

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

**Text:** College Algebra, 4th ed, Beecher, Penna, Bittinger (ISBN 10: 0321725603)

**Instructor** Yevhen Rutovytsky, [yruvovtysky@trcc.commnet.edu](mailto:yruvovtysky@trcc.commnet.edu)

**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, right triangle trigonometry, 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 - 1.6**

Number system. Mathematics as a language.

Graphing 1.1

Functions and Graphs 1.2

Equations of Lines and Modeling 1.3

Linear Equations, Functions 1.4

Solving Linear Inequalities 1.5

Graphing Polynomials Functions 4.2

Polynomial Division, The remainder Theorem 4.3

Zeros of Polynomials Functions 4.4

Rational Functions 4.5

Polynomial and Rational inequalities 4.6

**Chapter 5, 5.1 - 5.6**

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

**Chapter 2, 2.1 - 2.5**

Functions 2.1

The Algebra of Functions 2.2

The Composition of Functions 2.3

Symmetry and Transformations 2.4

Variation and Applications 2.5

**Chapter 3, 3.1 - 3.5**

The Complex Numbers 3.1

Quadratic Equations, Models 3.2

Graphs of Quadratic equations 3.3

Rational and Radical Equations 3.4

Solving Equations and Inequalities with Absolute Values 3.5

**Chapter 6, 6.1 - 6.6, 6.8**

Systems of Equations in 2 Variables 6.1

Systems of Equations in 2 and 3 Variables 6.2

Partial Fraction Decomposition 6.8

**Chapter 7, 7.1 - 7.4** Parabola 7.1

The Circle and the Ellipse 7.2

The Hyperbola 7.3

Nonlinear Systems of Equations and Inequalities 7.4

**Chapter 4, 4.1 - 4.6**

Polynomials Functions and Models 4.1

**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 , Use Matrices, Determinants
11. Find all Characteristics of Conic Sections, Write the Equations of Circles, Parabolas, Ellipses, Hyperbolas in Standard Form, and Graph them

**Measurements**      Quizzes –30%, 2 tests, each test – 20%, 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:**      Thursdays from 17:00 to 17:30 at the TRCC tutoring club or by appointment.

**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.

<p><b>TRCC Disabilities Service Providers</b> Counseling &amp; Advising Office Room A-119</p>
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<b>Matt Liscum</b> (860) 215-9265	<ul style="list-style-type: none"><li>• Physical Disabilities</li><li>• Sensory Disabilities</li><li>• Medical Disabilities</li><li>• Mental Health Disabilities</li></ul>
<b>Chris Scarborough</b> (860)215-9289	<ul style="list-style-type: none"><li>• Learning Disabilities</li><li>• ADD/ADHD</li><li>• Autism Spectrum</li></ul>

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*Have fun in learning!*