Integrated Modern Algebra
Wall High School
2024-2025

Teacher: Jennifer Glass (jglass@wallpublicschools.org)

Extra Help Schedule, Location, and Procedures:

- **Extra Help will be:**
  - **Mrs. Glass- A day rotation in Room E-2 during unit lunch**
- **Come to extra help frequently**

Marking Period Schedule

Marking Period 1 9/4/2024 - 11/6/2024	**Marking Period 3** 1/28/2025 - 4/1/2025
Marking Period 2 11/11/2024 - 1/17/2025	**Marking Period 4** 4/2/2025 - 6/5/2025
Midterm Exams 1/21/2025 - 1/27/2025	**Final Exams** 6/6/2025 - 6/13/2025

Course Description:
The curriculum for Integrated Modern Algebra is based on the belief that mastery in learning takes place over an extended period. When a skill or concept is introduced and practiced, students develop familiarity with it. This course intends to enable students to move toward independent learning within the context of review and extension of these skills with an introduction to topics essential for further study of mathematics. Emphasis is placed on the reinforcement of fundamental skills and concepts. The course focuses on families of functions, including linear, quadratic, exponential, and rational functions. Students are introduced to the complex number system. Other topics of study include trigonometry and data trends. As this course follows Algebra 1 and Geometry, students who complete this course will meet the NJDOE three-year mathematics graduation requirement. Students who complete and wish to continue to pursue mathematics at Wall High School can enroll in Algebra 2 CP. As this is a non-required precursor for Algebra 2 CP, students who have completed Algebra 2 CP are not eligible to take this course.

Units of Study:

1. Basics of Geometry: Angles, Segments, Area, and Volume

2. Advanced Geometry: Right Triangle Trigonometry and Circles
3. Reading Graphs and Functions
4. Linear Functions
5. Linear Systems and Inequalities
6. Solving Quadratic Functions and Systems
7. Graphing Quadratic Functions and Systems
8. Exponential Functions and Radical Functions
9. Rational Functions

Classroom Expectations to Ensure your Success:

1. Students will treat all peers, teachers and faculty with respect.
2. Students will bring a binder or notebook, charged Chromebook, and pencils every day.
3. Cheating/copying/plagiarism will not receive credit and will be documented for school purposes.
4. Cell phones will be placed in the phone holder at the beginning of class.
5. Abide by the Wall High School policies and rules. Failure to comply will result in the following consequences:

   First Offense: Student Conference
   Second Offense: Teacher detention
   Third Offense: Parent/Guardian Contact
   Fourth Offense: Referral to Administration/Central Detention

Materials & Available Resources

To be successful in this course, you will need:

1. Graphing Calculator (Recommended/classroom set/online tool)
2. Pencils/Pens
3. 3 ring binder
4. Loose leaf paper or notebook
5. Charged chromebook

Grading Breakdown

Each quarter grade is based on a percentage model; the following grading formulas have been established.

Marking Period Category Percentages

Category	Minimum Number	Percentage
Major Assessments	2	40%
Minor Assessments	4	40%
Homework/Classwork	10	20%

Course Grading

Category	Percentage
Marking Period 1	20%
Marking Period 2	20%
Midterm Exam	10%
Marking Period 3	20%
Marking Period 4	20%
Final Exam	10%

Big Ideas	Topics/Themes/Concepts	Activities & Assessments	Timeline (Number of Blocks)
Marking Period 1			
Unit 1: Basics of Geometry: Angles, Segments, Area, and Volume	Simplify algebraic expressions Add, subtract, multiply polynomial expressions Solve Linear Equations all types	Class notes Class practice Quiz	4 Sept. 5-10
	Define and apply definitions of angle, perpendicular lines, parallel lines, and line segment. Understand and apply angle relationships including complementary angles, supplementary angles, congruent angles, linear pairs, and vertical angles.	Class notes Class practice Quiz	3 Sept. 11-13
	Understand and apply the angle addition postulate. Understand and apply segment relationships including bisector,	Class notes Class practice Quiz	5 Sept. 14-23

