I. **OVERVIEW**

The following information will appear in the 2009 - 2010 catalog

**MATH 49**  
**Skills for Success in Transfer Level Math courses**  
**0.5 Unit**

*Formerly listed as: MATH - 49: Skills for Success in Intermediate Algeb*

*Designed to provide practice on mathematical skills needed for success in transfer level mathematics courses. Particularly useful for those who are weak in prerequisite skills or who have struggled in intermediate algebra or precalculus courses. NOTE: MATH 49 DOES NOT serve as a prerequisite to transferable mathematics courses.*

Four maximum completions.

Field trips are not required.  
**Units/Hours:** 0.50 Units: Lecture - 4.50 hours  
Lab - 13.50 hours  
**Grading:** P/NP Only

II. **LEARNING CONTEXT**

*Given the following learning context, the student who satisfactorily completes this course should be able to achieve the goals specified in Section III, Desired Learning:*

A. **COURSE CONTENT**

1. **Required Content:**

   Note - This course has only lab hours. All course content is described within the Lab Content section.

2. **Required Lab Content:**

   a. Linear Equations and Inequalities

      i. Linear equations

      ii. Linear inequalities

      iii. Applications

      iv. Absolute value

   b. Graphs of Linear Functions

      i. Graphing lines

      ii. Equations of lines

      iii. Inequalities in two variables

      iv. Sets, relations, and functions

   c. Systems of Linear Equations and Inequalities

      i. Solving systems of linear equations
ii. Applications

iii. Matrices

iv. Graphing system of linear inequalities

d. Exponents and Polynomials

i. Integer and rational exponents

ii. Manipulating polynomial expressions

iii. Factoring

e. Rational Expressions and Rational Functions

i. Simplifying expressions

ii. Adding, subtracting, multiplying, and dividing expressions

iii. Solving rational equations

iv. Graphing a rational function

v. Applications

f. Radicals

i. Simplifying radicals

ii. Adding, subtracting, multiplying, and dividing radicals

iii. Radical equations

iv. Rational exponents

g. Complex Numbers and Quadratic Equations

i. Operations on complex numbers

ii. Quadratic equations

h. Exponential and Logarithmic Expressions

i. Functions

ii. Laws of logarithms

iii. Solving exponential and logarithmic equations

iv. Graphing exponential and logarithmic functions

i. Conic sections

i. Parabolas
ii. Circles

iii. Ellipses

iv. Hyperbolas

j. Sequences and Series

i. Introduction to sequences and series

ii. Arithmetic sequences

iii. Geometric sequences

iv. Geometric series

B. ENROLLMENT RESTRICTIONS

1. Requisite Skills

   Before entering the course, the student will be able to:

   a. Simplify arithmetic expressions using the correct order of operations.

   b. Simplify algebraic expressions by combining like terms.

   c. Solve linear equations in one variable.

   d. Solve and graph linear inequalities in one variable.

   e. Graph linear equations and inequalities in two variables.

   f. Write the equation of a line describing the relationship between two variables.

   g. Solve systems of linear equations in two variables by the graphing method, the substitution method, or the elimination-by-addition method.

   h. Solve systems of linear inequalities by graphing and shading.

   i. Add, subtract, multiply, and divide polynomials.

   j. Factor polynomials, by factoring out the GCF, factoring by grouping, special factorizations, and guess and check.

   k. Solve quadratic equations by factoring.

   l. Simplify algebraic expressions by correctly applying the rules of exponents.

C. HOURS AND UNITS

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<tr>
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<th>UNITS</th>
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<tr>
<td>Lect</td>
<td>04.50000</td>
<td>0.25</td>
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<tr>
<td>Lab</td>
<td>13.50000</td>
<td>0.25</td>
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D. METHODS OF INSTRUCTION (TYPICAL)
Instructors of the course might conduct the course using the following method:

1. Students will have to attend initial orientation meeting.
2. Students will be evaluated and assigned topics for review by the computer program.
3. Computer software will present content, demonstrate correct techniques, and lead students through a collection of on-line exercises.
4. Work through assigned content material on-line.
5. Students will navigate learning paths based on their level of readiness.
6. There will be periodic meetings to evaluate student's progress.

E. ASSIGNMENTS (TYPICAL)

1. EVIDENCE OF APPROPRIATE WORKLOAD FOR COURSE UNITS
   Time spent on coursework in addition to hours of instruction (lecture hours)
   Each module takes approximately 8 - 10 hours to complete. Each student will need to complete three modules to receive credit for the course.

2. EVIDENCE OF CRITICAL THINKING
   Assignments require the appropriate level of critical thinking
   Modules are designed to help students to think critically so that they can succeed in transfer level math classes.

F. TEXTS AND OTHER READINGS (TYPICAL)

1. Other: ALEKS: (Assessment and LEarning in Knowledge Spaces) (an artificial intelligence-based system for individualized math learning available via the World Wide Web) McGraw Hill Publisher
   Other: ALEKS includes readings, video clips, and mathematical examples.

III. DESIRED LEARNING

A. COURSE GOAL
As a result of satisfactory completion of this course, the student should be prepared to:

achieve greater success in the transfer level math course(s) needed to meet career and/or academic goals.

B. STUDENT LEARNING GOALS
Mastery of the following learning goals will enable the student to achieve the overall course goal.

1. Required Learning Goals
   Upon satisfactory completion of this course, the student will be able to:

2. Lab Learning Goals
   Upon satisfactory completion of the lab portion of this course, the student will be able to:
   a. Solve problems involving absolute values.
   b. Solve systems of linear equations using elimination and matrices, and solve application problems involving system of equations.
c. Manipulate polynomial expressions by exponentiation, factorization, and arithmetic operations.

d. Simplify rational expressions and solve rational equations.

e. Add, subtract, multiply and divide complex numbers.

f. Graph quadratic functions given in standard form or general form by using transformations.

g. Simplify, expand, and contract logarithmic expressions using the rules of logarithms.

h. Solve logarithmic and exponential equations.

i. Graph exponential and logarithmic functions.

j. Identify, based on its equation, and correctly graph each type of conic section: circles, parabolas, ellipses, and hyperbolas.

k. State the general term of an arithmetic or geometric sequence, find the sum of an arithmetic or geometric sequence, and determine the first few terms of a given arithmetic, geometric, or recursive sequence.

IV. METHODS OF ASSESSMENT (TYPICAL)

A. FORMATIVE ASSESSMENT

1. Continuous computerized assessment after students completes each problem.

B. SUMMATIVE ASSESSMENT

1. Satisfactory completion of each module requires correct answers on a minimum of 70% of the problems assigned within the module. Student must satisfactorily complete three modules to earn each 1/2 unit of credit.