

640:104: Introduction to College Algebra

Textbook: “Intermediate Algebra 2e” by Marecek and Mathis ISBN-13: 978-1-951693-24-4

This free open source textbook can be accessed at: <https://openstax.org/details/books/intermediate-algebra-2e> where it is available to view online or download as a PDF. Print copies are also available for purchase.

Prerequisites: None

Credits: 4

Course Outline:

This is an introductory course on college level algebra which prepares the student for precalculus mathematics. This course will include chapters 2-10 from the textbook and incorporate arithmetic review throughout. Topics covered include algebraic equations and inequalities, coordinate geometry and systems of linear equations, operations on and factoring of polynomials, rational expressions and equations, roots and radicals, quadratic equations (with both real and complex solutions), and exponential and logarithmic functions.

Sections Covered:

- (2.1) Use a General Strategy to Solve Linear Equations
- (2.2) Use a Problem Solving Strategy
- (2.3) Solve a Formula for a Specific Variable
- (2.4) Solve Mixture and Uniform Motion Applications
- (2.5) Solve Linear Inequalities
- (2.6) Solve Compound Inequalities
- (2.7) Solve Absolute Value Inequalities
- (3.1) Graph Linear Equations in Two Variables
- (3.2) Slope of a Line
- (3.3) Find the Equation of a Line
- (3.4) Graph Linear Inequalities in Two Variables
- (3.5) Relations and Functions
- (4.1) Solve Systems of Linear Equations with Two Variables
- (4.2) Solve Applications with Systems of Equations
- (4.7) Graphing Systems of Linear Inequalities
- (5.1) Add and Subtract Polynomials
- (5.2) Properties of Exponents and Scientific Notation
- (5.3) Multiply Polynomials
- (5.4) Dividing Polynomials
- (6.1) Greatest Common Factor and Factoring by Grouping
- (6.2) Factor Trinomials
- (6.3) Factor Special Products

- (6.4) General Strategy for Factoring Polynomials
- (6.5) Polynomial Equations
- (7.1) Multiply and Divide Rational Expressions
- (7.2) Add and Subtract Rational Expressions
- (7.3) Simplify Complex Rational Expressions
- (7.4) Solve Rational Equations
- (7.5) Solve Applications with Rational Equations
- (7.6) Solve Rational Inequalities
- (8.1) Simplify Expressions with Roots
- (8.2) Simplify Radical Expressions
- (8.3) Simplify Rational Exponents
- (8.4) Add, Subtract, and Multiply Radical Expressions
- (8.5) Divide Radical Expressions
- (8.6) Solve Radical Equations
- (8.8) Use the Complex Number System
- (9.1) Solve Quadratic Equations Using the Square Root Property
- (9.2) Solve Quadratic Equations by Completing the Square
- (9.3) Solve Quadratic Equations Using the Quadratic Formula
- (9.4) Solve Equations in Quadratic Form
- (9.5) Solve Applications of Quadratic Equations
- (10.2) Evaluate and Graph Exponential Functions
- (10.3) Evaluate and Graph Logarithmic Functions
- (10.4) Use the Properties of Logarithms
- (10.5) Solve Exponential and Logarithmic Equations