

Howard Community College
Syllabus MATH-061/063/067
Basic to Elementary Algebra using ALEKS

COURSE MATERIALS

Required ALEKS Subscription: You are required to purchase an ALEKS subscription. Each student will be given a two-week temporary access code on the first day of class. It will be your responsibility to purchase either an 18-week or 52-week subscription before your temporary access expires.

Organizational Materials: You will have on-demand personal instruction, as well as video instruction. You will also be required to complete mathematics problems using the ALEKS platform. Therefore, it is essential that you develop a method to keep your work organized. We strongly recommend that you use either a notebook and folder, or a three-ring binder. Your instructor may ask to see your notes.

Calculator: You may only use a 4-function calculator for your work in Modules 1-6. The Mathematics Division will provide 4-function calculators in class for your convenience. Inexpensive, basic calculators can be purchased at most stores for about \$5.00. Graphing calculators are only authorized for use in Modules 7-10.

Headphones: To help create a professional working environment, we ask that you use headphones when listening to videos in the lab. For health and sanitation reasons, we do not lend headphones to students. We require that you bring your own headphones to class.

Student ID Barcode: Daily participation will be monitored using an electronic system called AccuTrack. You will be required to have a current HCC ID card with your student ID barcode on the back.

Optional Textbook: Your subscription to ALEKS will include the e-book version of the textbook Miller/O'Neill/Hyde: Beginning and Intermediate Algebra, 4th Ed. (McGraw-Hill) - ALEKS 360. You have the option of purchasing a printed version of the textbook through ALEKS.com. The printed text will cost \$15 including shipping and handling. If you are receiving financial aid, you must keep the receipt and get reimbursed through the financial aid office.

Home System Requirements (optional but highly recommended): In all college classes, students are expected to spend 2 hours outside of class for every hour in class. This means each week you should spend 5 hours in your scheduled class plus an additional 10 hours outside of your regular class time. There is a strong relationship between success in this course and the amount of work that you do outside of class. If you choose to do this work from home, know that ALEKS will run on tablets, laptops and desktops. Please see the table below for specific system requirements. There are also computers available in campus labs such as DH110, CL129 and the LAC.

	Windows	Macintosh	Chromebook	iPad	Android Tablet
Operating System	7+	OS X 10.7+	Chrome OS	iOS 6+	Android 4+
Screen Resolution	1024x768 +	1024x768 +	Any	Any	8.9"
Browsers	Chrome 30+ Explorer 9+ Firefox 25+	Chrome 30+ Safari 6+ Firefox 25+	Chrome 30+	Safari	Chrome 30+

COURSE STRUCTURE

General Overview: You will progress through the material for this course through an online adaptive software package called ALEKS-360. You will first take an Initial Knowledge Check that will assess exactly where you belong in the course material. You will then be able to proceed through the Modules online using the learning features of the program. Periodic checks of your understanding of the material will occur throughout each Module. You will have mastered a given topic once you answer three questions in a row correctly. After each Module is completed, you will take an exam. Once you have mastered the exam (score of 75% or above), you will move on to the next Module.

Initial Knowledge Check: This feature of the program allows us to know exactly what knowledge of mathematics you have before beginning the material required for this course. You will take the Initial Knowledge Check in class on the first day. This Knowledge Check will help us determine where you should begin in the course material. An individualized Module Pie will be designed for you by the system based on your answers on the Knowledge Check.

Regular Knowledge Checks: These Knowledge Checks will periodically assess your understanding of the material you have learned up to the point of the check. These checks appear after you have mastered 20 topics and spent 5 hours working on ALEKS. Incorrect solutions on these Knowledge Checks will add topics back into your Module Pie. Regular Knowledge Checks can be completed at home or on campus in one of the developmental math labs.

Module pie completion: A Module Pie is considered complete when you have mastered more than 90% of the material in the pie. When you have completed a Module Pie, ALEKS will push you into the next Module. You can see your progress in a Module Pie by going to the Report tab under the Main Menu. Look under Current Objective, and click on View Full Report. You have completed a Module when the Module pie has a grey background with the word "Completed" is at the top.

