



ANTELOPE VALLEY COLLEGE

**Academic Affairs
Course Outline of Record**

Academic Affairs Only

<input type="checkbox"/>	New Course
<input type="checkbox"/>	Effective Date (for articulation)
<input checked="" type="checkbox"/>	COR Revision 5/28/2009
<input type="checkbox"/>	Pre Req/Advisories
<input type="checkbox"/>	Other Changes
<input checked="" type="checkbox"/>	SLOs 4/10/2008

COURSE SUBJECT & NUMBER: MATH 102

COURSE NAME: *Intermediate Algebra

COURSE UNITS: 4 **COURSE HOURS:** 4 hours weekly

COURSE REQUISITES: (*Follow format of similar courses found in the college catalog.*)

Prerequisite: Eligibility for MATH 102 (AVC Assessment) or Completion of MATH 070.

Advisory: Eligibility for READ 099.

COURSE DESCRIPTION: (*Write a short paragraph providing an overview of topics covered. Be sure to identify target audience--transfer, major, GE, degree/certificate, etc. If repeatable, state the number of times at end of description as (R#).*)

This course is for the student who has been very successful completing Elementary Algebra and who is comfortable taking math classes, since it accelerates MATH 102A and MATH 102B into one semester. Topics include: formulas and word problems; graphs, slopes and equations of lines; introduction to functions; systems of equations; linear inequalities; exponents and polynomials with factoring; rational expressions and equations; radical expressions and equations; exponential and logarithmic functions; quadratic equations and functions; circles; and word problems appropriate to all these topics. (AVC)

COURSE OBJECTIVES: (*Title 5 requires that courses show evidence of critical thinking skills. Use Bloom's taxonomy to formulate concise, performance-based measurable objectives common to all students. Objectives must be closely aligned with course content, assignments, and methods of evaluation*)

Upon completion of course, the successful student will be able to

1. Construct coordinate tables, graph and interpret the graphs of basic functions and equations in two variables.
2. Calculate slopes from graphs, points or equations.
3. Find the domain, range or inverse of a function; find the composition of two functions.
4. Solve equations and inequalities in one variable, and systems of equations.
5. Simplify algebraic expressions by selecting the appropriate factoring method.
6. Perform the basic operations on polynomials, rational expressions, radical expressions and complex numbers.
7. Analyze the properties of quadratic functions in order to graph them.
8. Evaluate expressions with function or logarithmic notation.
9. Use the properties of logarithms to simplify logarithmic expressions and equations.
10. Graph circles and construct their equations.
11. Select the appropriate methods, including choosing formulas, sketching and constructing equations in order to solve application problems.

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COURSE CONTENT: *(Enter course content in terms of specific topics or a specific body of knowledge that each instructor must cover. Put topics in outline form with major and minor headings. Each instructor must cover all material listed below.)*

1. **Review of Basic Algebra**
 - A. Formulas and Word Problems
 - B. Graphs, Slopes and Equations of Lines
2. **Introduction to Functions**
 - A. Function Notation
 - B. Domain and Range
 - C. Vertical Line Test
 - D. Operations on algebraic functions
3. **Systems of Equations with Two and Three Variables**
 - A. Graphic and Algebraic Methods
 - B. Related Applications
4. **Linear Inequalities**
 - A. Compound Inequalities in One Variable
 - B. Graphing Linear Inequalities in Two Variables
5. **Exponents and Polynomials**
 - A. Scientific Notation
 - B. Multiplying and Dividing Polynomials
 - C. Factoring Polynomials
 - D. Solving Polynomial Equations by Factoring
6. **Rational Expressions and Equations**
 - A. Basic Operations with Rational Expressions
 - B. Proportion and Variation
 - C. Simple Equations with Rational Expressions
 - D. Work Problems and Other Applications
7. **Radical Expressions and Equations**
 - A. Basic Operations on Radical Expressions
 - B. Radical Equations
 - C. Rational Exponents
 - D. Pythagorean Theorem and Distance Formula
 - E. Pythagorean Theorem Applications
8. **Exponential and Logarithmic Functions**
 - A. Composition and Inverses of Functions
 - B. Exponential Functions
 - C. Logarithmic Functions and Their Properties
 - D. Exponential and Logarithmic Equations
 - E. Related Formulas and Applications
9. **Quadratic Equations and Functions**
 - A. Quadratic Formula
 - B. Quadratic Functions and Their Graphs
 - C. Complex Numbers
 - D. Solving Applications
10. **Circles**
 - A. Graphing Circles
 - B. Completing the Square and Circle Formula

