Intermediate Algebra

**Target Students:** Students who have not demonstrated college readiness as defined by HB5.

* A high priority are those students who passed Algebra II with an overall grade of less than 75.

**Pre-requisites:** Student has credit for Algebra I and Geometry and has met the passing standard on the Algebra I EOC.

**Course Description as defined by Lamar Institute of Technology, Lamar State College Port Arthur, and Lamar State College Orange:**A study of relations and functions, inequalities, algebraic expressions and equations (absolute value, polynomial, radical, rational), with a special emphasis on linear and quadratic expressions and equations.

. **Calculator use is NOT allowed in this course.**

**Learning Outcomes**

Upon successful completion of this course, students will:

1. Define, represent, and perform operations on real and complex numbers.

2. Recognize, understand, and analyze features of a function.

3. Recognize and use algebraic (field) properties, concepts, procedures (including factoring), and algorithms to

combine, transform, and evaluate absolute value, polynomial, radical, and rational expressions.

4. Identify and solve absolute value, polynomial, radical, and rational equations.

5. Identify and solve absolute value and linear inequalities.

6. Model, interpret and justify mathematical ideas and concepts using multiple representations.

7. Connect and use multiple strands of mathematics in situations and problems, as well as in the study of other

disciplines.

**Course Goal by Higher Education:**

* This course is recommended for students who have not demonstrated college readiness as defined by HB5.
* In particular, this course is intended to prepare students for the study of entry-level college mathematics.

**Additional Public Education Goals:**

* Students are prepared to enter post-secondary coursework or careers with no additional remediation in mathematics.
* Students experience a combination of class and tutoring times to simulate the course structure of Lamar Institute of Technology, Lamar State College Port Arthur, and Lamar State College Orange.
* Students manage their own learning through effective self-scheduling, self-monitoring, and effective peer study groups.

**Course Resources recommended by Lamar Institute of Technology, Lamar State College Port Arthur, and**

**Lamar State College Orange:**

**Suggested** **Course Textbook Resources:** Any textbook and/or printed material covering the syllabus topics.

**Suggested** **Course Online Resources:** iTunes University TASA Math Course,*Math XL* (Pearson Education): MyMathLab and MyStatLab, Interactmath.com, Khan Academy

**Assessments, Course Grade & College Readiness:**

Students will take a final exam created by the mathematics faculty of Lamar Institute of Technology and Lamar State College Port Arthur.

* If a student scores at least a 70 on the final exam then the student will have demonstrated TSI compliance with Lamar Institute of Technology, Lamar State College Port Arthur, and Lamar State College Orange. This student will be eligible to enroll in an entry-level college mathematics course without any further assessment or remediation.

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| **COURSE OUTLINE** | **High School**  **Equivalent** |
| Define and represent real numbers | Algebra I |
| Identify and use algebraic field properties. Add, subtract, multiply and divide real numbers and manipulate numerical expressions |
| Simplifying square roots of numbers |
| Solve linear equations and inequalities |
| Solve problems using equations and inequalities |
| Simplify and evaluate numerical and algebraic expressions with integer exponents using Laws of Exponents |
| Plot ordered pairs |
| Define a function and use function notation. Determine if a function exists given multiple representations |
| Find rule of dependency between data sets |
| Given a situation, identify the independent and dependent variables and determine if the situation is continuous or discrete |
| Write, model and evaluate a function using function notation given a problem situation |
| Identify domain, range and intercepts of functions |
| Graph linear equations & linear inequalities in two variables |
| Find the slope of a line & write its equation |
| Solve systems of linear equations in two variables including application |
| Define absolute value, including form and notation | Algebra II |
| Use algebraic properties to simplify and solve absolute value expressions, equations and inequalities |
| Evaluate absolute value expressions for given values |
| Add, subtract, multiply and divide polynomial |
| Factor polynomials including the techniques of the greatest common factor, grouping, difference of two squares and trinomials |
| Add, subtract, multiply and divide rational expressions |
| Simplify complex fractions |
| Solve equations involving rational expressions |
| Simplify equations involving rational exponents and simplify radical expressions |
| Add, subtract, multiply, divide expressions involving radicals and solve radical equations |
| Add, subtract, multiply and divide complex numbers |
| Solve quadratic equations by factoring, completing the square, quadratic formula and square root property |
| Write quadratic functions and inequalities using function notation, including when given a problem situation |
| Find domain, range, roots/zeros/solutions, intercepts, maximum, minimum, and increasing/decreasing intervals of a quadratic function and use them to graph and solve problems including those from a problem situation |
| Determine value of a quadratic function using its graph or function evaluation |
| Final Exam created by  Lamar Institute of Technology and Lamar State College Port Arthur |