

# Algebra II

## Syllabus 2022 - 2023

### Description

*Algebra* is the study of binary operations. *Analytic geometry* is the study of geometry in the coordinate plane. Our course, *Algebra II*, will address both these topics and combine them in the study of functions of a single variable. Types of functions we will study include linear functions, quadratic functions, polynomial functions, rational functions, exponential and logarithmic functions, and trigonometric functions.

### Course Information

**Teacher:** Dr. Paul L. Bailey

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**Website:** <http://plbailey79.github.io/portal>

**Text:** *Carnegie Learning Algebra II*, Finocchi and Lewis, Copyright 2018-2020 by Carnegie Learning, Inc.

**Text:** *Holt Algebra 2*, Burger et. al., Copyright © 2007 by Holt, Rinehart and Winston (on-line)

### Grade Components

**Classwork:** 20%

**Homework:** 10%

**Quizzes:** 20%

**Exams:** 50%

*Classwork* consists of attendance and participation in discussion, and activities such as team quizzes, worksheets, and other group work. Classwork activities are normally be graded on a scale of zero to ten.

*Homework* consists of progress through Carnegie Learning's on-line program Mathia, which we will cover at a rate of two workspaces per week. A weekly grade of zero through ten will reflect this progress.

There will be daily reading and practice problems assigned, but they will not be collected, as experience has shown that many student simply copy homework. Instead, the homework practice will be assessed using quizzes.

*Quizzes* are about twenty minutes long and occur weekly on Friday, covering that week's homework. These will be graded on a scale of zero to ten. No calculators or other electronic devices are allowed during quizzes.

*Examinations* are an hour long and occur every week on Tuesday or Wednesday. These will be graded on a scale of zero to one hundred points. There are two types of exams, tests and projects. *Tests* are free response exams with either 5 longer problems or 10 shorter problems. No calculators or other electronic devices are allowed during tests. *Projects* are typically multiple-choice, calculator active examinations.

### Class Expectations

- (a) *Respect:* Students are expected to treat each other, the teacher, and the classroom environment with respect. This includes arriving on time, focusing on the material, and avoiding unnecessary and unrelated conversation or comments.  
In particular, there will be *NO TALKING WHILE THE TEACHER IS TALKING*.
- (b) *Preparedness:* Students are expected to take notes in class. This includes coming to class on time with paper and pencil or pen.
- (c) *Participation:* Students are expected to actively participate in class discussion. This includes attentiveness, asking pertinent questions, supplying answers, making thoughtful comments, and otherwise being generally involved in the class discussion.
- (d) *No distractions:* Distractions are not permitted. You may not have books or notes from other classes open on your desk during our class.  
Most importantly, there will be *NO CELL PHONES* ever in the classroom.
- (e) *Calculators:* Students will have occasional need for a scientific calculator.

## Course Outline

This course outline is an approximation and is subject change as we proceed.

Semester	Week	Monday	Topic
1	1	08/01/22	Sets and Numbers
1	2	08/08/22	Operations and Roots
1	3	08/15/22	Linear Equations
1	4	08/22/22	Quadratic Equations
1	5	08/29/22	Quadratic Equations
1	6	09/05/22	Cartesian Plane, Distance
1	7	09/12/22	Lines, Circles, Parabolas
1	8	09/19/22	Functions
1	9	09/26/22	Linear, Quadratic, Monomial
1		10/03/22	Fall Break
1	10	10/10/22	Set Operations and Intervals
1	11	10/17/22	Polynomials (Arithmetic)
1	12	10/24/22	Polynomials (Factor Theorem, Multiplicity)
1	13	10/31/22	Polynomials (Sign Charts, Graphing)
1	14	11/07/22	Polynomials (Complex Conjugates)
1	15	11/14/22	Polynomial Inequalities
1	16	11/21/22	Thanksgiving Short Week
1	17	11/28/22	Transforming Functions (e.g. $1/x$ )
1	18	12/05/22	Rational Functions (Zeros and Poles)
1	19	12/12/22	Rational Functions (Graphing)
		12/19/22	Winter Break
		12/26/22	Winter Break
2	1	01/02/23	Short Week
2	2	01/09/23	Rational Functions (Holes, Arithmetic)
2	3	01/16/23	Radical Functions
2	4	01/23/23	Exponential Functions
2	5	01/30/23	Compound Interest; What is $e$ ?
2	6	02/06/23	Composition and Inverses; Injective
2	7	02/13/23	Logarithmic Functions
2	8	02/20/23	Solving Exp and Log Equations
2	9	02/27/23	Right Triangle Trig (sin, cos, tan)
2	10	03/06/23	Right Triangle Trig (arcsin, arccos, arctan)
2		03/13/23	Spring Break
2	11	03/20/23	Radian Measure, Reference Angles
2	12	03/27/23	Unit Circle Trig (Wrapping Function)
2	13	04/03/23	Unit Circle Trig (Graphs of sin, cos, tan)
2	14	04/10/23	Unit Circle Trig (Trig Identities)
2	15	04/17/23	Unit Circle Trig (Inverse Trig Functions)
2	16	04/24/23	Combinatorics, Bin Thm, Pascal's Triangle
2	17	05/01/23	Probability
2	18	05/08/23	Probability
2	19	05/15/23	Probability
2	20	05/22/23	Short Week