

PELLISSIPPI STATE TECHNICAL COMMUNITY COLLEGE
MASTER SYLLABUS

ELEMENTARY ALGEBRA
DSM 0830

Class Hours: 4.0

Credit Hours: 4.0

**Laboratory
Hours: 0.0**

Date Revised: Fall 1998

Catalog Course Description:

This course includes the study of real numbers, algebraic expressions, functions, linear equations and inequalities, graphing, systems of linear equations and inequalities, and related application. The TI-83 or TI-83 Plus calculator is required and used throughout the course.

Entry Level Standards:

Satisfactory completion of RSR 0710 or equivalent test score

Prerequisite:

RSM 0730 or equivalent math placement score

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

Thomasson/Pesut, *Experiencing Algebra*, Prentice Hall Publishing Company, 1999.
TI-83 or the TI-83 Plus graphics calculator. A symbolic manipulator such as the TI-89 or TI-92 is not permitted.

I. Week/Unit/Topic Basis:

Week	Topic
1	Rational numbers and the number line, 1.1; addition of rational numbers, 1.2; subtraction of rational numbers, 1.3; multiplication and division of rational numbers, 1.4/1.5; exponential expressions with integer exponents, 2.1; scientific notation, 2.2
2	Radical expressions and real numbers, 2.3; Exponential expressions with rational exponents, 2.4; Properties of real numbers and order of operations, 2.5; Review; Test 1
3	Variables and algebraic expressions, 3.1; Algebraic addition, subtraction, multiplication and division, 3.2/3.3; Equations, 3.4
4	Formulas and geometry, 3.5; More formulas, 3.6; Review; Test 2
5	Table of values, ordered pairs, and relations, 4.1; Rectangular coordinate system and graphing, 4.2; Functions and function notation, 4.3; Analyzing graphs, 4.4
6	Analyzing graphs, 4.4; Review; Test 3; Calculator/Group Work/Modeling Activities
7	Solving linear equations numerically and graphically, 5.1; Solving linear equations using

- addition and multiplication, 5.2; Solving equations using a combination of properties, 5.3
- 8 Solving equations for a variable, 5.4; Real world models of linear equations, 5.5; Solving linear absolute value equations 5.6
- 9 Review; Test 4; Graphing using ordered pairs and the intercept method, 6.1/6.2
- 10 Graphing using the slope-intercept method, 6.3; Coinciding, parallel, and perpendicular lines, 6.4; Writing equations from given data, 6.5
- 11 Review; Test 5; Calculator/Group Work/Modeling Activities; Solving systems of linear equations graphically, 7.1
- 12 Solving systems of linear equations with substitution, 7.2; Solving systems of linear equations using elimination, 7.3; Real world problems, 7.4; Review
- 13 Test 6; Introduction to linear inequalities, 8.1; Linear inequalities in one variable, 8.2; Linear inequalities in two variables, 8.3
- 14 Systems of linear equations in two variables, 8.4; Review; Test 7; Calculator/Group Work/Modeling Activities
- 15 Review; Final exam
- 16 Final exam retesting

II. Course Objectives*:

DSM 0830 is a mathematics course in the TBR mandated R/D program. The program is designed to provide students with skills which support their success in college-level curricula and enable them to achieve their educational goals. Students who complete the R/D program will experience about the same or better success in college-level classes as students who did not need to enroll in developmental courses.

