
LAKELAND COMMUNITY COLLEGE - COURSE OUTLINE FORM

ORIGINATION DATE:

APPROVAL DATE:

LAST MODIFICATION DATE:

EFFECTIVE TERM/YEAR: FALL 2007

PRINTED:

COURSE NUMBER: MATH0950

COURSE TITLE: Intermediate Algebra

	LECTURE	LAB	CLINICAL	TOTAL	OBR MIN	OBR MAX
CREDITS:	3.00	0.00	0.00	3.00	3.00	3.00
CONTACT HOURS:	3.00	0.00	0.00	3.00		

PREREQUISITES:

MATH0850 or placement test.

PROGRAMS & CERTIFICATES FOR WHICH THIS COURSE IS REQUIRED:

NONE

PROGRAMS & CERTIFICATES FOR WHICH THIS COURSE IS AN ELECTIVE:

NONE

COURSE ACCEPTED AS TRANSFER CREDIT BY:

RECOMMENDED CLASS SIZE: 30

RATIONALE: DEPARTMENT STANDARD

FREQUENCY OF OFFERING: 3 X YEAR

TERMS NORMALLY OFFERED: FALL SPRING SUMMER

LAB FEE: NONE

RATIONALE FOR COURSE:

This course continues to develop basic algebra concepts for application in college level mathematics courses. In addition, problem solving skills are continued to be developed that are useful in other disciplines.

COURSE DESCRIPTION:

This course continues the development of basic algebra concepts. Topics include factoring polynomials, solving polynomial equations, rational expressions, rational equations, radical expressions, radical equations, solving quadratic equations, graphing quadratic equations, and an introduction to the complex number system. This course is offered Satisfactory / Unsatisfactory only.

GENERAL COURSE GOALS:

1. Further students' knowledge of mathematics as a symbolic language and structure that is useful in solving real-world problems.
 2. Develop a basic understanding of how to use algebraic skills to model and solve real-world problems.
 3. Develop students' ability to translate between English and Math.
 4. Develop students' confidence to solve problems analytically.
 5. Develop algebraic, graphical, and numerical techniques for solving problems.
-

COURSE OBJECTIVES:

Upon completion of the course, the student should be able to:

1. Factor a polynomial by using appropriate methods: factoring out a common monomial factor, difference of two squares, difference and sum of two cubes, perfect trinomial square, other trinomial methods, and grouping.
2. Solve polynomial equations by factoring.
3. Use polynomial equations to solve appropriate application problems.
4. Add, subtract, multiply, and divide rational expressions.
5. Simplify complex rational expressions.
6. Solve equations involving rational expressions.
7. Use equations involving rational expressions to solve appropriate application problems.
8. Simplify expressions involving radicals and rational exponents.
9. Solve equations involving radicals and rational exponents.
10. Use equations involving radicals to solve appropriate application problems.
11. Simplify expressions involving complex numbers.
12. Solve quadratic equations in one variable using an appropriate method: extracting the square root, factoring, completing the square, or applying the quadratic formula.
13. Use the discriminant of a quadratic equation to determine the nature of solutions.
14. Complete the square as a means to transform a quadratic equation in two variables into standard form.
15. Graph a quadratic equation in two variables using the vertex, axis of symmetry and end behavior.
16. Use quadratic equations to solve appropriate application problems.
17. Solve equations that are quadratic in form. (As time permits.)

18. Solve quadratic inequalities analytically and interpret graphically. (As time permits.)

19. Communicate about algebra/mathematics both orally and in writing.

COURSE OUTLINE:

I. Polynomials

- A. Factoring
 - a. Greatest Common Factor
 - b. Factoring trinomials
 - 1. Guess and check
 - 2. Special forms
 - i. Perfect square trinomials
 - ii. Difference of squares
 - iii. Sum and difference of cubes
 - c. Factoring by grouping
- B. Solving polynomial equations by factoring
- C. Applications involving polynomials

II. Rational expressions

- A. Arithmetic of rational expressions
 - a. Multiplication and division
 - b. Addition and subtraction
 - 1. "Like" denominators
 - 2. "Unlike" denominators
- B. Solving equations involving rational expressions
 - a. Identifying extraneous solutions
- C. Simplifying complex fractions
- D. Applications involving rational expressions (including ratio, proportion, and variation)

