

# EASTERN ARIZONA COLLEGE

## Technical Math I

Course Design

2010-2011

### Course Information

**Division** Mathematics  
**Course Number** TEC 101  
**Title** Technical Math I  
**Credits** 4  
**Developed by** Ray Orr  
**Lecture/Lab Ratio** 4 Lecture/0 Lab

### Transfer Status

ASU	NAU	UA
Non Transferable	Elective Credit	Non Transferable

**Activity Course** No  
**CIP Code** 48.0500  
**Assessment Mode** Pre/Post Test (25 Questions/100 Points)  
**Semester Taught** Fall and Spring  
**GE Category** AAS degree only  
**Separate Lab** No  
**Awareness Course** No  
**Intensive Writing Course** No

### Prerequisites

MAT 077 with a grade of "C" or higher or placement test score as established by District policy

### Educational Value

This course is designed for continuing algebra students, or anyone who needs a refresher algebra course in preparation for College Algebra.

### Description

A continuation of Elementary Algebra. Topics include functions, systems of equations, inequalities, quadratics, radicals, and conic sections. Identical to MAT 120.

### Textbooks

Bittenger, M. *Elementary and Intermediate Algebra: Concepts and Applications*. Edition: 5<sup>th</sup>. Publisher: Addison-Wesley Longman, Inc. Year: 2010. ISBN-13: 9780321559449. Required

## **Supplies**

Scientific calculator

### **Competencies and Performance Standards**

#### **1. Apply techniques to identify, evaluate, graph, and combine functions.**

##### **Learning objectives**

*What you will learn as you master the competency:*

- a. Distinguish between functions and non-functions.
- b. Determine the domain and range of functions and non-functions.
- c. Use function notation.
- d. Perform the basic operations with functions: addition, subtraction, multiplication, and division.
- e. Sketch the graphs of basic algebraic functions.

##### **Performance Standards**

*You will demonstrate your competence:*

- On assigned activities
- On written exams
- On a two hour cumulative final exam

*Your performance will be successful when:*

- You can demonstrate the ability to identify, evaluate, graph, and combine functions

#### **2. Apply techniques to solve linear systems of equations.**

##### **Learning objectives**

*What you will learn as you master the competency:*

- a. Solve a two equation linear system graphically.
- b. Solve a linear system of equations by substitution.
- c. Solve linear system equations by elimination.
- d. Solve a linear system equations using Cramer's Rule.
- e. Solve applied problems using a linear system of equations.

##### **Performance Standards**

*You will demonstrate your competence:*

- On assigned activities
- On written exams
- On a two hour cumulative final exam

*Your performance will be successful when:*

- You can demonstrate the ability to solve linear systems of equations using a variety of methods

**3. Apply techniques to solve inequalities.**

***Learning objectives***

*What you will learn as you master the competency:*

- a. Solve and graph linear inequalities.
- b. Use interval notation.
- c. Solve compound inequalities.
- d. Solve absolute value inequalities.
- e. Solve inequalities in two variables graphically.

***Performance Standards***

*You will demonstrate your competence:*

- On assigned activities
- On written exams
- On a two hour cumulative final exam

*Your performance will be successful when:*

- You can demonstrate the ability to solve inequalities

**4. Apply techniques to simplify radical expressions with rational exponents, and solve radical equations.**

***Learning objectives***

*What you will learn as you master the competency:*

- a. Change radical expressions alternately between radical format and exponential format.
- b. Simplify radicals.
- c. Apply rules for adding radicals.
- d. Apply rules for multiplying and dividing radicals.
- e. Solve radical equations.
- f. Simplify an expression by rationalizing.
- g. Solve applications involving radicals.

***Performance Standards***

*You will demonstrate your competence:*

- On assigned activities
- On written exams
- On a two hour cumulative final exam

*Your performance will be successful when:*

- You can demonstrate the ability to simplify and solve a variety of radical expressions and equations
- You can correctly solve radical equations applied to real world situations

**5. Apply techniques to identify, solve, and graph quadratic equations and inequalities.**

***Learning objectives***

*What you will learn as you master the competency:*

- a. Perform addition, subtraction, multiplication, and division with complex numbers.
- b. Solve quadratic equations by completing the square.
- c. Solve quadratic equations using the quadratic formula.
- d. Solve quadratic inequalities.
- e. Solve applied problems involving quadratic equations.
- f. Find the axis of symmetry and the vertex of a parabola.

***Performance Standards***

*You will demonstrate your competence:*

- On assigned activities
- On written exams
- On a two hour cumulative final exam

*Your performance will be successful when:*

- You can correctly solve quadratic equations applied to real world situations
- You can demonstrate the ability to solve a variety of quadratic equations and inequalities

**6. Apply techniques to graph conic sections.**

***Learning objectives***

*What you will learn as you master the competency:*

- a. Identify the various conic sections from equations written in general form.
- b. Graph a parabola with a horizontal or vertical axis of symmetry.
- c. Graph a circle utilizing the standard form of a circle.
- d. Graph an ellipse that is in standard form.
- e. Graph a hyperbola that is in standard form.

***Performance Standards***

*You will demonstrate your competence:*

- On assigned activities
- On written exams
- On a two hour cumulative final exam

*Your performance will be successful when:*

- You can sketch graphs from equations for circles, ellipse, parabolas, and hyperbolas.

***Types of Instruction***

Classroom Presentation

## **Grading Information**

### **Grading Rationale**

Each instructor has the flexibility to develop evaluative procedures within the following parameters.

1. Written exams must represent at least 60% of the final course grade
2. Final exam must represent at least 20% of the final course grade.
3. The Post Test is to be embedded in the final exam and must represent at least 10% of the final course grade.
4. Other activities may represent at most 20% of the final course grade.

### **Grading Scale**

A	90%-100%
B	80%-89%
C	70%-79%
D	60%-69%
F	Below 60%