SOUTHEASTERN LOUISIANA UNIVERSITY
MATHEMATICS 1610 SYLLABUS
FALL 2025

COURSE TITLE: College Algebra

CREDIT: 3 semester hours

ONLINE TEXT: College Algebra, 3rd Edition with ALEKS, by Miller & Gerken

PUBLISHER: McGraw Hill

PREREQUISITE: A score of 22 or above on the Mathematics section of the ACT **OR** an appropriate score on the ALEKS exam **OR** a grade of A, B, or C in Math 107.

COURSE DESCRIPTION: College Algebra is a study of families of functions and their graphs. Topics include linear, polynomial, rational, exponential and logarithmic functions. Functions will be used to model and solve application-based problems.

Delivery of instruction will be via class lectures accompanied by coordinated online homework and quizzes on *ALEKS*.

REQUIRED MATERIALS:

- computer with strong, reliable Internet connectivity
- webcam (needed if remote instruction becomes necessary)
- TI-30XII scientific calculator
  - No other physical or online calculators are allowed on tests or exams, and thus, these calculators are not recommended for use on homework or quizzes.

EMAIL REQUIREMENT: All correspondence will be made through your Southeastern email account.

COURSE GRADES: Percentages earned as follows determine the course grade.

Category	Percentage	Course Grading	Scale
Adaptive Assignments	5%	89.50% - 100%	A
Homework	10%	79.50% - 89.49%	B
Quizzes	10%	69.50% - 79.49%	C
Lab Participation	10%	59.50% - 69.49%	D
Unit Tests	40% (4 @ 10%)	0% - 59.49%	F
Final Exam	25%		

MAKE-UP POLICY: The following is the makeup policy for homework assignments and quizzes. If you are absent, it is your responsibility to learn the material you missed; instructors will not reteach course material. In general, no makeups will be given for Unit Tests; exceptions to this can be made by the instructor on an individual, situation-specific basis.

HOMEWORK: Homework will be assigned for each section. Homework need not be completed in one sitting, but it must be completed before the due date and time*. **You must click the "Submit Homework" button in order for it to count.** At the end of the semester, the two lowest homework scores will be dropped. Homework may only be accessed after the due date with instructor permission**. No makeup work on homework will be allowed once Unit material has culminated in a Unit Test.**

QUIZZES: Quizzes are typically given on material covered in two class periods. You will be able to submit quizzes up to 10 times (with the best score counted). These must also be completed before the due date and time. **You must click the "Submit" button in order for it to count.** At the end of the semester, the lowest quiz score will be dropped. Quizzes may only be accessed after the due date with instructor permission. **No makeup work on quizzes will be allowed once Unit material has culminated in a Unit Test.**

SPECIFIC COURSE OBJECTIVES – Refer to these when preparing for exams. Students should be able to –

UNIT 1 OBJECTIVES

From Functions, Their Graphs and Properties
- Determine whether a relation represents a function.
- Find the value of a function.
- Find the value of x that yields a given $f(x)$.
- Find the domain of a function defined by an equation.
- Obtain information about a function from its graph: domain, range, function values, intercepts, local and absolute extrema, symmetry, and intervals where a function is increasing, decreasing, or constant.
- Determine symmetry from a function's equation..

From Lines and Linear Functions
- Calculate and interpret the slope of a line.
- Find the equation of a line given two points or its graph.
- Find equations of parallel or perpendicular lines.
- Find the intercepts of a line given its equation, and graph the line.
- Graph linear functions and determine their characteristics.
- Use average rate of change to identify linear functions.
- Solve applications involving linear models.

From Linear Equations and Linear Inequalities
- Find solutions of linear equations and inequalities by considering the graphs of related linear functions.
- Solve linear equations.
- Solve problems that can be modeled by linear equations.
- Use interval notation and set notation to give solutions to inequalities.
- Solve simple and compound linear inequalities.
- Solve applications using linear inequalities.

From Library of Functions and Transformations
- Graph the identity, squaring, square root, cubing, cube root, reciprocal, square of a reciprocal, and absolute value functions.
- Graph functions using translations.
- Graph functions using compressions and stretches,
- Graph functions using reflections about the axes.
- Graph functions using multiple transformations.

UNIT 2 OBJECTIVES

From Quadratic Function Properties and Graphs
- Graph a quadratic function using its vertex, axis of symmetry, and intercepts.
- Determine intervals where a quadratic function increases and decreases.
- Find a quadratic function given its vertex and one other point.
- Solve applications involving quadratic functions.

