NCBS 404A: MATH PREPARATION FOR TRADES I: PLUMBING, PIPEFITTING, HVAC, SHEET METAL, ELECTRICAL

Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2025
Units:	0
Hours:	2 lecture per week (24 total per quarter)
Degree & Credit Status:	Non-Degree-Applicable Non-Credit Course Basic Skills, 3 Levels Below Transfer
Foothill GE:	Non-GE
Transferable:	None
Grade Type:	Non-Credit Course (Receives no Grade)
Repeatability:	Unlimited Repeatability

Student Learning Outcomes

- The student will be able to perform the order of operations to find the value of an expression involving whole numbers, fractions, decimals, and/or signed numbers
- The student will be able to apply proportional reasoning and percent to real applications
- The student will be able to use geometric formulas to solve applications involving perimeter, area, and volume.

Description

Preparation for the mathematics aptitude tests for the trades. Operations and applications of fractions, decimals, percents, ratios and proportions, and geometric formulas.

Course Objectives

The student will be able to:

- 1. Perform the four operations (addition, subtraction, multiplication, and division) with whole numbers, fractions, mixed numbers, and decimals.
- 2. Convert between fractions, decimals, and percentages.
- Use ratios, rates, proportions, and percentages to model and solve application problems.
- 4. Evaluate square roots and use the Pythagorean Theorem.
- 5. Find perimeter, area, and volume of geometric figures.
- 6. Identify number patterns in sequences.

Course Content

- 1. Whole numbers
 - a. Add, subtract, multiply, and divide whole numbers
 - b. Estimate sums, differences, products, and quotients of whole numbers

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- 2. Fractions and mixed numbers
 - a. Simply fractions
 - b. Convert between improper fractions and mixed numbers
 - c. Add, subtract, multiply, and divide fractions and mixed numbers
- 3. Decimals
 - a. Converting between decimals and fractions
 - b. Add, subtract, multiply, and divide decimals
- 4. Percents
 - a. Converting between fractions, decimals, and percents
 - b. Finding the percent of a number
 - c. Applications of percentages
 - d. Calculating percent increase or decrease (relative change)
- 5. Ratios and proportions
 - a. Writing unit rates
 - b. Solving proportions
 - c. Applications involving proportional reasoning
- 6. Geometric formulas
 - a. Using the Pythagorean Theorem
 - b. Perimeter and area of rectangles, triangles, and composite figures
 - c. Circumference and area of circles and semicircles
 - d. Volume of spheres and cylinders
 - e. Converting between units (inches, feet, yards, square inches, square feet, etc.)
- 7. Sequences
 - a. Identifying the next number in a sequence of numbers, which may include arithmetic sequences, geometric sequences, or other patterns

Lab Content

Not applicable.

Special Facilities and/or Equipment

When taught hybrid, on-going access to computer with email software and hardware; email address.

Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

Class discussion Homework Self-assessment

Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

Lecture Discussion

Representative Text(s) and Other Materials

Aufmann, Richard, and Joanne Lockwood. <u>Mathematics: Journey from</u> <u>Basic Mathematics through Intermediate Algebra</u>. 2025.

Instructor created worksheets, instructor created practice tests, webbased practice.

Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

Weekly practice problems.

Discipline(s)

Mathematics