

Degree Credit   X    
Non Credit         
Nondegree Credit         
Comm Service       

RIVERSIDE COMMUNITY COLLEGE

COURSE OUTLINE

MATHEMATICS 10

COURSE DESCRIPTION

4 Units

10 PRECALCULUS

PREREQUISITE: Mathematics 36, or qualifying placement level.

An integrated treatment of algebra and trigonometry at the college level, with major emphasis on polynomial, rational, exponential, logarithmic, trigonometric and inverse functions, sequences and series, mathematical induction, analytic geometry, partial fractions, polar coordinates and parametric equations. The course is designed to prepare students for the study of calculus. 72 hours lecture.

SHORT DESCRIPTION FOR CLASS SCHEDULE

The college level algebra and trigonometry preparation for calculus.

LEARNING OBJECTIVES

Upon successful completion of the course, students should be able to:

1. Solve linear, quadratic, radical, exponential, logarithmic and trigonometric equations.
2. Graph translations of functions and graphs of conic sections.
3. Identify the graph of a function from its equation.
4. Find terms in a geometric and arithmetic sequence; evaluate series.

## COURSE CONTENT

### TOPICS

1. Review of number Systems  
Simple inequalities; exponents; absolute value and roots; factoring; reducing; simplifying; and the quadratic formula
2. Coordinate Plane  
Rectangular coordinates; distance and midpoint formulas
3. Function Concept  
Domain and range; translations and transformations of graphs of basic functions; function operations; inverse functions.
4. Sequences & Series  
Sigma notion; arithmetic and geometric progressions; series
5. Polynomial and Rational Functions  
Lines; slope; quadratic functions; zeros of polynomial functions; graphs of polynomial and rational functions, partial fraction decomposition.
6. Transcendental Functions  
Exponential and logarithmic functions and their graphs, properties of logarithms and solving logarithmic and exponential equations, applications.
7. Trigonometric Functions  
Graphs of trigonometric functions, including translations and phase shifts; inverse trigonometric functions; trigonometric identities and solving trigonometric equations.
8. Analytic Geometry  
Conic sections; parametric equations; polar coordinates
9. Binomial Theorem and Mathematical Induction

Students are also assigned reading, writing and other outside assignments equivalent to two hours per one hour lecture.

### METHODS OF INSTRUCTION

Methods of instruction may include, but are not limited to:

Class lectures/discussions/demonstrations  
Drills and pattern practices  
Videos/films/slides/audio tapes/computer assisted instruction  
Pair and small group activities/discussion  
Class exercises  
Handouts  
Cooperative learning tasks  
Online/distance education

### METHODS OF EVALUATION

Students will demonstrate mastery of learning objectives by methods of evaluation which may include, but are not limited to:

Oral reports/presentations/performance  
Written reports/presentations  
Quizzes/examinations  
Written assignments  
Class and individual projects  
Final examination

### COURSE MATERIALS

All materials used in this course will be periodically reviewed to insure that they are appropriate for college level instruction. Possible texts include:

Larson and Hostetler, Precalculus. 4<sup>th</sup> ed. Houghton Mifflin Publishing Company, 1997  
Sullivan, Michael, Precalculus. 5<sup>th</sup> ed. Prentice Hall Publishing company 1999