PELLISSIPPI STATE COMMUNITY COLLEGE
MASTER SYLLABUS
DEVELOPMENTAL MATHEMATICS
DSPM 0890

Class Hours: 2          Credit Hours: 0 (credit is assigned to the required modules)
Laboratory Hours: 2     Revised: Summer 2010

Catalog Course Description:

This course includes the study of integers, fractions, decimals, percents, ratio, proportions, measurements, real numbers, algebraic expressions, functions, linear equations and inequalities, graphing, systems of linear equations and inequalities, quadratics and rational functions and their graphs, polynomial expressions, quadratic equations, rational expressions and equations and related applications. The TI-83, TI-83 Plus or TI-84 calculator is required and integrated throughout the course.

Entry Level Standards:

Enrollment in or satisfactory completion of DSPW 0725 or equivalent test score. Student should be proficient with basic operations of whole numbers.

Prerequisites:

None.

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

License for Carnegie Learning
Classroom Activity Packet
Review Packet
The TI-83 or TI-83 Plus or TI 84 graphics calculator is required. A symbolic manipulator such as the TI-89 or TI-92 is not permitted.
Headphones/earphones for use in the Math Center

I. Unit/Topic Basis:

<table>
<thead>
<tr>
<th>Module</th>
<th>Topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intro</td>
<td>Learning Styles, Study Skills, Math Anxiety Tips for Success in Mathematics, Diagnostic Test</td>
</tr>
<tr>
<td>1</td>
<td>Exponential notation and order of operations, Problem Solving Strategies, Introduction to fractions and equivalent fractions, factors, prime factorization, and simplest form of fractions, Multiplying and dividing fractions, Adding and subtracting fractions, Order of operations with fractions, Operations on mixed numbers, Modeling word problems involving fractions</td>
</tr>
<tr>
<td>2</td>
<td>Introduction to decimals, Adding and subtracting decimals, Multiplying decimals, Dividing decimals, Order of operations, Fractions and decimals, Ratios, Rates, Proportions, Solving Problems with proportions including similar triangles, Percents, decimals and fractions, Solving percent problems, Mean, median, and mode</td>
</tr>
</tbody>
</table>
measurement (linear and weight/mass), Probability

3
Introduction to real numbers, operations with real numbers, variables and algebraic expressions, solving simple linear equations and applications

4
Solving linear equations algebraically, numerically and graphically, solving equations for a variable, linear inequalities in one variable, real world models, solving absolute value equations and inequalities

5
Analyzing graphs of linear functions, Graphing using ordered pairs and the intercept method, graphing using the slope-intercept method, Coinciding, parallel, and perpendicular lines, writing linear equations from given data, Graphing linear inequalities in two variables, applications

6
Solving systems of linear equations graphically, solving systems of linear equations with substitution, solving systems of linear equations using linear combinations, real world models, systems of linear inequalities in two variables

7
Introduction to polynomials, Operations involving non-negative exponents, Operations involving negative exponents, Polynomial addition/subtraction, Polynomial multiplication, Polynomial division and applications, Scientific notation, Factoring

8
Solve quadratics numerically, graphically, and algebraically, Square roots, Solve quadratics using the Principle of square roots, Pythagorean theorem, Distance formula, Solve using Quadratic Formula, Quadratic functions and graphs, real world applications

9
Multiplication/division of rational expressions, Adding rational expressions, Subtracting rational expressions, Solving rational equations, real world applications

II. Course Objectives*:

DSPM 0890 is a mathematics course in the TBR mandated Developmental Studies 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 developmental studies program will experience about the same or better success in college-level classes as students who did not enroll in developmental courses.

A. Perform operations with fractions, decimals, and integers. VI. 2
B. Solve problems using equations and graphs. VI. 2-6
C. Solve first order algebraic equations, inequalities, and systems. VI.2, 4, 5
D. Solve ratio, proportions, and percentage problems. VI. 2-5
E. Solve basic geometry problems involving perimeter, area, and linear measures. VI. 2-5
F. Solve basic probability and statistics problems VI. 2-6
G. Simplify and evaluate expressions, formulas and functions. VI.5
H. Model word problems numerically, graphically, or algebraically. VI.2, 3, 5
I. Use formulas and language of plane and coordinate geometry. VI.3
J. Interpret graphical information. VI.1, 3, 6
K. Factor polynomial expressions. VI.1
L. Solve quadratic equations algebraically, numerically, or graphically. VI.4,5
M. Use function notation: evaluate, determine the domain and range, and graph a function. VI.3,5
N. Solve rational equations algebraically, numerically, or graphically. VI.4,5

*Roman numerals after course objectives reference TBR's general education goals.

**III. Instructional Processes**: 

Students will:

1. Use graphing calculator and/or computer software to simplify algebraic expressions and solve linear equations and inequalities. *Mathematics Outcome, Technological Literacy Outcome*

2. Engage in collaborative activities such as modeling projects, presentations, group assignments, and/or other activities involving linear, quadratic and/or rational functions. *Mathematics Outcome, Transitional Strategy, Active Learning Strategy*

3. Use multiple approaches – physical, numerical, graphical, symbolic, and verbal to solve linear equations and inequalities, polynomial and rational equations. *Mathematics Outcome*

4. Participate in interactive discovery exercises that lead to the development of mathematical relationships. *Active Learning Strategy*

*Strategies and outcomes listed after instructional processes reference TBR’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. Add, subtract, multiply, and divide fractions, including mixed numbers, expressing answers in simplest form. A

