MATH 0000A - ELEMENTARY ALGEBRA

SECTION A

1. Division:	Sciences & Mathematics
2. Course Discipline:	MATH
3. Course Number:	0000A
4. Course Title:	ELEMENTARY ALGEBRA
5. First semester this new version/new course will be offered:	SUMMER 2013

SECTION B   General Course Information

1.Units:	N/A	**Variable Units:**	4-5
2.This Course is:	Degree-Applicable Credit - Non-Transferable		
3A. Cross-List:		**3B. Formerly:**	

Course Format and Duration

4. Standard Term Hours per Week		**5. Standard Term Total Semester Hours**	
Lecture/Discussion:	4 - 5	Lecture/Discussion:	72 - 90
Lab:		Lab:	
Activity:		Activity:	
By Arrangement:		By Arrangement:	
Total Hours per Week:	4 - 5	**Total Hours :**	72 - 90

6. Minimum hours per week of independent work done outside the class: 8 - 10

Course Preparation - (Supplemental form B required)

7a. Prerequisite(s): (Course and/or other preparation/experience that is <u>REQUIRED</u> to be completed previous to enrollment in this course.)

   Completion of MATH 582 with grade of "C" or better or placement by matriculation assessment process

7b. Co-requisite(s): (Courses and/or other preparation that is REQUIRED to be taken concurrently with this course.)

7c. Advisory: (MINIMUM preparation <u>RECOMMENDED</u> in order to be succesful in this course. Also known as "Course Advisory".)

Catalog Description And Other Catalog Information:

8. Repeatability: Not Repeatable

Please note: Repeatability does <u>not</u> refer to repeating courses because of substandard grades or a lapse of time since the student took the course. A course may be repeated <u>only</u> if the course content differs each time it is offered and the student who repeats it is gaining an expanded educational experience as stipulated in Title V.

☐ Skills or proficiencies are enhanced by supervised repetition and practice within class periods.

☐ Active participatory experience in individual study or group assignments is the basic means by which learning objectives are attained.

☐ Course content differs each time it is offered.

Explanation for above repeatability selection:

9a. Grading Option: Standard Grade

9b. Catalog Description:

Real numbers and their properties, first degree equations and inequalities, graphs of linear equations in two variables, systems of linear equations in two variables, properties of integer exponents, polynomial operations, basic factoring, rational expressions, radical expressions, quadratic equations, and applied problems and problem solving.

Course Outline Information

10. Course Objectives: (Performance objectives for all credit courses must indicate that students will learn critical thinking and will be able to apply concepts at college level.Performance objectives must be related to items listed in Section 11.)

Upon completion of this course, the students will be able to:

1. Execute basic order of operations with signed numbers, fractions, decimals and numbers with exponents.
2. Translate written or spoken language phrases and sentences to algebraic expressions and equations.
3. Graph linear equations and inequalities in two variables.
4. Find the equation of a line given sufficient information about the line.
5. Solve systems of linear equations in two variables and their associated applied problems.
6. Simplify and perform operations on algebraic expressions including polynomials, rational expressions, radicals, and integral exponents.
7. Translate numbers from decimal notation to scientific notation and vice versa.
8. Analyze polynomial expressions to determine the best approach to factoring and complete factorization using that technique.
9. Solve linear, radical, rational and quadratic equations and their associated applied problems.
10. Solve linear inequalities and represent their solutions using number lines and interval notation when appropriate.

11. Course Content Outline: (Provides a comprehensive, sequential outline of the course content, including all major subject matter and the specific body of knowledge covered.)

1.Real Numbers
A.Sets of Real Numbers
B.Four basic operations
C.Order of operations
D.Properties

2.Linear Equations and Inequalities in One Variable
A.Solve equations
B.Solve inequalities including interval notation
C.Solve literal equations
D.Solve applied problems

3.Linear Equations in Two Variables
A.Compute slope of a line
B.Write equation of a line (Point-slope form, slope-intercept form and standard form)
C.Parallel and perpendicular lines

4.Graphing Linear Equations in Two Variables
A.T-tables
B.Slope-intercept
C.Intercepts

5.Systems of Linear Equations and Inequalities in Two Variables
A.Solve by graphing
B.Solve by substitution
C.Solve by elimination/addition method
D.Solve applied problems

6.Polynomials
A.Add, subtract and multiply polynomials
B.Divide polynomials by monomials
C.Calculate degree of polynomials

7.Exponents
A.Properties of integral exponents
B.Scientific notation

8.Factor Polynomials Completely
A.Greatest Common Factor
B.Difference of squares
C.Trinomial
D.Grouping

9.Rational Expressions
A.Simplify using four basic operations
B.Evaluate
C.Solve rational equations
D.Solve applied problems

10.Roots and Radicals
A.Simplify
B.Add, subtract and multiply
C.Rationalize the denominator
D.Solve radical equations

11.Quadratic Equations
A.Solve by factoring
B.Solve by square-root property
C.Solve by quadratic formula
D.Solve applied problems

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12. Typical Out-of-Class Assignments: (Credit courses **require** two hours of independent work outside of class for each lecture hour, less lab/activity classes. List type of assignments including library assignments.)

a. Reading Assignments: (Submit at least 2 examples.)

1. In the text read the introduction to slope. Note the distinction between lines with positive slope and negative slope.

