Technical Math I

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:

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<th>ASU</th>
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<td>Non Transferable</td>
<td>Elective Credit</td>
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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
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%