2. Add, subtract, multiply, and divide decimals. A

3. Add, subtract, multiply, and divide integers. A

4. Determine other equivalent forms of a simple fraction, a decimal number, or a percent. A

5. Solve a problem involving percentages. D

6. Determine an equivalent measure within the same system for customary or metric units of measurement of (1) length, (2) weight or mass, (3) volume. E

7. Solve a problem involving probability and statistics. F
8. Solve a word problem by identifying a variable, writing an equation, and solving the equation. B, H
9. Find an appropriate solution to a two-step equation. C
10. Solve problems related to a given graph. B
11. Solve problems using integers, decimals, and fractions. A
12. Perform indicated operations on arithmetic expressions involving real numbers by using the correct order of operations. A
13. Simplify single- and multi-variable expressions with real number coefficients using the correct order of operations and the laws of commutativity, associativity, and distribution. G
14. Evaluate single- and multi-variable expressions and functions when given value(s) for the variable(s). G
15. Solve linear equations numerically, graphically, and algebraically. C
16. Solve linear inequalities and represent the solution on a graph and with interval notation. C
17. Find several solutions of first-order two-variable linear equations and inequalities and graph solutions on the Cartesian coordinate plane. C
18. Model and solve word problems with a single unknown and explain the solution in narrative form. H
19. Write the equation of a line given the graph of the line. I
20. Write the equation of a line given the slope of and a point on the line. I
21. Write the equation of a line given two points on the line. I
22. Identify slope, x- and y-intercepts given the equation of the line. I
23. Identify relationships, (parallel, perpendicular, coinciding) between lines by examining both the graphs and equations of the lines. I
25. Solve systems of equations using graphing, substitution, and elimination techniques. C
26. Model word problems containing two unknowns, solve the resulting system and explain the solution in narrative form. B, H
27. Interpret and solve problems involving the concepts of area and perimeter, volume, surface area, cost, revenue, profit, and interest. E
28. Interpret and solve problems involving the properties of complementary and supplementary angles. E
29. Simplify an exponential expression with positive and negative exponents using the rules of
30. Add, subtract, multiply and divide polynomial expressions. G
31. Rewrite a polynomial as a product of factors using GCF, trial and error, grouping, perfect trinomial squares, difference of squares or state that the polynomial "cannot be factored." K
32. Simplify a square root using the product and quotient rule. G
33. Find an acceptable solution set for equations with quadratics numerically, graphically, algebraically by factoring, using square roots, or the quadratic formula. L
34. Calculate the distance between two points using the distance formula. G
35. Find a missing side on a triangle using the Pythagorean Theorem. G
36. Evaluate, determine the domain and range, and graph a linear, quadratic and rational function. M
37. Interpret important characteristics of a polynomial function, quadratic function and their graphs. M
38. Model and solve word problems with quadratic and rational equations. L, N
39. Rewrite a rational expression in simplest form. G
40. Add, subtract, multiply and divide rational expressions. G
41. Find an acceptable solution set for equations with rational expressions. N

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

V. Evaluation:

A. Testing Procedures:

Students must score at least 80% on a module posttest to complete the module.

B. Laboratory Expectations:

Students will work in the Math Center to complete interactive mathematics instruction as well as other activities based on their learning styles.

C. Field Work:

N/A

D. Other Evaluation Methods:

The grade for each module will be determined by points earned on the module test, classroom assignments, and Math Center attendance. Students will not be allowed to take a module test until at least 80% of the course requirements up to that point have been completed.
Course Requirements:
Math Center Attendance        30 points per week
Classroom Activities              20 points per week
Scavenger Hunt                   10 points
Email Assignment                 10 points
Learning Style Assessment   10 points

Module Grade:
The grade for each module (0891-0899) will be determined by the weighted average of the module test grade and the course requirements up to that point.

(Test Grade + Test Grade + Course Requirements Grade) ÷ 3 = Module Grade

E. Grading Scale:

A = 94 – 100
B = 87 - 93
C = 80 - 86
F = below 80

VI. Policies:

A. Attendance Policy:

Pelissippi State 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 5 or more classroom or lab days will receive an F for any uncompleted modules or their last module.

B. Academic Dishonesty:

Individual instructors must distribute their policies on academic dishonesty and calculator use during the first week of classes. In addition to other possible disciplinary sanctions that may be imposed as a result of academic misconduct, the instructor has the authority to assign either (1) an F or a zero for the assignment or (2) an F for the course.

C. Accommodations for Disabilities:

Students who need accommodations because of a disability, have emergency medical information to share, or need special arrangements in case the building must be evacuated should inform the instructor immediately, privately after class or in her or his office. Students must present a current accommodation plan from a staff member in Services for Students with Disabilities (SSWD) in order to receive accommodations in this course. Services for Students with Disabilities may be contacted by going to Goins 134 or 126 or by phone: 694-6751(Voice/TTY) or 539-7153. More information is available at www.pstcc.edu/departments/swd/.

D. Cell Phones:

Cellular telephones and other devices with photographic imaging capabilities must be turned off and cannot be visible during any Pellissippi State instructional or testing activity. Students who violate this policy during an instructional activity will be asked to leave the classroom or other
instructional area; a violation of the policy during a test or other evaluation activity will be considered cheating and the student will be given a zero for that activity or an F for the course.

E. Withdrawal:

Students placed and enrolled in a DSP course are not permitted to withdraw except for serious documented circumstances. Students wishing to withdraw should discuss this matter first with their mathematics instructor and then must confer with a student development counselor. The counselor will notify the student of the decision to allow him/her to withdraw.