
ASHEVILLE-BUNCOMBE TECHNICAL COMMUNITY COLLEGE
MATHEMATICS DEPARTMENT
COMMON SYLLABUS DIRECTORY

PREFIX: MAT **NUMBER:** 171 **TITLE:** Precalculus Algebra

CONTACT HOURS: 3 **CREDIT HOURS:** 3

CCL DESCRIPTION: This is the first of two courses designed to emphasize topics which are fundamental to the study of calculus. Emphasis is placed on equations and inequalities, functions (linear, polynomial, rational), systems of equations and inequalities, and parametric equations. Upon completion, students should be able to solve practical problems and use appropriate models for analysis and predictions. *This course has been approved to satisfy the Comprehensive Articulation Agreement general education core requirement in natural science and mathematics.*

PREREQUISITE(S): MAT 080 or MAT 090

COREQUISITE(S): MAT 171A Precalculus Algebra Lab

TEXTBOOK: Sullivan & Sullivan, Algebra and Trigonometry Enhanced with Graphing Utilities, 5th Edition, ISBN 978-0-13-600492-9

DELIVERY METHOD: Traditional with Web Support

GRADING POLICY: Homework (20%) Chapter Tests (60%)
Final Examination (20%)

CONTENT OUTLINE:

- 1.1 Rectangular Coordinates; Graphing Utilities; Introduction to Graphing Equations
- 1.2 Solving Equations Using a Graphing Utility; Linear and Rational Equations
- 1.3 Quadratic Equations
- 1.4 Complex Numbers; Quadratic Equations in the Complex Number System
- 1.5 Radical Equations; Equations in Quadratic Form; Absolute Value Equations; Factorable Equations

- 1.6 Problem Solving: Interest; Mixture; Uniform Motion; Constant Rate Jobs
- 1.7 Solving Inequalities
- 2.1 Intercepts; Symmetry; Graphing Key Equations
- 2.2 Lines
- 2.3 Circles
- 2.4 Variation
- 3.1 Functions
- 3.2 The Graph of a Function
- 3.3 Properties of Functions
- 3.4 Library of Functions; Piecewise-Defined Functions
- 3.5 Graphing Techniques: Transformations
- 3.6 Mathematical Models: Building Functions
- 4.1 Linear Functions, Their Properties, and Linear Models
- 4.2 Building Linear Models from Data
- 4.3 Quadratic Functions and Their Properties
- 4.4 Building Quadratic Functions from Verbal Descriptions and from Data
- 4.5 Inequalities Involving Quadratic Functions
- 5.1 Polynomial Functions and Models
- 5.2 Properties of Rational Functions
- 5.3 The Graph of a Rational Function
- 5.4 Polynomial and Rational Inequalities
- 5.5 The Real Zeros of a Polynomial Function
- 5.6 Complex Zeros; the Fundamental Theorem of Algebra
- 11.7 Plane Curves and Parametric Equations
- 12.1 Systems of Linear Equations: Substitution and Elimination
- 12.2 Systems of Linear Equations: Matrices
- 12.3 Systems of Linear Equations: Determinants
- 12.7 Systems of Inequalities

COMMENTS: Any policy concerning the possible acceptance of a late assignment or the possibility of a special arrangement that might be made with the student who missed a scheduled examination due to circumstances beyond his/her control is left to the discretion of the instructor.
