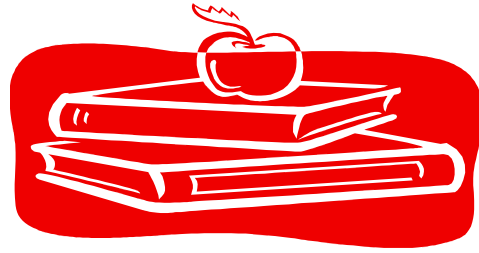


# Mackay Junior/Senior High School



**COURSE:** Algebra II

Date: 8-2-2011

Teacher with contact information: **LaRue Lambert**

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## COURSE DESCRIPTION

This course is a continued study of algebra concepts including linear and quadratic equations, inequalities, relations, polynomial, rational exponential and logarithmic functions, radicals, imaginary and complex numbers. Probability, statistics, and trigonometric functions will also be introduced.

## COMMON CORE / STATE CONTENT STANDARDS/VOCABULARY OBJECTIVES

- Simplify and evaluate algebraic expressions
- Solve linear and absolute value equations
- Solve and graph equations
- Use equations of relations and functions
- Determine the slope of a line
- Use scatter plots and prediction equations
- Graph linear inequalities
- Solve systems of linear equations graphically
- Solve systems of linear inequalities graphically
- Solve problems by using linear programming
- Organize data in matrices
- Perform operations with matrices and determinants
- Find inverses of matrices
- Use matrices to solve systems of equations
- Graph quadratic functions
- Solve quadratic equations
- Perform operations with complex numbers
- Graph and solve quadratic inequalities
- Add, subtract, multiply, divide and factor polynomials
- Analyze and graph polynomial functions
- Evaluate polynomial functions and solve polynomial equations

- Find factors and zeros of polynomial functions
- Find compositions and inverses of functions
- Graph and analyze square root functions and inequalities
- Simplify and solve equations involving roots, radicals, and rational exponents
- Graph exponential and logarithmic functions
- Solve exponential and logarithmic equations and inequalities
- Solve problems involving exponential growth and decay
- Simplify rational expressions
- Graph rational functions
- Solve direct, joint, and inverse variation problems
- Solve rational equations and inequalities
- Use the Midpoint and Distance formulas
- Write and graph equations of parabolas, circles, ellipses, and hyperbolas
- Identify conic sections
- Solve systems of quadratic equations and inequalities
- Use arithmetic and geometric sequences and series
- Use special sequences and iterate functions
- Expand powers by using the Binomial Theorem
- Prove statements by using mathematical induction
- Evaluate surveys, studies and experiments
- create and use graphs of probability distribution
- Use the Empirical rule to find probabilities
- Compare sample statistics and population statistics
- Find value of trigonometric functions
- Solve problems by using right triangle trigonometry
- Solve triangles by using the Law of Sines and Law of Cosines
- Graph trigonometric functions
- Use and verify trigonometric identities
- Use the sum and difference of angles identities
- Use the double- and half-angle identities
- Solve trigonometric equations

### INSTRUCTIONAL MATERIALS

Textbook: Glencoe McGraw-Hill Algebra II  
 Glencoe.com - online resources for Algebra II

### UNITS WITH INSTRUCTIONAL DATES

*The following lesson schedule is subject to revision*

2010-2011

Week	Lesson	Description
1	1.1 -1.3	Pre-Assessment
		Expressions and formulas, Properties of real numbers, solving

		equations
2	1.4 – 1.6	Solving absolute value equations, solving inequalities, solving compound and absolute value inequalities
3	Ch 1 Review and Test 2.1	Relations and functions
4	2.2-2.4	Linear Relations and Functions, Rate of Change and slope, Writing Linear Equations
5	2.5– 2.7	Scatter Plots and Lines of Regression, Special functions, Parent functions and Transformations
6	2.8 Ch 2 Review and Test	Graphing Linear and Absolute Value Inequalities
7	3.1-3.3	Solving Systems of Equations by Graphing, Solving Systems of Equations Algebraically, solving Systems of Inequalities by Graphing
8	3.4 – 3.5 Ch 3 Review and Test	Optimization with Linear Programming, systems of Equations in Three Variables
9	4.1 – 4.3	Introduction to Matrices, Operations with Matrices, Multiplying Matrices
End of 1 <sup>st</sup> Quarter		
10	4.4– 4.6	Transformations with matrices, Determinants and Cramer's Rule, Inverse matrices and Systems of Equations
11	Ch 4 Review and Test	
12	5.1 – 5.3	Graphing quadratic Functions, Solving Quadratic Equations by graphing, Solving quadratic equations by factoring
13	5.4 – 5.6	Complex Numbers, Completing the Square, the Quadratic Formula and Discriminant
14	5.7 – 5.8 Ch 5 Review	Transformations with Quadratic functions, Quadratic Inequalities
15	Ch 5 Test	