III. Exponents and radicals

- A. Definition of n th root
- B. Simplifying expressions involving radicals
 - a. Product rule
 - b. Quotient rule
 - c. "Like" terms
 - d. Rationalizing numerators and denominators
- C. Solving equations involving radical expressions
 - a. Identifying extraneous solutions
- D. Definition and properties of rational exponents
- E. Solving equations involving rational exponents
 - a. Identifying extraneous solutions.
- F. Applications involving radicals and rational exponents

IV. The complex number system

- A. Definition and standard form of a complex number
- B. Arithmetic of complex numbers
 - a. Addition and subtraction
 - b. Multiplication
 - c. Division
 - 1. Rationalizing the denominator

V. Quadratic equations

- A. Solving quadratic equations
 - a. Extracting the square root
 - b. Factoring
 - c. Completing the square and the quadratic formula
 - 1. Using the discriminant to determine the nature of solutions
 - 2. Complex number solutions

- B. Graphing quadratic equations in two variables
 - a. Finding the vertex, axis of symmetry, and determining end behavior from standard form
 - b. Completing the square to write a given quadratic in standard form
 - c. The vertex formula
 - C. Applications involving quadratic equations (including optimization problems)
 - D. Solving equations which are quadratic in form (as time permits.)
 - E. Solving quadratic inequalities (as time permits.)
 - a. Using a sign diagram
 - b. Graphical interpretation
-

INSTRUCTIONAL PROCEDURES THAT MAY BE UTILIZED:

1. Lecture/discussion sessions.
 2. Collaborative/group activities.
 3. Laboratory activities with worksheets, graphing calculators or computer.
 4. Modeling a problem situation with data from the Internet or other source.
 5. Problem solving sessions at the blackboard.
 6. Video tapes and tutorial instruction.
 7. Student projects and presentations and written reports.
-

SUGGESTED GRADING PROCEDURES:

1. Satisfactory / unsatisfactory course grade only. Satisfactory is issued if student earns at least 75%.
 2. Instructors must abide by the following departmental guidelines:
 - a. 80% or more of any test, midterm or final exam must be without the aid of books, notes, cheat sheets, other people, etc.
 - b. 80% or more of every student's final grade is based on exams and quizzes that were conducted in class without the use of notes, books, cheat sheets, other people, etc.
-

SUGGESTED COURSE EVALUATION PROCEDURE:

1. Formal and informal feedback from students and faculty.
 2. Review of student performance in subsequent mathematics courses.
-

 COURSE OUTLINE -- GENERAL EDUCATION OUTCOMES

COURSE ID: MATH0950

TITLE: Intermediate Algebra

General Education	Methods of Assessment
*** KNOWLEDGE ***	
1. Arts and Literature	- - - - -
2. Complexities of Human Behavior	- - - - -
3. Complexities of Social Institutions	- - - - -
4. Math and Science	1 - - - - -
5. Past and Present Cultures	- - - - -
6. Technology	- - - - -
*** CRITICAL THINKING ***	
7. Identify Personal Assumptions	- - - - -
8. Identify Ethical Dimensions	- - - - -
9. Examine Issues by Suspending/Challenging Assumpt	- - - - -
10. Evaluate Issues from Various Perspectives	- - - - -
11. Collect, Analyze, Interpret Information	1 - - - - -
12. Support Hypotheses	- - - - -
13. Synthesize Information	1 - - - - -
14. Draw Conclusions	1 - - - - -
*** COMMUNICATION SKILLS ***	
15. Speak Clearly and Effectively	- - - - -
16. Read with Comprehension	- - - - -
17. Write Clearly & Effectively in Standard English	- - - - -
18. Work Effectively in Groups	- - - - -
19. Listen Actively and with Understanding	- - - - -
20. Practice Effective Interpersonal Skills	- - - - -
21. Interpret/Use Graphic Communication	1 - - - - -
22. Use Technology-Based Communication	- - - - -
Methods of Assessment codes:	
1. Test/Examination	4. Collaborative Writing
2. Homework/Written Assignment	5. Oral Presentation
3. Research Paper	6. Lab Project
	7. Portfolio
	8. Demonstration of Skills
	9. Other (specify)