Mid-Module Quiz: Each Module contains one Mid-Module Quiz. Once you have completed approximately half of the Module Pie, you will need to tell your instructor that you are ready to take the Mid-Module Quiz. These quizzes must be completed during class or in one of the designated developmental math labs. The quiz covers topics you have already completed in the Module Pie, but you may also see future topics that ALEKS thinks you can answer successfully. Your success on a Mid-Module Quiz will result in either the addition or subtraction of topics to your Module Pies.

Instruction: This course provides you with multiple modes of instruction. First, you will have the option to attend On-Demand Instruction that runs in conjunction with your lab time. It is available in HR324 and is recommended for students seeking extensive help with a topic. Furthermore, depending on the topic being covered, you will have access to an e-book, video lectures, worked examples, animations, and extra examples. Your instructor also offers office hours each week outside of class. When your instructor is not available, you may seek help from the instructor on duty in HR324. You may also visit any developmental math lab (HR326 or HR322) to spend extra time working on ALEKS. Finally, all HCC students receive free tutoring from the Learning Assistance Center (LAC) in the RCF building for each class in which they are enrolled. If you would like an assigned tutor, please sign-up soon.

Participation: Participation is essential for successful completion of this course. Students are required to spend an average of 5 hours per week in a combination of On-Demand Instruction, and computer lab time. You may need to schedule an additional 30 minutes per week beyond your scheduled class time to reach this goal.

Homework: You will be responsible for submitting one Homework Assignment for each Module. The assignments are located in your student packet. Each assignment is 10 questions and worth 50 points. In order to take a Module Exam, your Homework grade must be at least 70% (35 points total). Homework will not be graded during class time, so be sure to submit this prior to the day you wish to take an Exam. Students will have the opportunity to resubmit their Homework if they do not receive a passing grade on the first try. For instructions on how homework should be submitted, please see your Student Packet.

Review for Module Exam: Within the ALEKS program, there are online reviews for each Module Exam. These reviews must be completed with an 80% or higher in order to take the Module Exam. You may attempt the review as many times as necessary in order to reach your goal of 80%. See your instructor if you have a hard time passing the review.

Module Exam: Once all requirements have been met, you will take a Module Exam. In order to take the exam, you must have completed your Module Pie and Mid-Module Quiz, scored 70% or higher on your written homework, scored 80% or higher on your Module Review, and gotten written permission from your instructor to take the exam. Your goal in order to master the entire Module is to score 75% or higher on your Module Exam. If you do not reach this score, you will be given another Module Review (on paper) and will have the opportunity to take the Exam again.

Participation Procedure: All students must sign in and out of Lab and On-Demand Instruction. The first time you sign in, you will have to enter your name as well as your course and section number into the computer. This step should only be performed once. If you are asked to enter this information again, an error has occurred and you should bring it to the attention of an instructor or lab manager.

Participation Hours: We expect you to attend On-Demand Instruction and Lab at least 5 hours every week. Each hour missed will result in the loss of one percentage point from your Participation Hours score. You can make up missed time or bank extra hours in any designated developmental math lab outside of your scheduled class time. You will earn one percentage point towards your Participation Hours for every hour that you spend in a designated developmental lab beyond the 5-hour weekly minimum.

Participation Mastery: To earn Participation Mastery you must have a minimum of 90% for your Participation Hours percentage.

GRADE STRUCTURE

Module Requirements:

To master a Module, you must meet all of the following requirements:	
Complete	ALEKS Module Pie
Complete	Mid-Module Quiz
70% or higher	Written Homework
80% or higher	Module Review
75% or higher	Module Exam

Final Grades: Final grades are assigned using the following table.

# of Modules Mastered	% of Final Grade	Final Grade without Participation Mastery	Final Grade with Participation Mastery
0	0%	0% (F)	0% (F)
1	30%	30% (F)	41% (F)
2	30%	60% (D)	71% (C)
3	10%	70% (C)	81% (B)
4	10%	80% (B)	91% (A)
5	3%	83% (B)	94% (A)
6	3%	86% (B)	97% (A)
7	3%	89% (B)	100% (A)
8 or more		90% (A)	100% (A)
Participation	11%		

***Mastering 5 or more modules will result in an A, as long as Academic Dishonesty does not occur.**

L-Grade: An L-grade is assigned in developmental courses for students who have not mastered the course objectives due to individual learning characteristics. In order to qualify for an L-grade, you must have an attendance score of at least 120% and work with steady diligence and effort beyond class sessions. Effort beyond class sessions must include documented time spent in computer labs and with a tutor. An L-grade is not computed in your grade point average. If you receive an L-grade, you must re-register and pay for the course and inform your new instructor of your L-grade status. In addition, you must commit to meeting course deadlines and other requirements as set forth by the instructor and the course coordinator.

