

City Colleges of Chicago
Course Title: Intermediate Algebra with Geometry

Length of course: 16 Weeks

Contact Hours: Contact Hours

Credit Hours: 5 Credit Hours

Lecture Hours: 5 Lecture Hours

Lab Hours:

Weekly Plan:

Catalogue Description:

Algebraic topics include: rational exponents; scientific notation; radical and rational expressions; linear, quadratic, quadratic in form, rational, radical, and absolute value equations; compound linear inequalities; literal equations; systems of linear equations in two and three variables; systems of linear inequalities; and introduction to functions. Geometric topics include: perimeter; area; volume; Pythagorean Theorem; and similarity and proportions. Students should be exposed to graphing calculator technology and/or computer algebra systems. Writing assignments, as appropriate to the discipline, are part of the course.

Students the Course is Expected to Serve:

This course is intended to prepare students for college-level mathematics. It is a prerequisite for transferable college mathematics courses.

Pre-requisites:

Placement Test -- or Consent of Chair -- or Prerequisite -- MATH 098 With a minimum grade of 'C' or Prerequisite -- PC MATH 3004 With a minimum grade of 'S'

Course Objectives:

1. Develop the algebraic skills necessary for problem solving.
2. Develop the ability to model linear, quadratic, and other nonlinear relations, including the use of the graphing techniques and geometrical principles as tools, for the purpose of solving contextual (real-world) problems.
3. Manipulate and apply literal equations for the purposes of solving contextual (real-world) problems.
4. Writing and communicating the results of problem solving appropriately.
5. Use technology as one aide for the purposes of solving contextual (real-world) problems.

Student Learning Outcomes:

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

- A. Simplify expressions containing rational exponents.
- B. Perform operations on and simplify radicals.
- C. Perform operations on and simplify rational expressions.
- D. Solve quadratic equations with real solutions, including the use of the quadratic formula.
- E. Solve rational equations.
- F. Solve absolute value equations of the form $|ax + b| = c$.
- G. Solve radical equations of the form: $\text{square root}(ax + b) = c$.
- H. Solve compound linear inequalities.
- I. Solve systems of linear inequalities in two variables.

- J. Solve systems of linear equations in two and three variables.
- K. Formulate and apply an equation, inequality or system of linear equations to a contextual (real-world) situation.
- L. Solve and evaluate literal equations, including nonlinear equations.
- M. Formulate and apply nonlinear literal equations to a contextual (real-world) situation.
- N. Graph linear and quadratic equations.
- O. Determine equations of lines, including parallel and perpendicular lines.
- P. Determine whether given relationships represented in multiple forms are functions.
- Q. Determine domain and range from the graph of a function.
- R. Formulate and apply the concept of a function to a contextual (real-world) situation.
- S. Interpret slope in a linear model as a rate of change.
- T. Apply formulas of perimeter, area, and volume to basic 2- and 3-dimensional figures in a contextual (real-world) situation.
- U. Apply the Pythagorean Theorem to various contextual (real-world) situations.
- V. Apply the concepts of similarity and congruency of triangles to a contextual (real-world) situation.

Topical Outline: Suggested Timeframe

<u>Week</u>	<u>Topic</u>
1	Algebraic Expressions
2-5	Linear Equations & Inequalities
6	Exponents & Scientific Notations
7-10	Quadratic Equations
11-13	Rational and Absolute Value Equations
14	Geometry
15-16	Functions

Calendar:

Methods of Evaluation:

Total Percentage: 0%

The weight given to exams, quizzes, and other instruments used for evaluation will be determined by the instructor. COMPASS and/or Department Exit Examination will also be used to evaluate the student.

Methods of Assessment:

Exams, quizzes, homework and other assessments will be used as appropriate to measure student learning.

Methods of Instruction:

Problem-based activities, collaborative-learning techniques, and lecture will be used as appropriate.

Recommended Text:

1. Larson, R. et.al. *Intermediate Algebra* 4th Edition, Houghton Mifflin, 2004
2. Martin-Gay, K. Elayn *Beginning and Intermediate Algebra* 3rd Edition, Prentice Hall, 2004