



**VIRGINIA BEACH CITY PUBLIC SCHOOLS**  
CHARTING THE COURSE

*Department of Teaching & Learning  
Parent/Student Course Information*

***DUAL ENROLLMENT PRE-CALCULUS I  
(TC3163)***

***TIDEWATER COMMUNITY COLLEGE  
(MTH 163)***

***One-half VBCPS credit, 3 TCC credits, One semester***

*Counselors are available to assist parents and students with course selections and career planning. Parents may arrange to meet with the counselor by calling the school's guidance department.*

#### **COURSE DESCRIPTION**

Pre-Calculus I is a dual enrollment, one semester course providing the successful student with three college semester credits and one-half Virginia Beach City Public Schools (VBCPS) elective credit. This course is designed to give students a thorough understanding of functions. It includes relations and functions and their graphs; inverse functions; applications of functions; polynomial, rational, exponential and logarithmic functions; systems of equations; and an introduction to matrices.

\*Tuition, fees and textbook fees are the responsibility of the student in accordance with the dual enrollment regulation (5-30.2).

#### **PREREQUISITE**

Algebra II or Algebra II with Trigonometry

## Objectives for MTH 163: Pre-Calculus I

### **Chapter 1: Equations and Inequalities**

- 1.1 Graphs and Graphing Utilities (NOTE: Section 1.1 can be covered with chapter 2)
- 1.2 Linear Equations and Rational Equations
- 1.3 Models and Applications
- 1.4 Complex Numbers
- 1.5 Quadratic Equations
- 1.6 Other Types of Equations
- 1.7 Linear Inequalities and Absolute Value Inequalities
- 1.8 Polynomial and Rational Inequalities

### **Chapter 2: Functions and Graphs**

- 2.1 Basics of Functions and Their Graphs
- 2.2 More on Functions and Their Graphs
- 2.3 Linear Functions and Slope
- 2.4 More on Slope
- 2.5 Transformations of Functions
- 2.6 Combinations of Functions; Composite Functions
- 2.7 Inverse Functions
- 2.8 Distance and Midpoint Formulas; Circles

### **Chapter 3: Polynomial and Rational Functions**

- 3.1 Quadratic Functions
- 3.2 Polynomial Functions and Their Graphs
- 3.3 Dividing Polynomials: Remainder and Factor Theorems
- 3.4 Zeros of Polynomial Functions
- 3.5 Rational Functions and Their Graphs
- 3.6 Modeling Using Variation

### **Chapter 4: Exponential and Logarithmic Functions**

- 4.1 Exponential Functions
- 4.2 Logarithmic Functions
- 4.3 Properties of Logarithms
- 4.4 Exponential and Logarithmic Equations
- 4.5 Exponential Growth and Decay; Modeling Data

### **Chapter 5: Systems of Equations and Inequalities**

- 5.1 Systems of Linear Equations in Two Variables
  - 5.2 Systems of Linear Equations in Three Variables
  - 5.3 OMIT
  - 5.4 Systems of Nonlinear Equations in Two Variables
  - 5.5 Systems of Inequalities
- 6.1 Matrix Solutions to Linear Systems

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For further information, please call (757) 263-1070.

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Alternative formats of this publication which may include taped, Braille, or large print materials are available upon request for individuals with disabilities. Call or write the Department of Teaching and Learning, Virginia Beach City Public Schools, 2512 George Mason Drive, P.O. Box 6038, Virginia Beach, VA 23456-0038. Telephone 263-1070 (voice); fax 263-1424; 263-1240 (TDD) or email him at [George.Coker@vbschools.com](mailto:George.Coker@vbschools.com).

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