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TYPICAL HOMEWORK ASSIGNMENTS: (Do not include in-class work, quizzes, or tests)

This information is necessary for all credit courses. Assignments should be closely related to course objectives, content, and methods of evaluation. (See sample of a “Model Outline” in the AP&P Standards & Practices Handbook.) Include a range of assignments (minimum of three) from which faculty may choose when designing their syllabus.

1. Describe nature and frequency of typical reading assignments if applicable; note if any are required:

Students will read from the textbook, approximately 20-25 pages each week (includes mathematical examples).

2. Describe nature and frequency of typical writing assignments if applicable; note if any are required:

Students will write short phrases as part of some computational assignments, approximately four times each week.

3. Describe nature and frequency of typical computational assignments if applicable; note if any are required:

Students will complete or revise computational assignments, approximately 6-10 pages each week.

4. Describe other types of homework assignments that students may be asked to complete (oral presentations; special projects; visual/performing arts; etc); note if any are required:

Students may be required to use computer software or web based sources to reinforce concepts and skills presented in lecture.

*For categories 1-4 above, list the estimated hours per week it would take a student to complete assignments. Title 5 (section 55002) requires that each unit must be shown to require three hours of work per week by the student either in or out of class. Homework formula: 3 hours of class work *times* each unit of credit *minus* classroom hours *equals* required homework hours.*

Reading Assignments: 2

Writing Assignments: 0.5

Computational Assignments: 5

Other Assignments: 1.5

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METHODS OF INSTRUCTION: *(Methods must be consistent with content and appropriate to objectives; state in terms of what instructor will be doing in order to present course content to students: for example, lecture, demonstration, present audio/visual materials; facilitate group work, etc. Do not list specific instructional equipment.)*

Methods of instruction may include but are not limited to: lecture; discussion; demonstration; board-work; use of computer software and web based sources; instructional multi-media; guest lecturers.

METHODS OF EVALUATION: *(These must be clearly related to course objectives and reflect course content and assignments in order to comply with Title 5 requirements. Describe what instructor will be looking for when evaluating various assignments and tests in order to determine whether students have met course objectives. Grades must be based on demonstrated proficiency in subject matter and determined, where appropriate, by essays, objective and essay tests, research papers or projects, problem solving exercises, or skills' demonstrations.)*

Methods of evaluation critique both problem-solving methodology and accuracy and may include but are not limited to:

1. Grading of examinations and a comprehensive in-class Department Final Exam that assess students' abilities to:
 - a) assimilate and recognize the applicability of the formulas, definitions, theorems, and algorithms, (1-11)
 - b) solve the roots of the polynomial functions, (4, 7, 9, 11)
 - c) use graphical, algebraic methods to compute the solution for the system of linear equations, (4, 11)
 - d) find the inverse function for a one-to-one function, (1, 3, 9, 11)
 - e) describe the behavior of functions and graph them, (1, 2, 3, 7, 10, 11)
 - f) classify and recognize the equation of the circles, parabolas, lines, (1, 2, 7, 10, 11)
 - g) simplify rational expressions, (5, 6)
 - i) apply the Quadratic Formula to solve the second degree polynomial equations, (5, 7, 9, 11)
2. Grading of quizzes that assess students' initial comprehension of concepts that will be developed further. (1-11)
3. Grading of homework assignments that assess students' math preparation and study habits. (1-11)

Suggested Texts or Other Instructional Materials

(List several when possible; include title, author, publisher, date, and latest edition. If older than five years, provide brief rationale.)

"Intermediate Algebra," by Baratto, McGraw Hill, 2008, 1st Edition

"Intermediate Algebra," by Sharma and Little, Educo, 2007, 7th Edition