From Quadratic Equations
- Factor second-degree polynomials or identify as prime.
- Find solutions of quadratic equations and inequalities by considering the graphs of related quadratic functions.
- Solve quadratic equations by factoring.
- Solve a quadratic equation by the square root method.
- Solve a quadratic equation by use of the quadratic formula.

From Polynomial Function Properties & Graphs
- Identify polynomial functions and their degrees.
- Graph a polynomial function using transformations when appropriate.
- Identify the real zeros and their multiplicities for a polynomial function.
- Produce the graph a polynomial function *by hand.*
- Produce the equation of a polynomial function given information about its intercepts, their multiplicities, and another specific point on the graph.
- Be able to multiply out the factors of a polynomial to rewrite the function in descending powers of x.

Solving Polynomial Equations
- Find solutions of polynomial equations and inequalities by considering the graphs of related polynomial functions.
- Solve polynomial equations of higher degree. Use factoring by grouping for cubic equations and *u*-substitution in equations of the quadratic type.

From Polynomial Inequalities
- Solve polynomial inequalities algebraically and from a given graph.

UNIT 3 OBJECTIVES

From Rational Functions Properties & Graphs
- Find the domain of a rational function given an equation or a graph.
- Find intercepts for the graph of a rational function given an equation or a graph.
- Find the vertical and horizontal asymptotes of a rational function given an equation or a graph.
- Find an oblique asymptote of a rational function given its graph.
- Produce the graph a rational function *by hand.*
- Produce the equation of a rational function given information about its intercepts, asymptotes, and another specific point on the graph.

Solving Rational Equations
- Find solutions of rational equations by considering the graphs of related rational functions.
- Solve proportions and other rational equations algebraically.
- Use *u*-substitution to solve equations of the quadratic type.

From Rational Inequalities
- Solve rational inequalities algebraically and from a given graph.

Solving Radical Equations and Equations with Rational Exponents
- Understand the meanings of $a^{1/n}$ and $a^{-m/n}$.
- Solve equations with variable expressions as radicands for square roots or cube roots.
- Find solutions of radical equations by considering the graphs of related radical functions.
- Eliminate extraneous roots from the solution sets of radical equations.
- Solve equations with variables raised to rational exponents.
- Solve radical and rational exponent equations that are quadratic-in-form using *u*-substitution.
- Solve rational exponent equations by factoring out the greatest common factor and using the zero-product property when appropriate.

From Composite Functions
- Evaluate composite functions.
- Form composite functions and find their domains.
- Solve applications involving composite functions.

From One-to-One and Inverse Functions
- Determine whether a function is one-to-one.
- Find the inverse of a function defined by an equation.
- Obtain the graph of the inverse function from the graph of the function.
- Find the range of a 1-1 function from the domain of its inverse.
- Determine properties of the inverse of a function.

UNIT 4 OBJECTIVES

From Exponential Functions
- Identify linear and exponential functions and find their equations.
- Graph exponential functions.
- Find solutions of exponential equations by considering the graphs of related exponential functions.
- Solve exponential equations of the form $b^x = b^y, b \neq 1$.
- Find the equations of exponential functions from descriptions, from tables of values, and from graphs.
- Solve applications involving exponential functions.

From Logarithmic Functions
- Change exponential statements to logarithmic statements and vice versa.
- Evaluate logarithmic expressions. (Understand what a logarithm *is*.)
- Determine the domains of logarithmic functions.
- Graph logarithmic functions.
- Find solutions of logarithmic equations by considering the graphs of related logarithmic functions.
- Solve simple logarithmic equations using algebraic methods.
- Solve applications related to logarithmic functions.

From Properties of Logarithms
- Work with the properties of logarithms to rewrite or simplify logarithmic expressions.
- Write logarithmic expressions as a sum or difference of logarithms.
- Write logarithmic expressions as a single logarithm.

From Logarithmic and Exponential Equations
- Solve logarithmic equations (simple format as well as those requiring the use of properties to change to simple form).
- Solve exponential equations (equate exponents with same bases, change to logarithmic form to solve, and use *u*-substitution to solve equations of the quadratic type).

From Applications of Exponential and Logarithmic Functions
- Use memorized formulas for interest compounded *n* times/year and interest compounded continuously to find unknown quantities.
- Determine the present or future value of a lump sum of money.
- Solve applications involving financial models.
- Determine the rate of interest or time required to double or triple lump sums of money.
- Solve applications involving the law of uninhibited growth.
- Solve applications involving the law of decay.
- Solve applications with given formulas from the Richter Scale, calculating pH, and logistic growth.