- A. Solve first order algebraic equations, inequalities, and systems. V, IV
- B. Evaluate expressions, formulas and functions. V
- C. Model word problems numerically, graphically, or algebraically. II, V
- D. Use formulas and language of plane and coordinate geometry. III
- E. Interpret graphical information. I
- F. Use a calculator to support problem solving. GE-V.6

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

III. Instructional Processes*:

Students will:

1. Use graphing calculator and/or computer software to simplify algebraic expressions and solve linear equations and inequalities. *Technological Literacy Outcome*
2. Engage in collaborative activities such as modeling projects, presentations, group assignments, and/or other activities involving linear equations. *Problem Solving and Decision Making*

Outcome, Numerical Literacy Outcome, Transitional Strategy, Active Learning Strategy

3. Use multiple approaches--physical, numerical, graphical, symbolic, and verbal to solve linear equations and inequalities. *Numerical 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. Perform indicated operations on arithmetic expressions involving real numbers by using the correct order of operations. A, F
2. Simplify single- and multi-variable expressions with real number coefficients using the correct order of operations and the laws of commutativity, associativity, and distribution. A
3. Evaluate single- and multi-variable expressions and functions when given value(s) for the variable(s). B, F
4. Solve linear equations numerically, graphically, and algebraically. A, F
5. Solve linear inequalities and represent the solution on a graph and with interval notation. A, F
6. Simplify expressions involving integer and rational exponents. B
7. Analyze graphs of functions. E
8. Find several solutions of first-order two-variable linear equations and inequalities and graph solutions on the Cartesian Coordinate Plane. D, F
9. Model and solve word problems with a single unknown and explain the solution in narrative form. C
10. Write the equation of a line given the graph of the line. D, E
11. Write the equation of line given the slope of and a point on the line. D
12. Write the equation of a line given two points on the line. D
13. Identify slope, x-, and y-intercepts given the equation of a line. D, F
14. Identify relationships. (parallel, perpendicular, coinciding) between lines by examining both the graphs and equations of the lines. D, E, F
15. Graph systems of inequalities and clearly label the region of solution. A, D, E
16. Solve systems of equations using graphing, substitution, and elimination techniques. A, D, E, F
17. Model word problems containing two unknowns, solve the resulting system and explain the solution in narrative form. C
18. Interpret and solve problems involving the concepts of area and perimeter, volume, surface area, cost, revenue, profit, and interest. C, D
19. Interpret and solve problems involving the properties of complementary and supplementary

angles. C, D

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

V. Evaluation:

A. Testing Procedures:

Students have a maximum of three attempts to pass each chapter test. If the student does not achieve 80% proficiency within three attempts, he/she fails the course. Two attempts will be allowed to achieve 60% proficiency on the final exam. If a student does not achieve 60% within two attempts, he/she fails the course.

If a student requires multiple attempts to achieve the required 80% on the chapter tests, the scores on the attempts will be averaged. The student will receive the average of the attempts or 80%, whichever is higher.

If a student requires a second attempt on the final exam to achieve the required 60%, the two attempts will be averaged. The student will receive the average of the two attempts or 60%, whichever is higher.

B. Laboratory Expectations: None

C. Field Work: None

D. Other Evaluation Methods:

Evaluation will be based on class participation, homework, and projects as outlined on the syllabus supplement distributed by the instructor.

E. Grading Scale:

Unless otherwise stated on the syllabus supplement, the course grade will be the average of the individual chapter exams and the final exam.

A = 94 - 100
B = 87 - 93
C = 77 - 86
F = below 77

To pass the course, the student must:

1. Achieve a course average of "77%" or better
2. Achieve at least 60% proficiency on the final exam
3. Receive an 80% proficiency on each chapter test

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. Students who miss more than the equivalent of one week of class are not eligible for an "I" or "E" grade and are in jeopardy of failing the course.

B. Academic Dishonesty:

Academic dishonesty in any form is prohibited and will be dealt with severely. Penalties range from an F or a zero for the specific project or examination to automatic failure for the course for all students involved. Individual instructors must distribute their policy on academic dishonesty during the first week of class.

C. Two Attempt Rule:

According to TBR policies, a student must complete this course within two semesters of enrollment or be suspended from all TBR schools for one semester. A final grade of A, B, C, E, F, I, or W counts as one attempt.

Withdrawal:

Students placed and enrolled in an R/D course are not permitted to withdraw except for serious circumstances. Students wishing to withdraw should discuss this matter first with their mathematics instructor and then must confer with a student development counselor.