

# Algebra I

## MAT-900

2022 07/01/2022 to 06/30/2023 Modified 04/22/2022

### Course Description

Algebra 1 takes the student beyond the basic mathematics skills learned at lower level classes of mathematics and introduces them to topics that explore higher mathematic principles and skills. The student will investigate and solve problems that use both real numbers and variables. The skills learned will be used to solve real life problems to help students function better in the world around them. An emphasis will be placed on solving equations, including linear, quadratic, inequalities, multistep, and variations. Factoring and graphing will be used to solve a variety of equations and systems of equations. Also, skills related to exponents, statistics, and probability will be explored and related to practical application.

### Rationale

In order to function in the real world, a basic knowledge of mathematics is essential for being successful in a variety of fields and occupations. Every day we use mathematics to solve everything from balancing a checkbook to determining the amount of shingles needed for a roof to the angle of elevation when surveying property for road improvements. Algebra 1 offers applicable math skills and practice to solve problems we encounter in the real world both at the personal and global level.

#### Prerequisite

Pre-Algebra or appropriate score on Math assessment test

### Measurable Learning Outcomes

- A. The student will identify real numbers, perform order of operations, and simplify expressions.
- B. The student will solve equations, work percent problems, and solve and graph inequalities.
- C. The student will graph linear functions, identify arithmetic sequences, and calculate rate of change.
- D. The student will write equations in slope-intercept form, point-slope form, and solve systems of equations by substitution and elimination.
- E. The student will solve and graph linear inequalities.
- F. The student will use the properties of exponents and add/subtract/multiply/divide polynomials.
- G. The student will identify and be able to factor using the various factoring methods and solve and graph quadratic functions and equations.
- H. The student will solve quadratic equations using the quadratic formula, calculate theoretical and experimental probability, and graph data.
- I. The student will write exponential functions, simplify radical expressions, and rational functions.

### Course Resources

See LUOA's [Systems Requirements](#) for computer specifications necessary to operate LUOA curriculum. Also view [Digital Literacy Requirements](#) for LUOA's expectation of users' digital literacy.

This course makes use of third-party digital resources to enhance the learning experience. LUOA staff and faculty have curated these resources. Students can safely access them to complete coursework. Please ensure that internet browser settings, pop-up blockers, and other filtering tools allow for these resources to be accessed. See Technologies and Resources Used in this Course below for a specific list.

Note: Embedded YouTube videos may be utilized to supplement LUOA curriculum. YouTube videos are the property of the respective content creator, licensed to YouTube for distribution and user access. As a non-profit educational institution, LUOA is able to use YouTube video content under the YouTube Terms of Service. For additional information on copyright, please contact the [Jerry Falwell Library](#).

## Materials Required for Purchase

The following materials are required in this course:

- Scientific or graphing calculator
- Paper for working out problems
- Graph paper for graphing equations and other solutions to problems

## Scripture Attribution

All Scripture quotations, unless otherwise indicated, are from the ESV® Bible (The Holy Bible, English Standard Version®), copyright © 2001 by Crossway, a publishing ministry of Good News Used by permission. All rights reserved. May not copy or download more than 500 consecutive verses of the ESV Bible or more than one half of any book of the ESV Bible."

## Technologies and Resources Used in this Course

The following resource(s) are used throughout this course:

- Thinkwell

## Policies

Students are accountable for all information in the [Student Handbook \(https://www.liberty.edu/online-academy/wp-content/uploads/2021/11/LUOA-Student-Handbook.pdf\)](https://www.liberty.edu/online-academy/wp-content/uploads/2021/11/LUOA-Student-Handbook.pdf). Below are a few policies that have been highlighted from the Student Handbook.

## Course Grading Policies

The student's grades will be determined according to the following grading scale and assignment weights. The final letter grade for the course is determined by a 10-point scale. Assignments are weighted according to a tier system, which can be referenced on the Grades page in Canvas. Each tier is weighted according to the table below. Items that do not affect the student's grade are found in Tier 0.

Grading Scale		Assignment Weights	
A	90-100%	Tier 0	0%
B	80-89%	Tier 1	25%
C	70-79%	Tier 2	35%
D	60-69%	Tier 3	40%
F	0-59%		

In order for students to receive credit for a course, the following conditions have to be met:

- All semester exams and module tests have to be completed.
- All Tier 3 projects or papers have to be completed.
- Fewer than 10 zeros exist in the gradebook for blank submissions in a full credit course and 5 zeros for blank submissions in a semester course.

## Types of Assessments

To simplify and clearly identify which policies apply to which assessment, each assessment has been categorized into one of four categories: Lesson, Assignment, Quiz, or Test. Each applicable item on the course Modules page has been designated with an identifier chosen from among these categories. Thus, a Quiz on the American Revolution may be designated by the title, "1.2.W - Quiz: The American Revolution." These identifiers were placed on the Modules page to help students understand which Resubmission and Honor Code policies apply to that assessment (see the Resubmission Policy and Honor Code Policy below for further details).

- **Lesson:** *Any item on the Modules page designated as a "Lesson"*

These include instructional content and sometimes an assessment of that content. Typically, a Lesson will be the day-to-day work that a student completes.

- **Assignment:** *Any item on the Modules page designated as an "Assignment"*

Typical examples of Assignments include, but are not limited to, papers, book reports, projects, labs, and speeches. Assignments are usually something that the student should do his or her best work on the first time.

