

I. COURSE DESCRIPTION:

This course presents a review of arithmetic, elements of algebra, statistics, geometry, and trigonometry. It emphasizes manipulative skills to prepare students for work in specialized areas of technology.

II. PREREQUISITES:

MTH 2 or the equivalent by placement test.

III. INTRODUCTION:

This course is designed to provide the student with a solid foundation in the mathematical skills needed to work on a day-to-day basis in a variety of technical disciplines.

IV. INSTRUCTIONAL MATERIALS:

Textbook: Elementary Technical Mathematics 10th edition by Dale Ewen and C. Robert Nelson
ISBN 1111296839

REQUIRED

Scientific or graphing calculator

REQUIRED

Protractor and ruler with metric and US units

REQUIRED

See Section IX for additional resources.

V. MATERIAL TO BE COVERED:

Unit I	Chapters 1 – 4.	4 weeks
Unit II	Chapters 5 – 7.	4 weeks
Unit III	Chapters 8, 12, 13 and 14.	5 weeks
Unit IV	Chapter 15	2 weeks

VI. BASIC CONCEPTS:

The student must master the following concepts:

Chapter 1 Basic Concepts

This is mainly review.

- 1.1 Review of Basic Operations
- 1.2 Order of Operations
- 1.3 Area and Volume **Emphasize**
- 1.4 Formulas **Emphasize**
- 1.5 Prime Factorization Divisibility
- 1.6 Introduction to Fractions
- 1.7 Addition and Subtraction of Fractions
- 1.8 Multiplication and Division of Fractions
- 1.9 The U. S. System of Weights and Measures **Emphasize**
- 1.10 Addition and Subtraction of Decimal Fractions
- 1.11 Rounding Numbers
- 1.12 Multiplication and Division of Decimal Fractions
- 1.13 Percent
- 1.14 Part (Amount), Base, and Rate
- 1.15 Powers and Roots **Omit cube roots**

Chapter 2 Signed Numbers and Powers of 10

The first 4 sections are review.

- 2.1 Addition of Signed Numbers
- 2.2 Subtraction of Signed Numbers
- 2.3 Multiplication and Division of Signed Numbers
- 2.4 Signed Fractions
- 2.5 Powers of 10
- 2.6 Scientific Notation **Use of calculator in scientific mode is optional.**

Chapter 3 The Metric System

- 3.1 Introduction to the Metric System
- 3.2 Length
- 3.3 Mass and Weight
- 3.4 Volume and Area
- 3.5 Time, Current, and Other Units
- 3.6 Temperature
- 3.7 Metric and U. S. Conversion

Chapter 4 Measurement

- 4.1 Approximate Numbers and Accuracy
- 4.2 Precision and Greatest Possible Error
- 4.3 The Vernier Caliper
- 4.4 The Micrometer Caliper
- 4.5 Addition and Subtraction of Measurements
- 4.6 Multiplication and Division of Measurements
- 4.7 Relative Error and Percent of Error

Chapter 5 Polynomials: An introduction to Algebra

- 5.1 Fundamental Operations
- 5.2 Simplifying Algebraic Expressions

Chapter 6 Equations and Formulas

- 6.1 Equations
- 6.2 Equations with Variables in Both Members
- 6.3 Equations with Parentheses
- 6.4 Equations with Fractions
- 6.5 Translating Words into Algebraic Symbols
- 6.6 Applications Involving Equations
- 6.7 Formulas
- 6.8 Substituting Data into Formulas
- 6.9 Reciprocal Formulas Using a Calculator

Optional

Chapter 7 Ratio and Proportion

- 7.1 Ratio
- 7.2 Proportion
- 7.3 Direct Variation
- 7.4 Inverse Variation

Chapter 8 Graphing Linear Equations

- 8.1 Linear Equations with Two Variables
- 8.2 Graphing Linear Equations
- 8.3 The Slope of a Line

Omit parallel and perpendicular lines.

Chapter 12 Geometry

- 12.1 Angles and Polygons
- 12.2 Quadrilaterals
- 12.3 Triangles
- 12.4 Similar Polygons
- 12.5 Circles
- 12.6 Radian Measure

Chapter 13 Right Triangle Trigonometry

- 13.1 Trigonometric Ratios
- 13.2 Using Trigonometric Ratios to Find Angles
- 13.3 Using Trigonometric Ratios to Find Sides
- 13.4 Solving Right Triangles
- 13.5 Applications Involving Trigonometric Ratios

Chapter 14 Trigonometry with Any Angle

- 14.1 Sine and Cosine Graphs
- 14.3 Solving Oblique Triangles: Law of Sines
- 14.4 Law of Sines: The Ambiguous Case
- 14.5 Solving Oblique Triangles: Law of Cosines

Chapter 15 Basic Statistics

- 15.1 Bar Graphs
- 15.2 Circle Graphs
- 15.3 Line Graphs
- 15.5 Mean Measurement
- 15.7 Range and Standard Deviation

VII. SUGGESTED WEEKLY SCHEDULE – 15 WEEK SEMESTER:

- Week 1: Chapter 1: Emphasize 1.3, 1.4, 1.9 and Unit Reviews. Omit cube roots in 1.15.
- Week 2: 2.1 – 2.6
- Week 3: 3.1 – 3.7
- Week 4: 4.1 – 4.7
- Week 5: Test I, 5.1, 5.2
- Week 6: 6.1 – 6.4
- Week 7: 6.5 – 6.8, (6.9 is optional if time permits.)
- Week 8: 7.1 – 7.4, Test II
- Week 9: 8.1 – 8.3
- Week 10: 12.1 -12.4
- Week 11: 12.5, 12.6, 13.1 – 13.3
- Week 12: 13.4, 13.5, 14.1
- Week 13: 14.3 – 14.5, Test III
- Week 14: 15.1 – 15.3
- Week 15: 15.5, 15.7

Give Final Exam during the scheduled exam period

VIII. SUGGESTED WEEKLY SCHEDULE – 10 WEEK SEMESTER:

- Week 1: Chapters 1 and 2
- Week 2: Chapter 3, 4.1 - 4.4
- Week 3: 4.5 – 4.7, Test I, 5.1, 5.2
- Week 4: 6.1 – 6.5
- Week 5: 6.6 – 6.8, 7.1 – 7.4, Test II
- Week 6: 8.1 – 8.3, 12.1 – 12.3
- Week 7: 12.4 – 12.6, 13.1, 13.2
- Week 8: 13.3 – 13.5, 14.1, 14.3, 14.4
- Week 9: 14.5, Test III, 15.1 – 15.3
- Week 10: 15.5, 15.7, EXAM