	congruent segments, and midpoint. Understand and apply the segment addition postulate. Apply volume and area formulas for cylinders, pyramids, cones, and spheres.		
	Solve literal equations	Class notes Class practice Unit Review Unit Assessment	3 Sept. 23-30
Unit 2: Advanced Geometry: Right Triangle Trigonometry and Circles	Understand and apply the Pythagorean Theorem Understand and apply the Distance Formula Understand and apply the Midpoint Formula Solve Right Triangles with Trigonometric Functions (only in degrees to find both angles and sides) Understand and apply the Cofunction Theorem. example: cos(30)=sin(60) Introduce Secant, Cosecant, and Cotangent trigonometric functions for right triangles.	Class notes Class practice quiz	6 Oct. 1-11
	Define and apply circles vocabulary: central angles, inscribed angle, diameter,	Class practice Class notes Unit Review	7 Oct. 14-28

	semi-circle, center, radius, chord, measure of an arc. Find the arc length of a circle using proportion with circumference. Find the area of a sector using a proportion with area. Write a standard-form circle equation given a graph or information such as center, radius, area, and circumference.	Unit Assessment	
Marking Period 2			
Unit 3: Reading Graphs and Functions	Use the definition of a function to determine whether a relationship is a function. Use function notation once a relation is determined to be a function. Evaluate functions for given inputs in the domain. Operations with function notation. Interpret Functions in real life problems.	Class practice Class notes quiz	4 Oct. 29-Nov. 4
	Identify characteristics of graphs of functions including domain and range, increasing and decreasing, maximum and	Class practice Class notes Quiz Unit Review Unit Assessment	5 Nov. 5-15

	minimum, end behavior, positive and negative, and discontinuity. Calculate and interpret the average rate of change of a function over a specified interval. Estimate the rate of change from a graph.		
Unit 4: Linear Functions	Given tables of values determine which represent linear functions and explain reasoning. Write a linear function in different but equivalent forms to reveal and explain different properties of the function. These forms include slope-intercept form, standard form and point-slope form each revealing different properties. Rearrange the equation of a line into different forms.	Class practice Class notes Quiz	3 Nov. 18-21
	Graph linear functions from a table, an equation or a described relationship. Identify key characteristics from the graph and equations.	Class practice Class notes Quiz Unit Review Unit Assessment	8 Nov. 22-Dec. 11

	Find slopes of parallel and perpendicular lines and write equations for such. Graph piecewise-defined functions.		
Unit 5: Linear Systems and Inequalities	Solve systems of linear equations through an algebraic method and check answers for correctness. Recognize when linear systems have one solution, no solutions or infinitely many solutions. Translate algebraic verbal equations to represent linear systems and solve those systems.	Class practice Class notes Quiz	5 Dec. 12-20
	Solve systems of linear equations through a graphical approach both by hand and with a graphing calculator. Find approximate solutions when appropriate. Explain why graphical approaches may only lead to approximate solutions while an algebraic approach produces precise solutions that can be represented graphically or numerically. Graph the solutions to a linear inequality.	Class practice Class notes Quiz	5 Jan. 2-9

	Graph the solution set to a system of linear inequalities.		
	Solving basic linear inequalities. Solving compound inequalities.	Class practice Class notes Unit Review Unit Assessment	3 Jan. 10-14
Midterm Exam Review			2 Jan. 15-16
Marking Period 3			
Unit 6: Solving Quadratic Functions and Systems	Simplify square roots. Operations with complex numbers.	Class practice Class notes Quiz	2 Jan. 29-Feb. 3
	Solve quadratic equations by inspection: taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Relate the value of the discriminant to the type of root to expect for the graph of a quadratic function.	Class practice Class notes Quiz	8 Feb. 4-19

	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.		
	Solve a simple System consisting of a linear equation and a quadratic equation in two variables algebraically. Solve a simple System consisting of quadratic equations in two variables algebraically.	Class practice Class notes Quiz Unit Review Unit Assessment	5 Feb. 20-28
Unit 7: Graphing Quadratic Functions and Systems	Investigate the graph of quadratic functions through the use of the graphing calculator. Recognize transformations of the parent f(x) = x2 as vertical f(x) = x2 + k, horizontal f(x + k), stretch or reflections. Identify the effect on the graph of replacing f(x) by f(x) + k, kf(x), f(kx), and f(x + k) for specific values of k; find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	Class practice Class notes Quiz	5 Mar. 3-10