	6.1– 6.3	Operations with Polynomials, Dividing Polynomials, Polynomial Functions
16	6.4– 6.7	Analyzing Graphs of Polynomial Functions, Solving Polynomial Equations, The Remainder and Factor Theorems, Roots and Zeros
17	6.8 Ch 6 Review and Test	The Rational Zero Theorem
18	Semester Tests	
End of First Semester		

Week	Lesson	Description
19	7.1 – 7.3	Operations on Functions, Inverse functions and Relations, Square Root Functions and Inequalities
20	7.4 – 7.6	$n$ th roots, Operations with Radical Expressions, Rational Exponents
21	7.7 Ch 7 Review and Test	Solving Radical Equations and Inequalities
22	8.1 – 8.3	Graphing Exponential functions, Solving Exponential Equations and Inequalities, Logarithms and Logarithmic Functions
23	8.4 – 8.6	Solving Logarithmic Equations and Inequalities, Properties of Logarithms, Common Logarithms
24	8.7 – 8.8	Base $e$ and natural Logarithms, Using Exponential and Logarithmic functions
25	Ch 8 Review and Test	
26	9.1 – 9.3	Multiplying and Dividing rational Expressions, Adding and Subtracting Rational Expressions, Graphing Reciprocal Functions
27	9.4 – 9.6	Graphing Rational Functions, Variation Functions, Solving Rational Equations and Inequalities
28	Ch 9 Review and Test	
End of 3 <sup>rd</sup> Quarter		

29	10.1 – 10.3	Midpoint and Distance Formulas, Parabolas, Circles
30	10.4 – 10.6	Ellipses, Hyperbolas, Identifying Conic Sections
31	10.7 Chapter 10 Review and Test	Solving Linear-Nonlinear Systems
32	13.1 – 13.3	Trig functions in Right Triangles, Angles and Angle Measure, Trig functions of general angles  Angle & Line Relationships, Congruent Triangles
33	13.4 – 13.6	Law of Sines, Law of Cosines, Circular Functions
34	13.7 – 13.9	Graphing Trigonometric functions, Translation of Trigonometric graphs, Inverse Trigonometric graphs
35	Ch 13 Review and Test	
36	11.2 – 11.4	Arithmetic Sequences and Series, Geometric Sequences and Series, Infinite Geometric Series
37	12.2 – 12.4	Statistical analysis, Conditional Probability, Probability and Probability Distributions
38	Review for Semester Test	
39	Semester Test	
End of 2 <sup>nd</sup> Semester		

### ASSESSMENTS / TESTS

See Instructional Units/Dates

### GRADING PROCEDURES

Daily Homework (6 – 8 per Chapter)	10 each
Daily 5 min Checks	5 each
Homework Quiz (3-4 per Chapter)	approx 10 each
Chapter Test	100
Notes, Class Participation, Projects	25
Semester Tests	200 each

Homework will be due daily. Full points will not be given if the assignment is late.

Quizzes and Tests must be taken during the class period. If absent, the student should arrange a make-up time before or after school.

Students should take daily notes and participate in classroom discussions. The notes and classroom participation will be graded at the end of each chapter.

Extra practice and tutorials are provided on the website [Glencoe.com](http://Glencoe.com). The use of this website is optional and available to help students better understand the materials presented during class.

Extra Credit will be given for practice quizzes (2 pts) and practice tests (5 pts) completed on **Glencoe.com**. Points will only be given for quizzes that have been completed with 100% accuracy and tests that have been completed with at least 80% accuracy. Students may redo practice quizzes until they get all items correct. Extra credit for practice quizzes and tests will only be given for the current chapter. Results must be emailed to me at [larulamb@mackayschools.org](mailto:larulamb@mackayschools.org) to receive credit.

Grades will be calculated by dividing the total points earned by a student by the total points possible.

### CLASS RULES

Be in your seat and working on the 5 minute check when the bell rings.

Have homework completed and ready to correct at the beginning of class.

Treat other students and teacher with respect.

Participate in Class.

Learn to love Math!

### MISCELLANEOUS

Materials:     Two Spiral Notebooks  
                   - One for Homework, One for Notes and Warm-up Problems (You may use Loose Leaf Paper for Homework if you prefer)  
                   Graphing Calculator – TI-83+ or above ( make sure it can be used on the ACT test)  
                   Number 2 pencils and erasers