Violation of Academic Honesty: In this course, students who do not follow the rules for quizzing and testing, or who are found to have cheated on their homework, are violating the academic honesty policy. The consequences of violating the academic honesty policy in this course and on campus are listed below.

If this is your...	This is the effect on your course grade...
First offense on campus	One letter grade decrease in your final course grade A drops to B B drops to C C drops to D
Second offense on campus or more	Final course grade of F

If a violation occurs on...	These are the repercussions...
Written Homework	You must redo written homework as assigned by a course coordinator.
Mid-Module Quiz	You must retake the Mid-Module Quiz in its entirety.
Module Exam	You will not earn the 3 points for this Module.

Course Extension Note: MATH-061E is a one-credit extension course offered during the winter semester that allows a student to complete Module 3. In order to sign up for this extension course, you must master Modules 1, 2 and the Mid-Module Quiz for Module 3. MATH-067E is a one-credit extension course that allows a student to complete Module 6. In order to sign up for this extension course, you must master Modules 4 and 5. The MATH Division will enter petitions for students who are eligible to enroll in an extension course at the end of the semester. You cannot register for extension courses before the end of the semester.

MATH-061E: This course requires students to master Module 3 from the MATH-061 content. To accomplish this, students must meet the following requirements: Complete the Module 3 ALEKS Pie, Score 70% or higher on the Module 3 Written Homework, Score 80% or higher on the Module 3 Exam Review, and score 75% or higher on the Module 3 Exam. Note that students do not have to take the Module 3 Mid-Module Quiz. Final grades for MATH-061E are administered based on the Module 3 Exam score.

MATH-067E: This course requires students to master Module 6 from the MATH-067 content. To accomplish this, students must meet the following requirements: Complete the Module 6 ALEKS Pie, Score 70% or higher on the Module 6 Written Homework, Score 80% or higher on the Module 6 Exam Review, and score 75% or higher on the Module 6 Exam. Note that students do not have to take the Module 6 Mid-Module Quiz. Final grades for MATH-067E are administered based on the Module 6 Exam score.

Final Grades for MATH-061E and MATH-067E:

Score on the Module 3 Exam	Grade
Below 75%	F
75% - 79%	C
80% - 89%	B
90% - 100%	A

Score on the Module 6 Exam	Grade
Below 75%	F
75% - 79%	C
80% - 89%	B
90% - 100%	A

ADDITIONAL SUPPORT

ALEKS Technical Support: To receive technical support for the ALEKS program you can either go to www.aleks.com and search under the *Support* tab, or you can call their support line 714-619-7090.

Instructor Office Hours: Your instructor will provide weekly office hours. You can find detailed information on where and when their office hours are held on the Instructor Information Sheet.

Open Lab Time: You may work in any of the designated developmental labs while they are open. Even if there is a developmental math class meeting in one of these labs, you are still permitted to use a computer and get help from the instructor and lab aides as long as a seat is available (priority is given to students who are registered for that class time).

On-Demand Instruction: Regardless of what module you are working in, you may seek help from the On-Demand Instructor in HR324 whenever the room is open.

Learning Assistance Center (LAC): The LAC is located on the third floor of the RCF building, and it offers one free hour of tutoring each week for each class in which you are enrolled. You can call 443-

518-1300 to make an appointment, or visit their website for more information at www.howardcc.edu/students/academic_support_services/student_support_services/Tutoring

COURSE REGULATIONS

General Course Procedures: The HCC Student Handbook states that, “Academic Honesty means the use of one’s own thoughts and materials in the writing of papers, taking of tests, and other classroom related activities. Any student intentionally aiding another student in any infraction of the Academic Honesty Policy is considered equally guilty.” In coordination with this definition, any work that you do for this course on an exam, quiz or knowledge check must comply with the above statement. Help from an instructor, tutor or lab aide on your ALEKS pie or your written homework is acceptable.

Knowledge Check and Mid-Module Quiz Procedures:

- 1) All of your work must be your own.
- 2) You may not receive assistance from any person, written material, or Internet site.
- 3) Apart from a 4-function calculator, you are not permitted to use any electronic devices.
- 4) Mid-Module Quizzes must be completed on yellow paper in Lab.

Module Exam Procedures:

- 1) Before you may take an exam, you must have all the requirements of the module completed (*see the module checklist in your student packet*).
- 2) Before you may take an exam, your instructor must check that you have completed all the requirements of the module and fill out the approval form.
- 3) You may take a module exam outside of your class as long as you are in one of the authorized developmental math labs and your instructor has filled out an approval form.
- 4) You may only attempt a module exam once per day.
- 5) You must ask permission of an instructor or lab manager to take a module exam. That person will sign the bottom of your approval form and give you a blue sheet of paper.
- 6) You must have your ID displayed on your desk while you take a module exam.
- 7) You may not talk to other students, leave the room, use any written material or headphones, have your cellphone or any other electronic device out (excluding a 4-function calculator), or have another website open while you are taking a module exam.
- 8) You must return your blue exam paper to an instructor or lab manager when you have completed your exam.

Violation of Academic Honesty: Violating any of the procedures above is a violation of academic honesty.

WEATHER-RELATED POLICIES

You can quickly receive notices of emergencies, college closings and other urgent information via text messaging, email or RSS feeds when you sign up for the HCC Mobile Alert System through myHCC. Furthermore, college closings also will be announced on the HCC Web site (www.howardcc.edu), main phone number (443-518-4800), and via Baltimore and Washington television and radio stations.

Late Opening Policy: If the college has a late opening and more than 30 minutes remains for your scheduled class, your class will meet for the remainder of the class time.

Early Closing Policy: If the college will be closing early and more than 30 minutes of time is available for your scheduled class before the closing, your class will meet during the available time.

COURSE OBJECTIVES

Upon successful completion of this course, you will be able to:

Module 1

- 1-1 Simplify fractions.
- 1-2 Multiply fractions.
- 1-3 Divide fractions.
- 1-4 Add and subtract fractions with like and unlike denominators.
- 1-5 Compare fractions.
- 1-6 Use the rules of the order of operations to simplify expressions that require combining like terms, removing parentheses and removing parentheses inside parentheses.
- 1-7 Evaluate algebraic expressions by substitution.
- 1-8 Solve an equation using addition or subtraction.
- 1-9 Solve an equation using multiplication or division.
- 1-10 Solve an equation using combinations of the four operations, in which like terms need to be collected and there are parentheses.
- 1-11 Express an inequality using inequality symbols or number line graphs.
- 1-12 Solve and graph linear inequalities in one variable.
- 1-13 Solve literal equations using one or two steps.
- 1-14 Find the perimeter and area of squares, rectangles, triangles and combinations.
- 1-15 Find the circumference and area of a circle.
- 1-16 Solve application problems involving combinations of geometric figures.

Module 2

- 2-1 Label and identify parts of the Cartesian coordinate system.
- 2-2 Graph points using a table of values or set of ordered pairs.
- 2-3 Find ordered pairs of real numbers that satisfy a given equation of a line.
- 2-4 Write the equation for and graph vertical and horizontal lines.
- 2-5 Define x - and y -intercepts, find the x - and y -intercepts of a line, express the intercepts as ordered pairs, and graph lines using the x - and y -intercepts.
- 2-6 Rewrite the equation of a line in standard form or slope-intercept form.
- 2-7 Define the slope of a line and find the slope of a line given two points.
- 2-8 Find the slope and y -intercept of a line given the equation of a line.
- 2-9 Write an equation for a line given a slope and y -intercept.
- 2-10 Draw the graph of a line from its equation, its slope and a point, or from two points.
- 2-11 Write an equation for a line with a given slope and through a given point.
- 2-12 Write an equation for a line through two given points.
- 2-13 Write a linear equation from information given in application problems that include income, sales commission, salaries, price, or number of items.

Module 3

- 3-1 Determine by graphing the solution(s) for a system of two linear equations.
- 3-2 Solve a system of two linear equations by substitution.
- 3-3 Solve a system of two linear equations by the elimination (addition) method.
- 3-4 Solve applied problems including number, geometric, interest, and amounts and cost by translating them into a system of two equations with two unknowns.
- 3-5 Identify and apply basic exponent properties with integer exponents.

- 3-6 Use a combination of exponent properties to simplify expressions involving integer exponents.
- 3-7 Identify the parts of a polynomial: terms and coefficients.
- 3-8 Classify polynomials as a monomial, binomial, trinomial or none of these.
- 3-9 Add, subtract and find the opposite of a polynomial.

Module 4

- 4-1 Multiply monomials, a monomial and a polynomial, and two binomials.
- 4-2 Simplify an algebraic expression that may involve a combination of addition, subtraction, and multiplication of polynomials.
- 4-3 Divide a polynomial by a monomial.
- 4-4 Divide a polynomial by another polynomial using the algebraic long division process. The degree of the remainder must be less than the degree of the divisor.
- 4-5 Factor polynomials by finding the greatest common monomial factor.
- 4-6 Use grouping to factor a four-term polynomial into a product of two binomials.
- 4-7 Factor a second-degree polynomial of the form $ax^2 + bx + c$ or $ax^2 + bxy + cy^2$ with $a=1$ into a product of two binomials, which contain integer coefficients. It may be necessary to remove a common factor first.
- 4-8 Factor a second-degree polynomial of the form $ax^2 + bx + c$ or $ax^2 + bxy + cy^2$ with $a \neq 1$ into a product of two binomials which contain integer coefficients. It may be necessary to remove a common factor first.
- 4-9 Factor the difference of two perfect squares.
- 4-10 Convert numbers from standard form into scientific notation and scientific notation back to standard form.
- 4-11 Solve application problems involving unit conversions and scientific formulas using unit analysis and/or scientific notation.

Module 5

- 5-1 Simplify radical expressions by applying the definition of a root.
- 5-2 Simplify radical expressions by applying the multiplication property of radicals.
- 5-3 Simplify radical expressions by applying the division property of radicals.
- 5-4 Simplify a given expression involving addition and/or subtraction of more than one term, which contains radicals. Some expressions must also be changed to their simplest radical form.
- 5-5 Multiply radical expressions and simplify.
- 5-6 Write a quadratic equation in standard form $ax^2 + bx + c = 0$, with $a \neq 0$ and determine the coefficients a , b , and c .
- 5-7 Solve quadratic equations by putting them into standard form and factoring.
- 5-8 Solve quadratic equations by the square root method.
- 5-9 Write the quadratic formula.
- 5-10 Apply the quadratic formula to solve quadratic equations yielding real value solutions.
- 5-11 Analyze, set up, and solve application problems including number, geometric, projectiles, and business involving quadratic equations.

Module 6

- 6-1 Identify parts of a triangle.
- 6-2 Determine the sum of the measures of the interior angles of a triangle.
- 6-3 Identify parts of a right triangle.
- 6-4 Solve real-life application problems by applying the Pythagorean Theorem.

- 6-5 Find the distance between two points.
- 6-6 Use the midpoint formula to find the point that is midway between two points on a line.
- 6-7 Determine restricted values for the variable in a rational expression.
- 6-8 Simplify rational expressions involving polynomials that must be factored.
- 6-9 Multiply and divide polynomial rational expressions.
- 6-10 Use proportions to solve practical problems including those with similar triangles.
- 6-11 Convert between percentages, decimals, and fractions.
- 6-12 Calculate a percentage of a number.
- 6-13 Solve application problems involving percentages.
- 6-14 Write a general formula for direct variation in which the constant variation and a missing value can be found.
- 6-15 Write a general formula for inverse variation in which the constant variation and a missing value can be found.
- 6-16 Solve application problems involving architecture, physics, and other real-world situations using direct and inverse variation.

Module 7

- 7-1 Use problem-solving strategies to explore data patterns numerically, graphically and algebraically. *(Section 2.1)*
- 7-2 Determine the independent and dependent variables of a function. *(Section 2.1)*
- 7-3 Determine if a relationship is a function by the vertical line test or by the informal definition. *(Section 2.2)*
- 7-4 Recognize a constant function. *(Section 2.2)*
- 7-5 Recognize a linear function from a table or a graph. *(Section 1.2)*
- 7-6 Recognize a linear function from an equation. *(Section 3.1)*
- 7-7 Interpret the significance of the slope of a line in application problems. *(Section 3.1)*
- 7-8 Interpret the meaning of the vertical (y -) and the horizontal (x -) intercepts in the context of applications. *(Section 3.1)*
- 7-9 Model applications with linear functions. *(Section 3.2)*
- 7-10 Solve a 3×3 system of equations algebraically. *(Section 3.3)*
- 7-11 Model applications with systems of equations. *(Section 3.3)*

Module 8

- 8-1 Model applications with linear inequalities. *(Section 4.1)*
- 8-2 Solve compound linear inequalities and express solutions algebraically as well as graph solutions on a number line. *(Section 4.2)*
- 8-3 Solve absolute value equations and inequalities using a graphing calculator. *(Section 4.3)*
- 8-4 Convert between radical and rational exponent form. *(Section 5.1)*
- 8-5 Simplify algebraic expressions containing rational exponents of the form $1/n$ using the properties of exponents. *(Section 5.1)*
- 8-6 Solve radical equations and equations with rational exponents of the form $1/n$ algebraically and graphically. *(Section 5.2)*
- 8-7 Determine extraneous roots. *(Section 5.2)*

- 8-8 Simplify algebraic expressions containing rational exponents of the form m/n using the properties of exponents. *(Section 5.3)*
- 8-9 Solve radical equations and equations with rational exponents of the form m/n algebraically and graphically. *(Section 5.3)*

Module 9

- 9-1 Recognize a quadratic function from a graph or equation. *(Section 6.1)*
- 9-2 Use the vertex of a quadratic function to determine an appropriate window for the graph. An appropriate window includes the vertex and vertical and horizontal (y and x) intercepts. *(Section 6.1)*
- 9-3 Solve quadratic equations with real roots. *(Section 6.2)*
- 9-4 Use a graphing calculator to solve a maximum/minimum problem involving a quadratic function. *(Section 6.2)*
- 9-5 Use quadratic functions to model applications. *(Section 6.2)*
- 9-6 Use the discriminant to determine the number and type of roots for a quadratic function. *(Section 6.3)*
- 9-7 Write and simplify a quadratic equation given the real roots. *(Section 6.3)*
- 9-8 Find restrictions for rational equations. *(Section R.E.)*
- 9-9 Find a least common denominator. *(Section R.E.)*
- 9-10 Solve rational equations. *(Section R.E.)*
- 9-11 Determine extraneous roots. *(Section R.E.)*
- 9-12 Set up and solve a rational equation that comes from a word problem. *(Section R.E.)*
- 9-13 Solve nonlinear systems of equations algebraically and graphically. *(Section 6.5)*
- 9-14 Solve nonlinear inequalities graphically. *(Section 6.5)*

Module 10

- 10-1 Use function notation. *(Section 8.1)*
- 10-2 Find the domain and range of a function from its graph or a table. *(Section 8.1)*
- 10-3 Evaluate a function by using a table, graph or an algebraic rule. *(Section 8.1)*
- 10-4 Determine whether a function has an inverse by deciding if it is 1-1 (Horizontal Line Test). *(Section 8.2)*
- 10-5 Given a function expressed as a set of ordered pairs or in table form, find its inverse. *(Section 8.2)*
- 10-6 Graph the inverse of a function. *(Section 8.2)*
- 10-7 Recognize exponential functions from a table, graph or equation. *(Section 9.1)*
- 10-8 Model application problems by exponential functions. *(Section 9.1)*
- 10-9 Graph exponential functions. *(Section 9.2)*
- 10-10 Calculate compound and continuous compound interest. *(Section 9.2)*
- 10-11 Graph the general and common logarithmic function. *(Section 10.1)*
- 10-12 Convert between exponential and logarithmic form. *(Section 10.1)*
- 10-13 Evaluate a logarithmic expression. *(Section 10.1)*
- 10-14 Solve logarithmic equations. *(Section 10.1)*
- 10-15 Apply the properties of logarithms to rewrite a given expression. *(Section 10.2)*

