

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

FUNDAMENTALS OF MATHEMATICS
MTH 1100

Class Hours: 3.0

Credit Hours: 3.0

**Laboratory Hours:
0.0**

Date Revised: Fall 1998

Catalog Course Description:

Topics include critical thinking skills, sets, Venn diagrams, graphing, functions, applications of linear and quadratic equations, systems of linear inequalities, linear programming, consumer math, probability, and statistics.

Entry Level Standards:

Students 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:

Angel, Allen R., and Stuart R. Porter. *A Survey of Mathematics with Applications*, 5th Ed., Addison Wesley Publishing Co., 1997.

References:

Barnett, Raymond A. and Michael R. Ziegler. *Finite Mathematics*. Dellen-MacMillian, New York, 1987.
Plascik, Chester. *College Mathematics*. Merrill Publishing Co., Columbus, Ohio, 1984.

Personal Equipment:

A basic scientific calculator is required. A graphing calculator is recommended.

I. Week/Unit/Topic Basis:

Week	Topic
1	Critical thinking skills; 1.1, 1.2, 1.3
2	Sets; 2.1, 2.2, 2.3
3	Venn diagrams and Set applications; 2.5, Review
4	Test 1; Linear equations and formulas; 6.1, 6.2, 6.3
5	Applications of linear equations, linear inequalities, Graphing linear equations; 6.4, 6.6, 6.7

6	Linear equalities in two variables, Review, Test 2; 6.8
7	Quadratic equations by quadratic formula, functions, systems of linear inequalities; 6.9, 6.10, 7.5
8	Linear programming, mass and temperature, metric system, factor-label method; 7.6, 8.3, 8.4
9	Geometry, polygons, perimeter and area, volume, graph theory; 9.1, 9.2, 9.3, 9.4, 9.5
10	Review, Test 3, Percent; 11.1
11	Promissory notes and simple interest, compound interest, installment buying; 11.2, 11.3, 11.4
12	Mortgages, the nature of probability, theoretical probability; 11.5, 12.1, 12.2
13	Review, Test 4, Expected value; 12.4
14	Tree diagrams, "or" and "and" problems, sampling techniques, misuses of statistics; 12.5, 12.6, 13.1, 13.2, Review
15	Test 5, frequency distributions, statistical graphs, measures of central tendency, measures of dispersion; 13.3, 13.4, 13.5, 13.6
16	Review, Final Exam

II. Course Objectives*:

- A. Master the logic necessary to interpret set notation and Venn diagrams. I, III, V
- B. Master the algebraic and linear programming skills necessary for success in the student's discipline. I, II, III, V
- C. Master the critical thinking skills necessary for success in the student's discipline and life. II, IV
- D. Master the algebraic modeling skills necessary for success in the student's discipline. I, III, V
- E. Apply and interpret function notations and concepts. I, III, V
- F. Translate verbal situations into algebraic equations. I, III
- G. Construct and discuss mathematical models. I, III
- H. Collect and assemble quantitative data making wide use of tables and graphs. I
- I. Use the basic principles of probability. I, II
- J. Use mathematics to solve personal everyday financial problems. I, II, III, IV
- K. Master geometric principles necessary for success in the student's discipline. III, V

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

III. Instructional Processes*:

Students will:

1. Use inductive reasoning to solve some problems. The emphasis is to observe numerical patterns to conclude what the next numbers in a sequence are. *Problem Solving and Decision Making Outcome, Numerical Literacy Outcome, Active Learning Strategies*
2. Use algorithmic processes to solve some problems deductively, such as solving linear programming problems that involve business applications. *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 sets and Venn Diagrams to use given information about number of employees and employee preferences and dislikes to determine an optimal reorganization of those employees into smaller work groups. *Communication Outcome, Problem Solving and Decision Making Outcome, Numerical Literacy Outcome, Transitional Strategies, Active Learning Strategies*
4. Use a scientific or graphing calculator to solve math of finance problems. Formulas are provided, but the student must determine which formulas to use and when to use them. The student must also be able to use the calculator to get correct results, working with numbers that are often very large and that need to have exponents correctly applied to them. *Technological Literacy Outcome, Numerical Literacy 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. Use set notation and Venn diagrams in application problems. A
2. Utilize inductive and deductive reasoning. A
3. Graph systems of linear inequalities. D, F, H
4. Translate verbal situations into algebraic models. B, D, E, F, G
5. Graph, evaluate, and apply linear, quadratic, and exponential functions. B, D, E, H
6. Construct mathematical models using various functions. G
7. Calculate simple and compound interest, annuities, and loans. H
8. Solve linear programming problems graphically. D, H
9. Graph a frequency distribution as a histogram and a frequency polygon. A
10. Solve basic probability problems. C
11. Research library texts related to major and write a word problem demonstrating application of math in that major. F, H

*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, research paper, and a comprehensive final exam. A minimum of 4 chapter tests is recommended.

B. Laboratory Expectations: None

C. Field Work: None

D. Other Evaluation Methods:

The assigned library activity can count no more than half of an individual test grade; where appropriate, grammar and syntax will be evaluated in addition to the content.

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. 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.