

I. CATALOG DESCRIPTION:

A. Department Information:

Division: Technical
Department: Electricity/Electronics/Refrigeration
Course ID: TECALC 950
Course Title: Shop Calculations
Units: 3
Lecture: 3 Hours
Prerequisite: None

B. Catalog and Schedule Description:

A basic skill course designed as a review of whole numbers, fractions, decimals, problem solving methods, and practical measurements.

II. NUMBER OF TIMES COURSE MAY BE TAKEN FOR CREDIT: One

III. EXPECTED OUTCOMES FOR STUDENTS:

Upon completion of this course, students will be able to:

- A. Acknowledge the computational concepts of addition, subtraction, multiplication, and division as used with whole numbers.
- B. Identify the arithmetic, mechanics, and the manipulations of the operations of fractions.
- C. Recognize the similarity decimals have with whole numbers and fractions and be familiar with the decimal fraction values and how they are used.
- D. Demonstrate different solving methods on applied problems.
- E. Apply practical measurement techniques.

IV. CONTENT:

A. Whole Numbers

- 1. Addition
- 2. Subtraction
- 3. Multiplication
- 4. Division
- 5. Exponents and order of operations

B. Fractions: Multiplication & Division

- 1. Reducing both proper and improper fractions
- 2. Multiplication of fractions and mixed numbers
- 3. Division of fractions and mixed numbers

C. Fractions: Addition & Subtraction

- 1. Reducing both proper and improper fractions
- 2. Factoring method of finding the lowest common denominator
- 3. Addition of fractions and mixed numbers
- 4. Subtraction of fractions and mixed numbers

D. Decimal Fractions

- 1. Rounding off numbers
- 2. Addition
- 3. Subtraction
- 4. Multiplication
- 5. Division
- 6. Changing fractions to decimals and decimals to fractions
- 7. Ratio and proportion

E. Practical Measurements

- 1. Linear measurement
- 2. Pressure measurement
- 3. Fluid measurement
- 4. Electrical measurement

V. METHODS OF INSTRUCTION:

Methods of instruction will vary from instructor to instructor but may include:

- A. Lectures and discussions about mathematical principles, focusing on mechanics and vocabulary.
- B. Lectures and discussions are complemented with handouts and instruction using sample problems.
- C. Homework is assigned to promote understanding, vocabulary and self-esteem.

VI. TYPICAL ASSIGNMENTS:

Typical assignments will vary from instructor to instructor by may include:

- A. $836-427 =$
- B. $2/3 + 5/6 =$
- C. $85/8 - 512/16 =$
- D. $(62/3)(3/4) =$
- E. $9 \div 12.5 =$
- F. Linear and distance measurement
- G. Exponential measurement scales
- H. Pressure gage measurements
- I. Electrical measurements

VII. EVALUATION:

A. Methods of evaluation will vary from instructor to instructor but may include:

- 1. Chapter exams
- 2. Final exam
- 3. Typical Questions:
 - a) $2/3 + 5/6 =$
 - b) $85/8 - 512/16 =$
 - c) Measure the OD of pipe with calipers
 - d) Interpret readings from an analog meter face

B. Frequency of evaluation will vary from instructor to instructor but may include:

- 1. Five chapter exams
- 2. One final exam

VIII. TYPICAL TEXTS:

Barker/Aufmann/Lockwood, Essential Mathematics, 5th Edition, Houghton Mifflin, New York, 1999
Olivo, Basic Technical Mathematics, 1st Edition, Prentice Hall, New York, 1994
Anderson, Achatz, Mckenzie, Technical Shop Math, 3rd Edition, Industrial Press, New York, 2000

IX. OTHER SUPPLIES REQUIRED OF STUDENTS: None