

**Prerequisite:** Intermediate Algebra (MAT 137) with a “C” grade or better or appropriate placement through multiple-measures assessment process.

**Text:** Precalculus, by Coburn and Herdlick (ISBN 9780077431181)

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**Course Description:** This course is a thorough and rigorous algebra course, that strengthens the proficiency with algebraic skills and the conceptual understanding needed to be successful in the Calculus sequence. The topics include: sets, number line, graphing functions, polynomials, exponential, logarithmic and rational functions, rational exponents, conic sections, matrices, polynomial, exponential, logarithmic and radical equations, linear and quadratic inequalities, absolute value equations and inequalities and linear systems.

**Course Content:**

**Chapter 1, 1.1 - 1.5**

Number system. Mathematics as a Language.  
 Rectangular coordinates 1.1  
 Linear Equations and the Rate of Change 1.2  
 Functions, Function Notation and the graph of the function 1.3  
 Linear Functions 1.4  
 Solving Linear Inequalities 1.5

**Chapter 9, 9.1 - 9.2**

Systems of Equations in 2 Variables 9.1  
 Systems of Equations in 3, 4 ... n Variables 9. 2

**Chapter 2, 2.1 - 2.6**

Analyzing the Graph of a Function 2.1  
 Toolbox Functions and Transformations 2.2  
 Absolute value Functions, equations and inequalities 2.3  
 Basic Rational Functions 2.4  
 Variation and Applications 2.6

**Chapter 3, 3.1 - 3.6**

The Complex Numbers 3.1  
 Solving Quadratic Equations 3.2  
 Quadratic Functions and Applications 3.3

Quadratic Models 3.4

The Algebra of Functions 3.5

The Composition of Functions 3.6

**Chapter 4, 4.1 - 4.6**

Synthetic Division; The Remainder and Factor Theorems 4.1

The Zeros of Polynomials Functions 4.2

Graphing Polynomials Functions 4.3

Graphing Rational Functions 4.4

Additional Insights into Rational Inequalities 4.5

Polynomial and Rational inequalities 4.6

**Chapter 9, 9.4 (best place to talk about this :)**

Partial Fraction Decomposition 9.4

**Chapter 5, 5.1 - 5.7**

One-to-one and Inverse Functions 5.1

Exponential Functions and Graphs 5.2

Logarithmic Functions and Graphs 5.3

Properties of Logarithmic Functions 5.4

Solving Exponential and Logarithmic equations 5.5

Applications and Models 5.6 and 5.7

**Course Objectives:**

After the successful completion of the course the student must be able to:

1. Define Absolute Value, Find Distances on the Number Line, on the Coordinate Plane
2. Simplify Expressions with Rational Exponents, Write them in Radical Form, Simplify, Combine, Rationalize Radical Expressions
3. Solve Linear and Quadratic Inequalities, Absolute Value Equations and Inequalities, Express Answers in Interval Form
4. Perform Operations on Complex numbers, Conjugates, Represent Complex Numbers Graphically.

5. Perform Operations on Radical Expressions, Rational Exponents, Solve Radical Equations
6. Find the Domain and Range of Functions, Combine Functions, Identify Odd and Even functions, Graph Piece-wise Defined Functions, Find Compositions of Functions, Inverses, Transformations of Functions.
7. Find the Characteristics of Polynomial Functions, Solve Polynomial equations , Find Zeroes(roots) and X-intercepts of Polynomials, Apply the Fundamental Theorem of Algebra, The Remainder and Factor Theorem, Analyze End Behavior
8. Graph Rational Functions, Find Vertical, Horizontal, Slant Asymptotes
9. Graph Exponential and Logarithmic Function, Use Properties of Exponentials and Logarithms, Solve Exponential and Logarithmic Equations
10. Solve Systems of Linear Equations in Several Variables and understand Matrices.
11. Apply partial fraction decomposition to rewrite a rational expression as a sum of its partial fractions.

**Measurements**            Quizzes –40%, 2 tests, each test – 15%, and final exam – 30%.

Grade equivalents: A 93 – 100, A- 90 – 93, B+ 87 -89, B 83 – 86, B- 80 – 82, C+ 77 – 79, C 73 – 76, C- 70 – 72, D+ 67 – 69. D 63 – 66. D- 60 – 62, F below 60.

**Support Services:**    Tutorial services. Peers. Meeting with me for extra help on an appointment basis.

**Office Hours:**        TBD

**Class Cancellation:**    In case of increment weather, check the college website for class cancellations or call 860-215-9000 for recorded message.

### **Plagiarism and Academic Honesty**

At TRCC, we expect the highest standards of academic honesty. The Board of Trustees' Proscribed Conduct Policy prohibits cheating on examinations, unauthorized collaboration on assignments, unauthorized access to examinations or course materials, plagiarism.

**MyCommNet Alert:** MyCommNet is a system that sends text messages and emails to anyone signed up in the event of a campus emergency. Additionally, TRCC sends messages when the college is delayed or closed due to weather. All students are encouraged to sign up for myCommNet Alert. A tutorial is available on the Educational Technology and Distance Learning Students page of the web site. [http://www.trcc.commnet.edu/div\\_it/educationaltechnology/Tutorials/myCommNetAlert/MIR3.html](http://www.trcc.commnet.edu/div_it/educationaltechnology/Tutorials/myCommNetAlert/MIR3.html)

**Disabilities :**            If you have a disability that may affect your progress in this course, please meet with a Disability Service Provider (DSP) as soon as possible. Please note that accommodations cannot be provided until you provide written authorization from a DSP.

<b>TRCC Disabilities Service Providers</b> Counseling & Advising Office	
<p><b>Elizabeth Willcox</b>, Advisor (860)215-9289 Room A113</p>	<ul style="list-style-type: none"> <li>• Sensory Disabilities</li> <li>• Medical Disabilities</li> <li>• Mental Health Disabilities</li> </ul>
<p><b>Matt Liscum</b>, Counselor (860) 215-9265 Room A113</p>	<ul style="list-style-type: none"> <li>• Learning Disabilities</li> <li>• ADD/ADHD</li> <li>• Autism Spectrum</li> </ul>

**Digication:** *As a student, you will maintain an online learning portfolio using a TRCC designed template. Through this electronic tool, you can see your own growth in college-wide learning. It may even help you to find the major that is a match to you. You can keep this Digication account after graduation, too. A Three Rivers General Education Assessment Team will select random works and review them so that we can improve the college experience for all. Your name will not be attached to any of the assessment work; it is private. This tool will also be a “place” where you can connect your learning from the classroom, school, and life. Sometimes when you look at all of the work you have done and think about it, you learn something else. In Digication, you will be able to make other portfolios, too. It’s like a file cabinet with the ability to have multiple but separate files. What is exciting about the electronic tool is when you look inside you will see you are developing in new ways! Look at your class outline to see what assignments to post into the TRCC Template; you may post your own choices, too.*

*Have fun in learning!*