2. Find and read an article that discusses very large or very small numbers in an applied setting. Note how these numbers are more easily represented in scientific notation versus decimal notation.

b. Writing, Problem Solving or Performance: (Submit at least 2 examples)

1. Solve applied mathematical problems that use linear models. Example: After a 23% reduction, you purchase a television for $320. What was the television's price before the reduction?

2. The relationship between Celsius and Fahrenheit temperatures can be described by a linear equation. The graph of this equation contains the point (0, 32): Water freezes at 0 degrees Celsius or at 32 degrees Fahrenheit. The line also contains the point (100, 212): Water boils at 100 degrees Celsius or at 212 degrees Fahrenheit. Write the linear equation expressing Fahrenheit temperature in terms of Celsius temperature.

c. Other (Term projects, research papers, porfolios, etc.)

13. Required Materials:

a. All textbooks, resources and other materials used in this course are college level?

☑ Yes
☐ No

b. Representative college-level textbooks (for degree applicable courses) or other print materials:

Book 1:

Author:	Blitzer
Title:	Introductory Algebra for College Students
Publisher:	Pearson
Date of Publication:	2012
Edition:	6th

c. Other materials and/or supplies required of students:

Methods of Instruction

14. Check all Instructional methods used to present course content:

☑ Lecture   ☑ Activity
☑ Discussion Semminar   ☑ Distance Education (requires supplemental form)
☐ Lab   ☐ Work Experience
☑ Directed Study   ☐ Tutoring

Other:

Give detailed examples of teaching methodology that relate to the course performance objectives:

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1. Interactive lecture format to develop the concept of adding and subtracting rational expressions. Commonalities and differences between adding and subtracting arithmetic fractions and rational expressions will be emphasized. Students will participate verbally and by working various examples.

2. In class small group collaborative learning activity - students will discuss the various methods used for graphing linear equations in two variables. Given a list of linear equations, students will be able to choose the most efficient method to graph each equation. The instructor will circulate and ask clarifying questions as the students complete this task.

15. Methods of Assessing Student Learning

15a. Methods of Evaluation:

☑	Essay Exam	☐	Reports
☑	Objective Exam	☑	Problem Solving Exam
☑	Projects	☐	Skill Demonstration
☑	Class Discussion	☐	Other

15b. (All courses must provide for measurement of student performance in terms of stated student performance objectives, Area 10, and culminate in a formal recorded grade based on uniform standards. Submit at least 2 examples.)

Example 1: Given a quadratic equation, determine which strategies could be used to solve it. Choose the most efficient method and solve the equation. This problem is graded based on the completeness and correctness of the strategy used and the solutions found.

Example 2: Solve a system of two equations by applying the substitution method, the elimination method, and by graphing. Show that the solution is the same by all three methods. This question is graded based on the clarity, completeness, and correctness of the method used and of the solution found.

SECTION C

1. Program Information:
- ☑ In an approved program
- ☐ Part of a new program
- ☐ Not part of an approved program

2. TOP Code Information
   Program Title: Mathematics, General 170100

3. Course SAM Code:
- ☐ A - Apprenticeship Course
- ☐ B - Advanced Occupational
- ☐ C - Clearly Occupational
- ☐ D - Possibly Occupational
- ☑ E - Non-Occupational

4. Faculty Discipline Assignment(s):

   Mathematics

Comments:

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SECTION D

General Education Information:

1. College Associate Degree GE Applicability:

2. CSU GE Applicability:

3. IGETC Applicability:

4. C-ID :

SECTION E

1. Articulation Information: (Required for Transferable Courses Only)

- ☐ CSU Transferable
- ☐ UC Transferable
- ☐ CSU/UC Major Requirement.

If CSU/UC major requirement, list campus and major. (Note: Must be lower division)

2. List at least one community college and its comparable course. If requesting CSU and/or UC transferability also list a CSU/UC campus and comparable lower division course

SECTION F

Planning and Resources: Please address the areas below:

1. Evidence of Need or Potential: recommendations of advisory committee, connection to existing or planned degrees/certificates, or regional/national developments, transfer university requirements.

Required as a prerequisite to Math D. (Math D is a prerequisite to any transferable mathematics course. Additionally, Math D meets the mathematics requirement for achieving an Associate Degree.)

2. Appropriateness to Mission: connection to basic skills, transfer, career technical education, or lifelong learning; relationsh

Required as a prerequisite to Math D. (Math D is a prerequisite to any transferable mathematics course. Additionally, Math D meets the mathematics requirement for achieving an Associate Degree.)

3. Place in Program/Department: relationship to student learning outcomes identified by program, connection to general education, or articulation with other institutions.

Required as a prerequisite to Math D. (Math D meets GE applicability for Mathematics Competency and Communications and Analytical Thinking.) Math A includes all four Math program SLO's (Equations and Expressions, Visual Models, Applied Problems, Communication).

4. Availability of Faculty and Facilities: minimum qualifications to teach course, special training for instructors, or long-term physical impact of course.

All math faculty members meet the minimum qualifications to teach this course. No special training is required.

5. Potential Impact on Resources: impact on library, computer support, transportation, equipment, or other needs

No additional resources are needed since we have the classroom space and technology already available.

SECTION G

1. Maximum Class Size (recommended):   35

2. If recommended class size is not standard, then provide rationale: