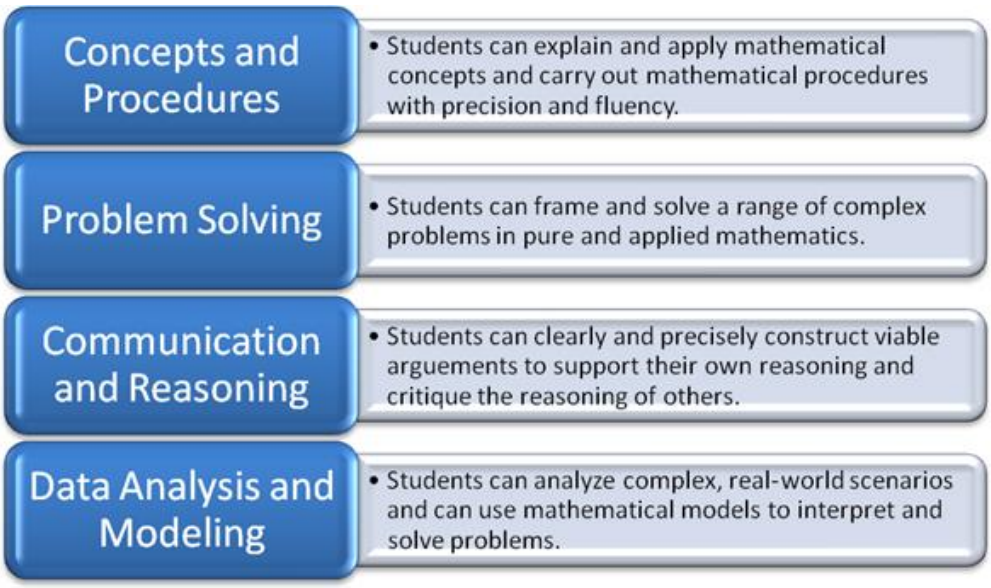
NATIONAL UNIVERSITY
VIRTUAL HIGH SCHOOL

COURSE SYLLABUS

Algebra I A/B **Last Modified: Nov. 2017**

Course Description: In this year-long Algebra course, students will cover topics over a two semester period (as designated by "A" and "B" sections). Students will become familiar with the language and history of algebra, they will use properties of real numbers to simplify expressions, and solve equations and inequalities. Students will work with ratios and proportions; they will study probability and statistics as well as explore functions, slope and graph linear equations.

Learning Targets:



Semester A	Semester B
Chapter 1 • Variables and expressions • Order of operations and evaluating expressions • Real numbers and the number line • Properties of real numbers • Adding a subtracting real numbers • Multiplying and dividing real numbers Chapter 2 • An introduction to equations • Patterns, equations, and graphs • Solving one-step equations • Solving two-step equations • Solving multi-step equations	Chapter 7 • Zero and negative exponents • Scientific notation • Multiplying powers with the same base • More multiplication properties of exponents • Division properties of exponents • Exponential growth and decay • Geometric Sequences Chapter 8 • Adding and subtracting polynomials • Multiplying and factoring • Multiplying binomials

- Solving equations with variables on both sides
- Literal equations and formulas
- Ratios, rates, and conversions
- Solving proportions
- Proportions and similar figures
- Percents
- Change expressed as a percent

Chapter 3

- Inequalities and their graphs
- Solving inequalities using addition and subtraction
- Solving inequalities using multiplication and division
- Solving multi-step inequalities
- Working with sets
- Compound inequalities
- Absolute value equations and inequalities
- Unions and intersections of sets

Chapter 4

- Using graphs to relate two quantities
- Patterns and linear functions
- Patterns and nonlinear functions
- Graphing a function rule
- Writing a function rule
- Formalizing relations and functions
- Arithmetic sequences

Chapter 5

- Rate of change and slope
- Direct variation
- Slope-intercept form
- Point-slope form
- Standard form
- Parallel and perpendicular lines
- Scatter plots and trend lines
- Graphing absolute value functions

