

## SYLLABUS

**COURSE # AND TITLE:** Math 113, Applied Mathematics for Vocational Studies

**# OF CREDITS:** 3

**CATALOG DESCRIPTION:**

Instructs students in the knowledge of addition, subtraction, multiplication and division of whole numbers, fractions and decimals. Topics also include ratios and proportions, percents, standard and metric measurements and conversions. Basics of algebra, operations of rational numbers, algebraic expressions, solving equations, formulas, geometry and trigonometric concepts of sine, cosine, tangent and the Pythagorean Theorem. Vocational applications are emphasized.

**Semester Offered:** Fall, Spring, Summer

**Prerequisites:** Grade of "C" or better in MATH 095 *or* ACCUPLACER score of 66+ (Arithmetic) *or* 41-60 (Algebra)

*Common Student Learning Outcomes*

*Upon successful completion of San Juan College programs and degrees, the student will....*

<i>Learn</i>	<i>Students will actively and independently acquire, apply and adapt skills and knowledge to develop expertise and a broader understanding of the world as lifelong learners.</i>
<i>Think</i>	<i>Students will think analytically and creatively to explore ideas, make connections, draw conclusions, and solve problems.</i>
<i>Communicate</i>	<i>Students will exchange ideas and information with clarity and originality in multiple contexts.</i>
<i>Integrate</i>	<i>Students will demonstrate proficiency in the use of technologies in the broadest sense related to their field of study.</i>
<i>Act</i>	<i>Students will act purposefully, reflectively, and respectfully in diverse and complex environments.</i>

**GENERAL LEARNING OBJECTIVES:**

Upon successful completion of this course, the student will have a working knowledge of the following content areas:

1. Master the application of the basic operations of integers and rational numbers, including calculator use.
2. Have a useful foundation in the application of measurement, specifically to include measuring instruments.
3. Simplify expressions, use formulas, and solve applications of algebra and geometry, including direct and inverse variation.
4. Solve geometrical measurement and trigonometric applications appropriate to the vocational areas.
5. Collect, analyze, and interpret masses of numerical data.

**SPECIFIC LEARNING OUTCOMES:**

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

- 1.1 Add, subtract, multiply, and divide integers and simplify expressions of integers.
- 1.2 Add, subtract, multiply, and divide rational numbers, as well as simplify expressions with rational numbers.
- 1.3 Apply computational and calculator skills to appropriate applications for vocational areas.
  
- 2.1 Appropriately convert units of length, weight, capacity, area, and volume in two measurement systems: American and Standard International (Metric).
- 2.2 Calculate and apply formulas of perimeter, area, and volume to regular and composite figures.
- 2.3 Accurately read appropriate measuring instruments: ruler, micrometer, caliper, dial indicators, and gauges.
  
- 3.1 Simplify expressions and solve first degree equations in one variable.
- 3.2 Describe, diagram and apply formulas of geometry to regular and composite figures.
- 3.3 Apply ratios, rates, and proportions to solve problems of direct and inverse variation (pulleys, forces, blueprints, etc.).
  
- 4.1 Use the Pythagorean Theorem, ratios of sine, cosine, and tangent to solve right triangle problems for missing dimensions (angles or sides).
- 4.2 Apply the law of sines and cosines to solve oblique triangles for missing dimensions.
- 4.3 Diagram and solve problems of right triangle trigonometry as it applies to the vocational areas.
  
- 5.1 Construct bar, circle and line graphs.
- 5.2 Find mode, median and mean for a set of measurements.

**OTHER REQUIREMENTS:**

A scientific calculator is required.

Dean 

Date 12-17-08

**A current syllabus must be on file in the dean's office for every course being taught during a given semester.**