

## College Algebra (MATH 1314) Online



**Credit:** 3 semester credit hours (3 hours lecture)

### Prerequisite/Co-requisite:

- A score of 350 or above on the TSI-Assessment placement test or a “C” or better in TMTH 0375 and
- Complete the Online Orientation and
- Answer “Yes” to seven or more questions on the Distance Education Self-Evaluation: <http://www.lit.edu/depts/DistanceEd/OnlineOrientation/OOStep2.aspx>

### Course Description

In-depth study and applications of polynomial, rational, radical, exponential, and logarithmic functions, and systems of equations using matrices. Additional topics such as sequences, series, probability, and conics may be included. *This course is time-bound, structured, and completed totally online.*

### Student Identification Fees

This online course has no additional fees associated with student identification.

### Required Textbook and Materials

1. MyMathLab Standalone Access Code
  - a. May be purchased online at [www.mymathlab.com](http://www.mymathlab.com)
  - b. May be purchased at a local bookstore: **ISBN 032119991X**
2. A basic scientific calculator: *please check with your individual instructor as to the specific type of calculator required.*

### Objectives

#### Course Objectives

Upon completion of this course, the student will be able to:

1. Demonstrate and apply knowledge of properties of functions, including domain and range, operations, compositions, and inverses.
2. Recognize and apply polynomial, rational, radical, exponential, and logarithmic functions and solve related equations.
3. Apply graphing techniques.
4. Evaluate all roots of higher degree polynomial and rational functions.
5. Recognize, solve, and apply systems of linear equations using matrices.

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## Course Syllabus

### Core Objectives

1. Critical Thinking Skills: To include creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information.
2. Communication Skills: To include effective development, interpretation and expression of ideas through written, oral, and visual communication.
3. Empirical and Quantitative Skills: To include the manipulation and analysis of numerical data or observable facts resulting in informed conclusions.

### Course Outline

- A. Chapter R: Basic Concepts of Algebra
  1. Real Numbers
  2. Algebra Essentials
  3. Geometry Essentials
  4. Polynomials
  5. Factoring Polynomials
  6. Synthetic Division
  7. Rational Expressions
  8. Nth Roots; Rational Exponents
- B. Chapter 1: Equations and Inequalities
  1. Linear Functions
  2. Quadratic Equations
  3. Complex Numbers; Quadratic Equations in the Complex Number System
  4. Radical Equations; Equations Quadratic in Form; Factorable Equations
  5. Solving Inequalities
  6. Equations and Inequalities Involving Absolute Value
  7. Problem Solving: Interest, Mixture, Uniform Motion, Constant Rate Job Applications.
- C. Chapter 2: Graphs
  1. The Distance and Midpoint Formulas
  2. Graphs of Equations in Two Variables; Intercepts; Symmetry
  3. Lines
  4. Circles
- D. Chapter 3: Functions and Their Graphs
  1. Functions
  2. The Graph of a Function
  3. Properties of Functions
  4. Libraries of Functions; Piecewise-Defined Functions
5. Graphing Techniques; Transformations
- E. Chapter 4: Linear and Quadratic Functions
  1. Linear Functions and Their Properties
  2. Linear Models: Building Linear Functions from Data
  3. Quadratic Functions and Their Properties
  4. Build Quadratic Models from Verbal Descriptions and from Data
- F. Chapter 5: Polynomial and Rational Functions
  1. Polynomial Functions and Models
  2. Properties of Rational Functions
  3. The Graph of a Rational Function
  4. Polynomial and Rational Inequalities
  5. The Real Zeros of a Polynomial Function
  6. Complex Zeros; Fundamental Theorem of Algebra
- G. Chapter 6: Exponential and Logarithmic Functions
  1. Composite Functions
  2. One-to-One Functions; Inverse Functions
  3. Exponential Functions
  4. Logarithmic Functions
  5. Properties of Logarithms
  6. Logarithmic and Exponential Equations
  7. Applications
- H. Chapter 8: Systems of Equations and Inequalities
  1. Systems of Linear Equations; Matrices

