



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

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

***DUAL ENROLLMENT PRE-CALCULUS I***  
***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

Dr. Aaron C. Spence, Superintendent  
Virginia Beach City Public Schools  
2512 George Mason Drive, Virginia Beach, VA 23456-0038

Produced by the Department of Media and Communications for the Department of Teaching and Learning.  
For further information please call (757) 263-1070.

#### Notice of Non-Discrimination Policy

Virginia Beach City Public Schools does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation/gender identity, pregnancy, childbirth or related medical condition, disability, marital status, age, genetic information or veteran status in its programs and activities and provides equal access to the Boy Scouts and other designated youth groups. School Board policies and regulations (including, but not limited to, Policies 2-33, 4-4, 4-6, 4-43, 5-7, 5-19, 5-20, 5-44, 6-7, 7-48, 7-49, 7-57 and Regulations 4-4.1, 4-4.2, 4-6.1, 4-43.1, 5-44.1, 7-11.1, 7-17.1 and 7-57.1) provide equal access to courses, programs, counseling services, physical education and athletic, vocational education, instructional materials and extracurricular activities.

To seek resolution of grievances resulting from alleged discrimination or to report violations of these policies, please contact the Title VI/Title IX Coordinator/Director of Student Leadership at (757) 263-2020, 1413 Laskin Road, Virginia Beach, Virginia, 23451 (for student complaints) or the Section 504/ADA Coordinator/Chief Human Resources Officer at (757) 263-1133, 2512 George Mason Drive, Municipal Center, Building 6, Virginia Beach, Virginia, 23456 (for employees or other citizens). Concerns about the application of Section 504 of the Rehabilitation Act should be addressed to the Section 504 Coordinator/Executive Director of Student Support Services at (757) 263-1980, 2512 George Mason Drive, Virginia Beach, Virginia, 23456 or the Section 504 Coordinator at the student's school. For students who are eligible or suspected of being eligible for special education or related services under IDEA, please contact the Office of Programs for Exceptional Children at (757) 263-2400, Laskin Road Annex, 1413 Laskin Road, Virginia Beach, Virginia, 23451.

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 [Emmanuel.Cenizal@VBSchools.com](mailto:Emmanuel.Cenizal@VBSchools.com)

**vbschools.com**  
your virtual link to Hampton Roads' largest school system



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

No part of this publication may be produced or shared in any form without giving specific credit to Virginia Beach City Public Schools.

(Revised August 2017)