Administrative Unit: Computer and Mathematical Sciences Department

Course Prefix and Number: MATH 104

Course Title: Beginning Algebra

Number of Credit Hours: 3
Lecture Hours: 3
Laboratory Hours: 0

Catalog Description: An introduction to the fundamental concepts of algebra. Review of arithmetic skills, solving linear equations and inequalities, application problems, graphing lines, and introduction to polynomials and factoring. Students must repeat the course if a grade of U, F, or D is awarded.

Prerequisite(s)/Corequisite(s): None.

Text(s): A variety of textbooks deal with the subject of beginning algebra. Most are satisfactory if they cover the areas under the Topical Outline. Examples include:

Blitzer, R. *Introductory Algebra for College Students.* Prentice-Hall.


Course Objectives:

- To communicate mathematically in both written and verbal forms.
- To reason with symbolic and graphical representations.
- To use mathematics to solve real-world problems.
- To use technology, such as graphing calculators and computers, to enhance their mathematical understanding.

Measurable Learning Outcomes:

- Manipulate algebraic and numerical expressions including fractions, decimals, and signed numbers.
- Solve linear equations and inequalities both graphically and algebraically.
- Evaluate formulas.
- Translate English phrases into algebraic expressions.
- Solve real-world problems using equations and inequalities.
- Graph lines and linear inequalities in the Cartesian Plane.
- Find the equation of a line in both slope-intercept and point-slope form.
- Interpret the meaning of the slope and the intercepts of a line.
- Apply the rules of exponents to simplify algebraic expressions.
- Add, subtract, multiply, and divide polynomials.
Use scientific notation.
Factor polynomials.
Solve quadratic equations by factoring.

Topical Outline (major areas of coverage):

- Arithmetic Skill Review
  - Fractions
  - Decimals
  - Percents
  - Signed Numbers
  - Properties of Real Numbers
  - Order of Operations
- Linear Equations and Inequalities
  - Addition Principle
  - Multiplication Principle
  - Solving Linear Equations
  - Using Formulas
  - Solving Linear Inequalities
- Solving Applied Problems
  - Translating English phrases into algebraic expressions
  - Use equations to solve application problems
  - Use inequalities to solve application problems
- Lines
  - Plotting points in the Cartesian Plane
  - Slope
  - Slope-intercept form of the Equation of a Line
  - Point-Slope form of the Equation of a Line
  - Graphing Lines
  - Graphing Linear Inequalities
- Exponents and Polynomials
  - Rules of Exponents
  - Negative Exponents and Scientific Notation
  - Adding and Subtracting Polynomials
  - Multiplying Polynomials
  - Dividing Polynomials
- Factoring Polynomials
  - Greatest Common Factor
  - Factoring by Grouping
  - Factoring Trinomials
  - Factoring Special Forms
- Solving Quadratic Equations by Factoring

Recommended maximum class size for this course: 30

Library Resources: Online databases are available at http://www.ccis.edu/offices/library/resources.asp. You may access them from off-campus using your eServices login and password when prompted.

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Name ___________________________________________ Signature ________________________________

Date: March 8, 2006
NOTE: The intention of the master syllabus is to provide an outline of the contents of this course, as specified by the faculty of Columbia College, regardless of who teaches the course, when it is taught or where it is taught. Faculty members teaching this course for Columbia College are expected to facilitate learning pursuant to the course objectives and cover the subjects listed in the topical outline. However, instructors are also encouraged to cover additional topics of interest so long as those topics are relevant to the course’s subject. The master syllabus is, therefore, prescriptive in nature but also allows for a diversity of individual approaches to course material.

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