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Course Syllabus

**Grade Scale**

90 – 100	A
80 – 89	B
70 – 79	C
60 – 69	D
0 – 59	F

**Course Evaluation**

Final grades will be calculated according to the following criteria:

Tests	60%
Course Assignments	40%

**Course Requirements**

1. The student must purchase all of the required course materials.
2. The student will be expected to have access to the Internet and a computer.
3. Blackboard logon and access to course a minimum of four times per week.
4. Additional course requirements as defined by the individual course instructor.

**Course Policies**

1. The students are responsible for initiating and completing the drop process.  
Students who stop participating and fail to drop the course will earn an “F” in the course.
2. Additional class policies as defined by the individual course instructor.

**Technical Requirements (for courses using Blackboard)**

The latest technical requirements, including hardware, compatible browsers, operating systems, software, Java, etc. can be found online at:

[https://help.blackboard.com/en-us/Learn/9.1\\_2014\\_04/Student/015\\_Browser\\_Support/015\\_Browser\\_Support\\_Policy](https://help.blackboard.com/en-us/Learn/9.1_2014_04/Student/015_Browser_Support/015_Browser_Support_Policy) A functional broadband internet connection, such as DSL, cable, or WiFi is necessary to maximize the use of the online technology and resources.

**Disabilities Statement**

The Americans with Disabilities Act of 1992 and Section 504 of the Rehabilitation Act of 1973 are federal anti-discrimination statutes that provide comprehensive civil rights for persons with disabilities. Among other things, these statutes require that all students with documented disabilities be guaranteed a learning environment that provides for reasonable accommodations for their disabilities. If you believe you have a disability requiring an accommodation, please contact the Special Populations Coordinator at (409) 880-1737 or visit the office in Student Services, Cecil Beeson Building. You may also visit the online resource at <http://www.lit.edu/depts/stuserv/special/defaults.aspx>

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**Student Code of Conduct Statement**

It is the responsibility of all registered Lamar Institute of Technology students to access, read, understand and abide by all published policies, regulations, and procedures listed in the *LIT Catalog and Student Handbook*. The *LIT Catalog and Student Handbook* may be accessed at [www.lit.edu](http://www.lit.edu) or obtained in print upon request at the Student Services Office. Please note that the online version of the *LIT Catalog and Student Handbook* supersedes all other versions of the same document.

**Sample Course Schedule**

*(For a specific course schedule please see your instructor. Tests and the assessment of core objectives activity will be assigned by each individual instructor)*

<b>Week</b>	<b>Topic</b>	<b>Reference</b>
1	Introductory Activities	Syllabus, other instructor information
	Math 1314 Pre-Test Review	Chapter R
2	Equations and Inequalities	Chapter 1; MyMathLab
3	Equations and Inequalities	Chapter 1; MyMathLab
4	Equations and Inequalities	Chapter 1; MyMathLab
5	Graphs	Chapter 2; MyMathLab
6	Graphs	Chapter 2; MyMathLab
7	Functions and Their Graphs	Chapter 3; MyMathLab
8	Functions and Their Graphs	Chapter 3; MyMathLab
9	Linear and Quadratic Functions	Chapter 4; MyMathLab
10	Polynomial and Rational Functions	Chapter 5; MyMathLab
11	Polynomial and Rational Functions	Chapter 5; MyMathLab
12	Polynomials and Rational Functions	Chapter 5; MyMathLab
13	Exponential and Logarithmic Functions	Chapter 6; MyMathLab
14	Exponential and Logarithmic Functions	Chapter 6; MyMathLab
15	Exponential and Logarithmic Functions	Chapter 6; MyMathLab
16	Exponential and Logarithmic Functions (Applications)	Chapter 6; MyMathLab
	Systems of Equations	Chapter 8; MyMathLab
	Math 1314 Post-Test	

**Contact information varies by instructor.**