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**ASHEVILLE-BUNCOMBE TECHNICAL COMMUNITY COLLEGE**  
**MATHEMATICS DEPARTMENT**  
**COMMON SYLLABUS DIRECTORY**

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PREFIX: MAT NUMBER: 175 TITLE: Precalculus

CONTACT HOURS: 4 CREDIT HOURS: 4

CCL DESCRIPTION: This course provides an intense study of the topics which are fundamental to the study of calculus. Emphasis is placed on functions and their graphs with special attention given to polynomial, rational, exponential, logarithmic and trigonometric functions, and analytic geometry. 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, MAT 090, MAT 095, MAT 121, MAT 161, MAT 171

COREQUISITE(S): None

TEXTBOOK: Demana, Waits, Foley & Kennedy, Precalculus Functions & Graphs,  
5<sup>th</sup> Edition, Addison Wesley Longman

DELIVERY METHOD: Traditional

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

CONTENT OUTLINE:

- 1.1 Modeling and Equation Solving
- 1.2 Functions and Their Properties
- 1.3 Twelve Basic Functions
- 1.4 Building Functions from Functions
- 1.5 Graphing Transformations
- 1.6 Modeling with Functions

- 2.1 Linear and Quadratic Functions and Modeling
- 2.2 Power Functions with Modeling
- 2.3 Polynomial Functions of Higher Degree with Modeling
- 2.4 Real Zeros of Polynomial Functions
- 2.5 Complex Numbers
- 2.6 Complex Zeros and the Fundamental Theorem of Algebra
- 2.7 Graphs of Rational Functions
- 2.8 Solving Equations in One Variable
- 2.9 Solving Inequalities in One Variable
- 3.1 Exponential and Logistic Functions
- 3.2 Exponential and Logistic Modeling
- 3.3 Logarithmic Functions and Their Graphs
- 3.4 Properties of Logarithmic Functions
- 3.5 Equation Solving and Modeling
- 3.6 Mathematics of Finance
- 4.1 Angles and Their Measures
- 4.2 Trigonometric Functions of Acute Angles
- 4.3 Trigonometry Extended: The Circular Functions
- 4.4 Graphs of Sine and Cosine: Sinusoids
- 4.5 Graphs of Tangent, Cotangent, Secant, and Cosecant
- 4.6 Graphs of Composite Trigonometric Functions
- 4.7 Inverse Trigonometric Functions
- 4.8 Solving Problems with Trigonometry
- 5.1 Fundamental Identities
- 5.2 Proving Trigonometric Identities
- 5.3 Sum and Difference Identities
- 5.4 Multiple-Angle Identities
- 5.5 The Law of Sines
- 5.6 The Law of Cosines

**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.

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