COURSE OUTLINE

Adult Basic and Secondary Education 24
Algebra 1B

Catalog Statement

ABSE 24 provides students with continued instruction on reasoning and modeling algebraically. Areas presented in this class include descriptive statistics, and quadratic functions/modeling. This course is designed to meet the needs of students who wish to continue their study of algebra and to earn high school credit in mathematics.

Total Lecture Units: 0.0
Total Laboratory Units: 0.0
Total Course Units: 0.0

Total Lecture Hours: 0.0
Total Laboratory Hours: 100.0
Total Laboratory Hours To Be Arranged: 0.0
Total Faculty Contact Hours: 100.0
Total Student Contact Hours: 100.0

Recommended preparation: ESL 40 or equivalent; ABSE 23 or equivalent

Note: This is a self-paced course in an open-entry, open-exit lab environment. Successful completion of this course is worth 5 high school credits (1/2 unit) towards a high school diploma.

Course Entry Expectations

Prior to enrolling in the course, the student should be able to:
Skills Level Ranges: Reading: 5; Writing: 3; Listening/Speaking: 4; and Math: 3.

Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

- define appropriate quantities for the purpose of descriptive modeling;
- choose a level of accuracy appropriate to limitations on measurement when reporting quantities;
- create linear and quadratic equations to solve problems;
- create equations in two or more variables to represent relationships between quantities;
- write arithmetic and geometric sequences both recursively and with an explicit formula;
- identify the effects on a graph by changing part of a function;
- distinguish between situations that can be modeled with linear functions and with exponential functions;

- construct linear and exponential functions including arithmetic and geometric sequences from various sources;
- compare linear, quadratic, and exponential growth;
- interpret the parameters in a linear or exponential function in terms of a context;
- display and analyze data statistically;
- solve simple problems involving theoretical and experimental probability.

Course Content **Total Faculty Contact Hours = 100.0**

Exponents and Polynomials **(4 hours)**
- Exponents
  - Integer exponents
  - Rational exponents
- Polynomials **(6 hours)**
  - Polynomials
  - Addition and subtraction of polynomials
  - Multiplication of polynomials
  - Special products of binomials

Factoring Polynomials **(8 hours)**
- Factoring methods
  - Factors and greatest common factors
  - Factoring by greatest common factors
  - Factoring $x^2 + bx + c$
  - Factoring $ax^2 + bx + c$
- Applying factoring methods **(7 hours)**
  - Factoring special products
  - Selection of factoring methods

Quadratic Functions and Equations **(15 hours)**
- Quadratic functions
  - Identification of quadratic functions
  - Characteristics of quadratic functions
  - Graphing quadratic functions
  - Transformation of quadratic functions
- Solving quadratic equations **(20 hours)**
  - Quadratic equations by graphing
  - Quadratic equations by factoring
  - Quadratic equations by using square roots
  - Completing the square
  - The quadratic formula and the discriminant
  - Nonlinear systems
  - Cubic functions and equations

Exponential Functions **(10 hours)**
- Exponential functions
  - Geometric sequences
  - Exponential functions
- Functions, models, and patterns **(10 hours)**
  - Exponential growth and decay

Patterns and recursion
Linear, quadratic, and exponential models
Linear and nonlinear rates of change
Comparison of functions

Data Analysis and Probability **(10 hours)**

Data analysis

Organization and display of data
Frequency and histograms
Data distribution
Dot plots and distributions
Errors in graphs and statistics

Probability **(10 hours)**

Experimental probability
Theoretical probability
Independent and dependent events

Methods of Instruction

The following methods of instruction may be used in this course:

- independent study using worksheets and texts;
- computer-aided instruction;
- video instruction.

Out of Class Assignments

The following out of class assignments may be used in this course:
Not Applicable

Methods of Evaluation

The following methods of evaluation may be used in this course:

- completion of individualized contract;
- assessments at the end of each chapter;
- unit exams.

Textbooks

Burger, Edward B., et al. *Algebra 1 Common Core Edition*. Austin: Holt McDougal, 2011. Print.
9th Grade Textbook Reading Level. ISBN: 0547647034

Student Learning Outcomes

Upon successful completion of the required coursework, the student will be able to:

- demonstrate ability to add, subtract and multiply polynomials;
- show how to multiply polynomials and special cases;

- demonstrate how to factor polynomials;
- solve quadratic equations by graphing, by factoring, square roots, and completing the square;
- use linear, quadratic and exponential models to write equations of real-world problems;
- demonstrate how to analyze data statistically;
- know how to calculate experimental and theoretical probability of an event.