Chapter 6

- Solving systems by graphing
- Solving systems using substitution
- Solving systems using elimination
- Applications of linear systems
- Linear inequalities
- Systems of linear inequalities

- Multiplying special cases
- Factoring
- Factoring special cases
- Factoring by grouping

Chapter 9

- Quadratic graphs and their properties
- Quadratic functions
- Solving quadratic equations
- Factoring to solve quadratic equations
- Completing the square
- The quadratic formula and the discriminate
- Linear, quadratic, and exponential models
- Systems of linear and quadratic equations

Chapter 10

- The Pythagorean Theorem
- Simplifying radicals
- Operations with radical expressions
- Solving radical equations
- Graphing square root functions
- Trigonometric ratios

Chapter 11

- Simplifying rational expressions
- Multiplying and dividing rational expressions
- Dividing polynomials
- Adding and subtracting rational expressions
- Solving rational equations
- Inverse variations
- Graphing rational functions

Chapter 12

- Organizing data using matrices
- Frequency and histograms
- Measures of central tendency and dispersion
- Box-and-whisker plots
- Samples and surveys
- Permutations and combinations
- Theoretical and experimental probability
- Probability of compound events

Required Materials: Graphing Calculator
Note: This course contains an embedded softcopy textbook.

Content Standards: This course was written to Common Core State Standards as adopted by California within the Smarter Balance Consortium.

Pre-Requisites: Pre-Algebra or comparable mathematics course

Grade Scale:

Letter	Range (%)
A	95.0+
A-	90.0 – 94.9
B+	87.0 – 89.9
B	84.0 – 86.9
B-	80.0 – 83.9
C+	77.0 – 79.9
C	74.0 – 76.9
C-	70.0 – 73.9
D+	67.0 – 69.9
D	64.0 – 66.9
D-	60.0 – 63.9
F	0.00 – 59.9

Course Methodology: This is an inquiry-based course. Students will generate knowledge through online readings, asynchronous discussions with students and their instructor, interactions with online tutorials, and online and hands-on simulations. A semester project developed by each student will be used to demonstrate knowledge and understanding of the material in the course.

The instructor will act as a guide, a facilitator, an events planner, and a resource advisor. He/she will always be available through e-mail. The student must actively construct and acquire knowledge by being intrinsically motivated to succeed. To succeed, students must participate and complete all readings and activities. This course requires the student's active participation.
Both formal and informal assessment methods will be used in the course. Informal assessment will include an evaluation of the quality and timeliness of participation in class activities. Formal assessment may include multiple-choice quizzes, tests, discussion board participation, and written assignments. A final exam will be given at the end of the course.

Course Expectations: Students are expected to conduct themselves in a responsible manner that reflects sound ethics, honor, and good citizenship. It is the student's

responsibility to maintain academic honesty and integrity and to manifest their commitment to the goals of NUVHS through their conduct and behavior. Students are expected to abide by all NUVHS policies and regulations. Any form of academic dishonesty, or inappropriate conduct by students or applicants may result in penalties ranging from warning to dismissal, as deemed appropriate by NUVHS.

Communication:

Throughout this course students will need to be in close contact with their instructor and fellow students. Students are expected to communicate via email and electronic discussion boards. Therefore, students should plan on checking email at least three to five times a week and participate in the discussion boards during the weeks they are live.

Instructors strongly encourage and welcome open communication. Clear, consistent, and proactive communication will ensure a successful experience in this course. It is the student's responsibility to notify the instructor immediately if and when a personal situation occurs that affects his/her performance in this class. Being proactive with communication will result in a quick solution to any problems that may occur.

Technical Support is offered through Spectrum Pacific Learning Company (SPLC). Should a student need any technical assistance, he/she should email the Help Desk as soon as possible at helpdesk@myonlinelogin.com or call 1-877-252-7715. SPLC will help resolve technical problems and walk through the solution with students. If a problem persists for more than 48 hours, the student must also notify his/her teacher(s) and NUVHS.