- **Quiz:** *Any item on the Modules page designated as a "Quiz"*

This usually takes the form of a traditional assessment where the student will answer questions to demonstrate knowledge of the subject. Quizzes cover a smaller amount of material than Tests.

- **Test:** *Any item on the Modules page designated as a "Test"*

This usually takes the form of a traditional assessment where the student will answer questions to demonstrate knowledge of the subject. Tests cover a larger amount of material than Quizzes.

## Resubmission Policy

Students are expected to submit their best work on the first submission for every Lesson, Assignment, Quiz, and Test. However, resubmissions may be permitted in the following circumstances:

- **Lesson:** Students are automatically permitted two attempts on a Lesson. Students may freely resubmit for their first two attempts without the need for teacher approval.
- **Assignment:** Students should do their best work the first time on all Assignments. However, any resubmissions must be completed before the student moves more than one module ahead of that Assignment. For example, a student may resubmit an Assignment from Module 3 while in Module 4, but not an Assignment from Modules 1 or 2. High School students may not resubmit an Assignment without expressed written permission from the teacher in a comment.
- **Quiz:** Students may NOT resubmit for an increased grade.
- **Test:** Students may NOT resubmit for an increased grade.

If a student feels that he or she deserves a resubmission on a Lesson, Assignment, Quiz, or Test due to a technical issue such as a computer malfunction, the student should message his or her teacher to make the request.

## Honor Code Policy

Every time a student violates the Honor Code, the teacher will submit an Honor Code Incident Report. The Student Support Coordinator will review the incident and allocate the appropriate consequences. Consequences, which are determined by the number of student offenses, are outlined below:

- **Warning:** This ONLY applies to high school Lessons and elementary/middle school Assignments and Lessons. Students should view these actions as learning opportunities.
  - **Lessons:** A zero will be assigned for the question only.

- **Elementary/Middle School Assignment:** The student must redo his or her work; however, the student may retain his or her original grade.
- **1st Offense:**
  - **Lesson, Quiz, or Test:** The student will receive a 0% on the entire assessment.
  - **Assignment:** The student will either:
    - Receive a 0% on the original assignment
    - Complete the Plagiarism Workshop
    - Retry the assignment for a maximum grade of 80%
- **2nd Offense:** The student will receive a 0% and be placed on academic probation.
- **3rd Offense:** The student will receive a 0% and the Director of Faculty will determine the consequences that should follow, possibly including withdrawal from the course or expulsion from the academy.

## Materials Selection Policy

LUOA curates educational materials that are consistent with the school's philosophy; however, the fallen human condition depicted in literature (as in Scripture itself) is not always pleasant. Valuable works sometimes have objectionable or profane elements. Good books provide four (4) recognized values.

- They build godly attitudes and character traits.
- They deepen our social and cultural awareness.
- They strengthen our use of written language.
- They provide a lifelong source of enjoyment and relaxation.

In order to instill these values in students and fulfill the stated objectives of the school, all LUOA students are expected to read and study good books on a regular basis. Recognizing that materials designed for one level may not be appropriate for another, three (3) levels of criteria are applied:

- Elementary materials must contain no objectionable material,
- Objectionable elements in sixth through eighth-grade materials must be limited and must serve a specific educational purpose, and
- Objectionable content may be included in high school materials but must be outweighed by positive literary, curricular, and/or Christian values.

The curriculum department has approved required educational materials for students.

## Schedule

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### Module 1: Foundations of Algebra

Week 1: The Language of Algebra

Week 2: Tools for Algebra

Week 3: More Tools of Algebra & Module 1 Assessment

### Module 2: Equations, Proportions, & Percent

Week 4: Solving Equations

Week 5: More Solving Equations & Proportion

& Percent

Week 6: More Proportion & Percent & Module 2 Assessment

### Module 3: Inequalities

Week 7: Introduction to Inequalities

Week 8: Multi-Step & Compound Inequalities

Week 9: Module 3 & Quarter 1 Assessments

**Module 4: Functions**

Week 10: Introduction to Functions

Week 11: Applying Functions

**Module 5: Linear Functions**

Week 12: Characteristics of Linear Functions

Week 13: Using Linear Functions

Week 14: More Using Linear Functions & Module 5 Assessment

**Module 6: Systems of Equations & Inequalities**

Week 15: Systems of Linear Equations

Week 16: More Systems of Linear Equations

Week 17: Linear Inequalities

Week 18: Module 6 & Quarter 2 Assessments

**Module 7: Exponents & Polynomials**

Week 19: Exponents

Week 20: More Exponents & Polynomials

Week 21: More Polynomials

**Module 8: Factoring Polynomials**

Week 22: Factoring Methods

Week 23: Applying Factoring Methods & Module 8 Assessment

**Module 9: Quadratic Functions & Equations**

Week 24: Quadratic Functions

Week 25: Solving Quadratic Equations

Week 26: More Solving Quadratic Equations

Week 27: Module 9 & Quarter 3 Assessments

**Module 10: Data Analysis & Probability**

Week 28: Probability

Week 29: Data Analysis

Week 30: More Data Analysis & Module 10 Assessment

**Module 11: Exponential & Radical Functions**

Week 31: Exponential Functions

Week 32: Radical Functions and Expressions

Week 33: Radical Equations & Module 11 Assessment

**Module 12 Rational Functions & Equations**

Week 34: Rational Functions & Expressions

Week 35: Operations with Rational Expressions

Week 36: Module 12 & Quarter 4 Assessments

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