Alexandria Technical and Community College

MATH 1425: Precalculus

A. COURSE DESCRIPTION

Credits: 4
Lecture Hours/Week: 4
Lab Hours/Week: *.*
OJT Hours/Week: *.*

Prerequisites:
This course requires any of these seven prerequisites
- MATH 1421 - College Algebra
- MATH 0421 - Bridge to College Algebra (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 5)
- MATH 0431 - Intermediate Algebra (Minimum grade: 2.0 GPA Equivalent and Number of Years Valid: 5)
- MATH 1420 - College Algebra
- Algebra College Level
- ATCC Calculus-Level Placement
- A score of 2 on test Algebra

Corequisites: None

MnTC Goals: Goal 04 - Mathematical/Logical Reasoning

This course meets Minnesota Transfer Curriculum (MnTC) goal area 4. This course, covering topics in college algebra and trigonometry, prepares learners for calculus and other advanced math courses. Topics include algebraic manipulation, graphing, and applications related to polynomial, rational, exponential, logarithmic, and trigonometric functions. A graphing calculator is required. Prerequisite: College level math score on a placement test or a minimum grade of "C" in Intermediate Algebra (MATH0431).

B. COURSE EFFECTIVE DATES: 05/19/2008 - Present

C. OUTLINE OF MAJOR CONTENT AREAS

1. Calculate the difference quotient for a quadratic function and relate to the graph of the function.
2. Calculate the intercepts and min/max of quadratic functions.
3. Carry out vector operations, including addition, subtraction, and dot product.
4. Graph quadratic, polynomial, rational, exponential, and logarithmic functions.
5. Identify key characteristics of functions, including intercepts, domain, and range.
6. Investigate rate of change.
7. Simplify exponential and logarithmic expressions.
8. Solve quadratic, polynomial, rational, exponential, and logarithmic equations.
9. Solve right triangles for missing dimensions.
11. Use trigonometric identities to manipulate trigonometric expressions.
12. Use vertical and horizontal shifts, reflections, and stretching to graph functions.

D. LEARNING OUTCOMES (General)

1. The learner will be able to calculate the instantaneous rate of change of a quadratic function.
2. The learner will be able to use analytic trigonometry to solve problems involving triangles and vectors.

3. The learner will be able to solve exponential, logarithmic, and trigonometric equations.

4. The learner will be able to evaluate, manipulate, graph, and describe common algebraic functions and their transformations.

E. Minnesota Transfer Curriculum Goal Area(s) and Competencies

   Goal 04 - Mathematical/Logical Reasoning
   1. Illustrate historical and contemporary applications of mathematical/logical systems.
   2. Clearly express mathematical/logical ideas in writing.
   3. Apply higher-order problem-solving and/or modeling strategies.

F. LEARNER OUTCOMES ASSESSMENT

   As noted on course syllabus

G. SPECIAL INFORMATION

   None noted