Support:

At NUVHS you will have access to multiple support teams. Who you contact will depend on the questions you have. Always start by contacting your teacher through the Message Center in the course. Your teacher should be able to answer your question, but if they can't, then they will direct you to another support team. If you have questions about any of the course content, your grades, or course policies, you should contact your instructor.

For questions about your enrollment, transcripts, or general school-wide policies, you can contact NUVHS Student Services at info@nuvhs.org or by phone at 866.366.8847. For example, if you would like to withdraw from your course, you should contact Student Services. Please note that a refund for your course can only be obtained if you drop within the first seven days of enrolling in the course.

For help with login/password issues, or other technical issues specific to the Blackboard website, you can contact the team at National University Blackboard Learn. They can also be reached by phone at (888) 892-9095.

Course Outline: Semester A

Unit	Topic	Activity
1	The Foundations of Algebra	• Diagnostic Exam • Lessons: 1.1 to 1.3 • Homework: 1.1 to 1.3 • Class Discussion • Chapter 1 Quiz 1
2	The Foundations of Algebra (Continued)	• Lessons: 1.4 to 1.9 • Homework: 1.4 to 1.9 • Class Discussion • Chapter 1 Quiz 2 • Chapter 1 Test
3	Solving Equations	• Lessons: 2.1 to 2.10 • Homework: 2.1 to 2.10 • Class Discussion • Chapter 2 Quiz 1 • Chapter 2 Quiz 2 • Chapter 2 Test
4	Solving Inequalities	• Lessons: 3.1 to 3.8 • Homework: 3.1 to 3.8 • Class Discussion • Chapter 3 Quiz 1 • Chapter 3 Quiz 2 • Chapter 3 Test • Midterm
5	An Introduction to Functions	• Lessons: 4.1 to 4.7 • Homework: 4.1 to 4.7 • Class Discussion • Chapter 4 Quiz • Chapter 4 Test
6	Linear Functions	• Lessons: 5.1 to 5.8 • Homework: 5.1 to 5.8 • Class Discussion • Chapter 5 Quiz 1 • Chapter 5 Quiz 2 • Chapter 5 Test

7	Systems of Equations and Inequalities	• Lessons: 6.1 to 6.6 • Homework: 6.1 to 6.6 • Class Discussion • Chapter 6 Quiz • Chapter 6 Test
8	Algebra IA Review	• Class Discussion • Class Project • Final Exam

Course Outline: Semester B

Unit	Topic	Activity
1	Exponents and Exponential Functions	• Diagnostic Exam • Lessons: 7.1 to 7.3 • Homework: 7.1 to 7.3 • Class Discussion • Chapter 7 Quiz 1
2	Exponents and Exponential Functions (Continued)	• Lessons: 7.4 to 7.7 • Homework: 7.4 to 7.7 • Class Discussion • Chapter 7 Quiz 2 • Chapter 7 Test
3	Polynomials and Factoring	• Lessons: 8.1 to 8.8 • Homework: 8.1 to 8.8 • Class Discussion • Chapter 8 Quiz 1 • Chapter 8 Quiz 2 • Chapter 8 Test
4	Quadratic Functions and Equations	• Lessons: 9.1 to 9.8 • Homework: 9.1 to 9.8 • Class Discussion • Chapter 9 Quiz 1 • Chapter 9 Quiz 2 • Chapter 9 Test • Midterm

5	Radical Expressions and Equations	• Lessons: 10.1 to 10.6 • Homework: 10.1 to 10.6 • Class Discussion • Chapter 10 Quiz • Chapter 10 Test
6	Radical Expressions and Functions	• Lessons: 11.1 to 11.7 • Homework: 11.1 to 11.7 • Class Discussion • Chapter 11 Quiz 1 • Chapter 11 Quiz 2 • Chapter 11 Test
7	Data Analysis and Probability	• Lessons: 12.1 to 12.8 • Homework: 12.1 to 12.8 • Class Discussion • Chapter 12 Quiz 1 • Chapter 12 Quiz 2 • Chapter 12 Test
8	End of Course Algebra Comprehensive Review	• Class Discussion • Course Project • Final Exam