

## Course Objective Development Form

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**Course Number:** MAC 1105

**Course Title:** College Algebra

**Initiator(s) of Course Objectives:** Cynthia Mansour

**Date:** 2/17/1999

**Signature(s):**

**Cluster 3**

**Date of Cluster Approval:** 1/6/2005

**Typed Name and Signature of Cluster Chair:** Greg Henderson

### Course Objectives:

1. Show extended knowledge of objectives presented in prerequisite courses.
2. Solve applied problems from the sciences, engineering, mathematics and business through the study of appropriate mathematical functions and equations.
3. Use the laws of exponents to simplify exponential expressions.
4. Convert radical expressions to expressions involving rational exponents.
5. Be able to support algebraic techniques graphically, numerically and verbally.
6. Know and apply the characteristics of the following types of functions: linear, linear absolute value, quadratic, radical, polynomial, rational, exponential and logarithmic functions.
7. Find the domain and range among real numbers of given functions.
8. Show understanding of and be able to use functional notation.
9. Find the composition of two functions and give the domain of the composition.
10. Decompose a composite function into two functions.
11. Know and apply the definition of one-to-one function and recognize graphically the characteristics of one-to-one functions.
12. Know and apply the definition of inverse function.
13. Determine the inverse of a one-to-one function; numerically, graphically and symbolically.

14. Be able to restrict the domain of a function that is not one-to-one to create a function with that characteristic.
15. Show understanding of the relationships present between a function and its inverse.
16. Solve applied optimization problems graphically.
17. Solve applied optimization problems involving the quadratic function symbolically.
18. Find functions and corresponding equations that model relationships in practical applications.
19. Determine the function (linear, quadratic, polynomial or exponential) that best approximates the relationship between a given set of input-output values (ordered pairs).
20. Express as equations statements involving direct, inverse and joint variation or proportion.
21. Solve problems involving variation or proportion.
22. Convert logarithmic equations to exponential equations and vice versa.
23. Use the properties of logarithms including the change of base formula.
24. Use the  $\log$ ,  $\ln$ ,  $10^x$ ,  $e^x$ , and  $y^x$  function keys on a calculator to solve problems.
25. Solve exponential and logarithmic equations.
26. Solve practical applications involving exponential growth and decay.
27. Solve a system of nonlinear equations in two unknowns.
28. Solve a system of at least 4 linear equations by substitution.
29. Solve a system of inequalities graphically.