<td>Regular Polygons, Tessellations, Three-Dimensional Shapes</td>
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<td>8</td>
<td>Review, Test #2, Measurement</td>
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<td>9</td>
<td>Length and Area</td>
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<td>Surface Area and Volume</td>
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<td>11</td>
<td>Review, Test #3</td>
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<td>12</td>
<td>Transformations</td>
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<td>13</td>
<td>Congruence and Similarity Using Transformations</td>
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<td>14</td>
<td>Geometric Problem Solving Using Transformations</td>
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<td>15</td>
<td>Review, Test #4, and Review for Final</td>
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<tr>
<td>16</td>
<td>Comprehensive Final Exam</td>
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**II. Course Objectives*:**

A. Analyze a given set of data and accurately describe the data by interpreting the significance of the mean, median, mode, and standard deviation. I

B. Use the basic principles of probability. I

C. Understand the real life applicability of statistics, probability, and geometry.

D. Gain experiences in measurement, using metric and standard units.

E. Master classifications of two-and three-dimensional figures, and know their properties and relationships. III

F. Learn the relevant parts of geometric forms and their measures. IV, V, VI, VII

G. Understand the different types of transformations and how they are used every day.

*Roman numerals after course objectives reference goals of the university parallel program.

**III. Instructional Processes*:**

Students will:

1. Successfully understand and interpret real world problems. *Problem Solving and Decision Making Outcome, Transitional Strategies, Active Learning Strategies*

2. Successfully use a variety of problem solving strategies, both inductive and deductive reasoning. *Problem Solving and Decision Making Outcome, Numerical Literacy Outcome, Active Learning Strategies*

3. Work, either individually or in a group setting, to solve problems from different occupational fields. Solutions must be mathematically correct and be clear and correct in
terms of the related occupational field. An example might include using geometric concepts to solve a real life problem that relates to the student’s life or future occupation. 

*Communication Outcome, Problem Solving and Decision Making Outcome, Numerical Literacy Outcome, Transitional Strategies, Active Learning Strategies*

4. Use calculator and computer technology as problem solving and exploration tools. 

*Technological Literacy Outcome, Numerical Literacy Outcome, Active Learning Strategies*

5. Use a wide variety of mathematical modeling tools, both virtual and physical, as problem solving and communication tools. 

*Technological Literacy Outcome, Active Learning Strategies, Communication Outcome*

6. Keep a journal of real life math problems that are encountered. 

*Communication Outcome, Active Learning Strategies*

*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. Solve for the mean of raw data scores and frequency distributions.  
   
   *A*

2. Draw a variety of graphs both by hand and on a computer.  
   
   *F*

3. Solve for the median and mode of raw data scores.  
   
   *A*

4. Solve for the variance and standard deviation of raw data scores and of frequency distributions.  
   
   *A*

5. Understand and apply when a particular measurement of central tendency and different graphs are more appropriate.  
   
   *A*

6. Use calculators and computers as aids in analyzing data.  
   
   *F*

7. Solve basic probability problems.  
   
   *B*

8. Draw probability tree diagrams and compare relationships with other diagrams.  
   
   *F*

9. Describe points, curves, and planes.  
   
   *F*

10. Measure line segments and angles.  
    
    *F*

11. Understand definition of all polygons and their classifications.  
    
    *E, F*

12. Understand and use the Pythagorean Theorem.  
    
    *E, F*

13. Understand what congruence and similarity mean.  
    
    *C*

14. Discover and apply definition and properties of parallel lines and transversals.  
    
    *C, F*

15. Find the perimeter and area of parallelograms, triangles, trapezoids, regular polygons, and composite figures.  
    
    *E, F*
16. Use numerical relationships in similar figures, ratios and proportions, and triangles. E, F
17. Understand definitions of circles and three dimensional geometry. F
18. Find the surface area and volume of prisms, pyramids, cylinders, cones, and composite figures. F
19. Understand the different types of transformations and symmetries. F
20. Communicate about different methods of solving problems. F
21. Analyze data from other areas and subjects. F
22. Make connections between various geometrical ideas and areas such as science, art, and landscaping. F
23. Utilize manipulatives to model math algorithms and problem solving. F

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

V. Evaluation:

A. Testing Procedures:

   Students are evaluated primarily on the basis of tests, quizzes, homework, and/or a comprehensive final exam. A minimum of 5 major tests (in addition to the final) is recommended.

B. Laboratory Expectations:

   Students will be expected to keep a portfolio of all laboratory experiments and projects. The portfolio will serve as a collateral file of future teaching references.

C. Field Work:

   N/A

D. Other Evaluation Methods:

   Excessive absences may lower the final grade.

E. Grading Scale:

   93 – 100 A
   88 – 92 B+
   83 – 87 B
   78 – 82 C+
   70 – 77 C
   60 – 69 D
   Below 60 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 (Pellissippi State Catalog). 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:

Any student found engaging in an act of academic dishonesty will be promptly dismissed from the course with a grade of F. Academic dishonesty includes the following:
- Plagiarism--presenting someone else’s words or ideas as your own;
- Collusion--allowing other people to write, to revise, or to alter significantly the text of a paper that is supposed to be your work alone.