TESTING: All tests will be administered in the Math Lab located in Sims Library, Room 208. Students will sign up for a test time via a link provided by the instructor. Instructors will provide more information regarding testing sign-up closer to the unit test. The dates of each test can be found on your daily schedule.

Students are expected to maintain the highest standards of academic integrity. Behavior that violates these standards is not acceptable. Examples are the use of unauthorized material, communication with fellow students during an examination, attempting to benefit from the work of another student and similar behavior that defeats the intent of an examination or other class work. Cheating on examinations and plagiarism are considered very serious offenses and shall be grounds for disciplinary action as outlined in the current General Catalog.

In particular, the following are **NOT ALLOWED** during Unit Tests and the Final Exam:

- procuring help from another person, through electronic devices or otherwise
- procuring help from a non-sanctioned website
- cell phone usage
- accessing *ALEKS* material in a second browser window when testing is taking place
- having a second browser window open for any reason other than what is approved by the course instructor
- use of a calculator other than one allowed by the course
- use of notes, workbook pages, or other resources that give definitions, steps to solving problems, or solutions

If you have any doubt whatsoever regarding what could constitute academic dishonesty, seek clarification from your instructor before use or access.

PARTICIPATION – in Class & in the Math Lab:

- Class Meetings: Every student is expected to attend and actively participate for in-class instruction as listed on your class schedule. The time for the class meeting is not counted toward your Math Lab work requirement.
- Math Lab Requirement: Every student is required to work on mathematics in the Math Lab for a minimum of 3 hours every week. (Variations due to holidays and testing will be made. Consult your schedule posted on Canvas for specifics.) Attendance is counted on a weekly basis determined by section. The total time of your lab attendance each week will be rounded to the nearest tenth of an hour. Attendance will be monitored by your Southeastern ID card swipe, but it is also your responsibility to keep a record of your attendance. Your attendance score will be posted by your instructor who will receive weekly updates and can be checked on the gradebook application in ALEKS. While in the lab, you will have access to faculty and peer tutoring, and you must be working on material related to your math class as your time there is counted in your course grade!

If you want to withdraw from this course, it is your responsibility to complete all procedures for withdrawing from a course on your own.

WORKING FROM HOME: The Math 1610 online material can be accessed from a student's personal computer. Internet access and the appropriate plug-ins are required in order to use the website where the notes, homework, and exercises are found. The website for this course is www.aleks.com. Once you have registered for your class site in ALEKS, you will be able to login to the site from home with your login and password. NOTE: Ensure that all homework and quizzes submitted from home are properly saved on the site. You should check your scores online to ensure that credit is assigned. If homework and quiz grades are not successfully sent from home and the deadline passes, the student may not be able to make up the work.

Expectations regarding student behavior/classroom decorum: Free discussion, inquiry, and expression is encouraged in this class. Classroom behavior that interferes with either (a) the instructor's ability to conduct the class or (b) the ability of students to benefit from the instruction is not acceptable. Examples may include routinely entering class late or departing early; use of communication devices, or other electronic devices; repeatedly talking in class without being recognized; talking while others are speaking; or arguing in a way that is perceived as "crossing the civility line." Classroom behavior which is deemed inappropriate and cannot be resolved by the student and the faculty member may be referred to the Office of Judicial Affairs for administrative or disciplinary review as per the Code of Student Conduct which may be found at http://www.selu.edu/admin/stu_affairs/handbook/. According to Southeastern Louisiana University policy, students cannot bring children to any classroom for daycare or babysitting.

Academic Accommodations: If you are a qualified student with a disability seeking accommodations under the Americans with Disabilities Act, you are required to self-identify with the Office of Student Accessibility Services, Tinsley Hall, Room 102. No accommodations will be granted without documentation from the Office of Student Accessibility Services. The deadline for registering or making accommodation changes is two weeks prior to the start of the Final Exam period. Any requests received after the deadline will generally be considered for the following semester.

Sexual Misconduct: If you are the victim of a sexually oriented crime, please be aware that the University Policy regarding Victims of Sexual Misconduct is located online at www.southeastern.edu/resources/policies/assets/sexual_misconduct.pdf as well as at page 68 in the University Student Handbook at http://www.southeastern.edu/admin/stu_affairs/handbook/index.html. The policy includes definitions of the various sexually oriented offenses prohibited by Southeastern as well as the reporting options for victims and the process of investigation and disciplinary proceedings of the university. For more information log onto http://www.southeastern.edu/admin/police/victims_soc/index.html.