	Graph quadratic functions given in vertex form through the process of generating points in function notation and apply the meaning of symmetry to plot points.		
	Recognize that different forms of quadratic functions reveal different key features of its graph. Relate the value of the discriminant to the type of root to expect for the graph of a quadratic function. Interpret models of quadratic functions given as equations or graphs. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. Solve a simple System consisting of a linear equation and a quadratic equation in two variables graphically. Solve a simple System consisting of quadratic equations in two variables graphically.	Class practice Class notes Quiz Unit Review Unit Assessment	6 Mar. 11-21
Cumulative		Cumulative Review	2

		Cumulative Assessment	Mar. 24-26
Marking Period 4			
	Understand and apply the Laws of Exponents. Graph Exponential functions and discuss key features including intercepts, transformations, and horizontal asymptotes.	Class practice Class notes Quiz	4 Mar. 27-Apr. 4
Unit 8: Exponential Functions and Radical Functions	Switch from radical form to rational exponents and vice versa. Graph square roots functions and discuss key features including intercepts and transformations. Perform addition, subtraction, multiplying and dividing with square root functions.	Class practice Class notes Quiz	3 Apr. 7-11
	Graph and analyze piecewise functions containing linear, quadratic, exponentials and square root functions. Solve radical and exponential equations and discuss extraneous solutions.	Class practice Class notes Quiz Unit Review Unit Assessment	7 Apr. 21-May 2
Unit 9: Rational Functions	Simplify rational expressions. Identify excluded values and discuss domain restrictions and discontinuities.	Class practice Class notes Quiz	3 May 5-9
	Multiply rational expressions.	Class practice Class notes Quiz	3 May 12-16

	Divide rational expressions.		
	Solve rational equations and check for extraneous solutions.	Class practice Class notes Unit Review Unit Assessment	5 May 19-29
Final Exam Review			3 May 30- June 5

**Subject to revision*

Make-up Work as per Student Handbook

- Students who are absent from class for any reason will be required to make-up the work missed in each class. Completion of this work should take approximately the same amount of time as the student missed from class. In extreme cases of prolonged absence, (more than five consecutive days,) the Principal may grant extra time for the students to complete missing assignments. Students will receive an incomplete grade pending the submission of the missing assignments. Students will receive a zero for any work that is not completed by the designated timeline.
- It is the student's responsibility to obtain all make-up work from his/her teachers immediately upon return to school. Failure to obtain makeup work is no excuse for not completing work missed. Students have the same amount of time that they have been absent to make up the work.

Academic Integrity Policy as per Student Handbook

<u>Plagiarism Policy</u>

- **Freshmen**: On the first offense, the student may rewrite for a maximum grade of 55. The rewrite should be closely monitored by the teacher because on the freshmen level we are concerned with students' understanding of the process. On the second offense, the student receives a 0 grade for the final product. (Students' offenses will be filed in the supervisor's office.)
- **Sophomores, Juniors and Seniors:** If the teacher finds that the plagiarism is flagrant or pervasive and can document the same, the assessment may receive a grade of zero.

<u>Cheating</u>

Students are expected to conduct themselves honestly and with integrity in their work. All forms of cheating and plagiarism are prohibited. Behavior that is unacceptable includes, but is not limited to the following:

- Copying another student's work;

- Working with others on projects that are meant to be done individually;
- Looking at or copying another student's test or quiz answers;
- Allowing another student to look at or copy answers from one's test or quiz;
- Using any other method (ie "cheat sheets", communicating in any form) to get/give test or quiz answers;
- Taking a test or quiz in part or in whole to use or to give to others;
- Copying information from a source without giving proper acknowledgment;
- Taking papers from other students, publications, or internet sources and claiming it as one's own work;
- Academic dishonesty in any other form including, but not limited to, tampering with computerized grade records;
- Giving or receiving answers and/or test questions to or from another student.

Violators of this policy will be disciplined on a case-by-case basis, depending on the seriousness of the violation, prior violations and other factors.

Disciplinary measures/consequences may include, but are not limited to the following:

- Redoing the assignment (see policy on plagiarism);
- Receiving a zero grade on the project, test or quiz;
- Letter sent to parent and placed in the student's file;
- Detention, suspension or expulsion.