

CATALOG INFORMATION

Dept and Nbr: IED 90B                      Title: TECHNICAL MATH  
Full Title: Technical Mathematics  
Last Reviewed: 4/27/2009

| Units   |      | Course Hours per Week |      | Nbr of Weeks | Course Hours Total |       |
|---------|------|-----------------------|------|--------------|--------------------|-------|
| Maximum | 3.00 | Lecture Scheduled     | 3.00 | 17.5         | Lecture Scheduled  | 52.50 |
| Minimum | 3.00 | Lab Scheduled         | 0    | 6            | Lab Scheduled      | 0     |
|         |      | Contact DHR           | 0    |              | Contact DHR        | 0     |
|         |      | Contact Total         | 3.00 |              | Contact Total      | 52.50 |
|         |      | Non-contact DHR       | 0    |              | Non-contact DHR    | 0     |

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable  
Grading:                      Grade Only  
Repeatability:            00 - Two Repeats if Grade was D, F, NC, or NP  
Also Listed As:  
Formerly:

**Catalog Description:**  
Practical applications of mathematics for occupational students, using electronic calculators. Includes right angle trigonometry, equations, graphs, vectors, logarithms, and algebra fundamentals.

**Prerequisites/Corequisites:**  
Course Completion of IED 90A or equivalent.

**Recommended Preparation:**  
Eligibility for ENGL 100 or ESL 100

**Limits on Enrollment:**

**Schedule of Classes Information:**  
Description: Practical applications of mathematics for occupational students, using electronic calculators. Includes right angle trigonometry, equations, graphs, vectors, logarithms, and algebra fundamentals. (Grade Only)  
Prerequisites/Corequisites: Course Completion of IED 90A or equivalent.  
Recommended: Eligibility for ENGL 100 or ESL 100  
Limits on Enrollment:

Transfer Credit:

Repeatability: Two Repeats if Grade was D, F, NC, or NP

## **ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:**

|                      |                      |                 |            |           |
|----------------------|----------------------|-----------------|------------|-----------|
| <b>AS Degree:</b>    | <b>Area</b>          |                 | Effective: | Inactive: |
|                      | MC                   | Math Competency | Fall 1981  | Fall 2009 |
| <b>CSU GE:</b>       | <b>Transfer Area</b> |                 | Effective: | Inactive: |
| <b>IGETC:</b>        | <b>Transfer Area</b> |                 | Effective: | Inactive: |
| <b>CSU Transfer:</b> |                      | Effective:      | Inactive:  |           |
| <b>UC Transfer:</b>  |                      | Effective:      | Inactive:  |           |

**CID:**

**Certificate/Major Applicable:**

Both Certificate and Major Applicable

## **COURSE CONTENT**

### **Outcomes and Objectives:**

The student will:

1. Demonstrate basic mathematical concepts related to algebra, geometry, and trigonometry.
2. Solve basic mathematical problems associated with the subject matter of the course.
3. Analyze, evaluate, and solve mathematical word problems associated with the subject matter of the course.
4. Evaluate and demonstrate on-the-job uses of the mathematical concepts associated with his/her occupational field.
5. Use an electronic calculator in solving mathematical problems.
6. Use mathematical conversion tables and formulas.

### **Topics and Scope:**

- I. Algebra fundamentals
  - A. Equations and the algebraic process
  - B. Theory of signed numbers
  - C. Rules of operation of signed numbers
  - D. Addition, subtraction, multiplication and division of signed numbers
- II. Addition and subtraction of algebraic expressions
  - A. Definitions and classifications of terms and expressions
  - B. Operations on monomial and polynomial expressions
  - C. Simplifying algebraic expressions
  - D. Operations on exponents
- III. Multiplication and division of binomials and polynomials
  - A. Rules of operation
  - B. Practical applications
- IV. Powers of ten
  - A. Definitions and technical applications

- B. Scientific notation and significant figures
- C. Rules of operation
- V. Factoring
  - A. The concept of prime factors
  - B. Rules of operation
  - C. Factoring binomial and trinomial expressions
- VI. Algebraic equations
  - A. Definition and types of equations
  - B. Rules for solving equations
  - C. Practical applications in occupational areas
- VII. Angles
  - A. Definitions and measurements of angles
  - B. Cartesian or rectangular coordinates
  - C. Polar coordinates and the generation of angles
  - D. Oblique triangles and the laws of sines and cosines
- IX. Principles of vector analysis and numerical control of mill machines
  - A. The concept of vector forces
  - B. Computation of and graphing vector forces
  - C. Practical applications in occupational areas

### Assignment:

Students will be required to complete:

1. Reading assignments that will average fifteen pages per week during a full semester class.
2. Computational homework assignments averaging one per week or approximately ten assignments during the semester.
3. Practical occupational problem assignments - approximately ten assignments during the semester.
4. Periodic tests and final exam

### Methods of Evaluation/Basis of Grade:

**Writing:** Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing  
0 - 0%

**Problem Solving:** Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems and class worksheets

Problem solving  
20 - 50%

**Skill Demonstrations:** All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations  
0 - 0%

**Exams:** All forms of formal testing, other than skill performance exams.

Periodic tests and final exam

Exams  
50 - 80%

**Other:** Includes any assessment tools that do not logically fit into the above categories.

None

Other Category  
0 - 0%

**Representative Textbooks and Materials:**

Introduction to Technical Mathematics. Washington, Allen J., Pearson 2008, fifth edition  
Industrial Education 90B Syllabus, Power, T.C.,