COURSE DISCIPLINE :   ABSE

COURSE NUMBER :   35

COURSE TITLE (FULL) :   Integrated Mathematics 2A

COURSE TITLE (SHORT) :   Integrated Mathematics 2A

CATALOG DESCRIPTION

ABSE 35 focuses on algebraic relations, equations, and functions; applications of various types of graphing; and working with polynomials, and complex numbers. This course is designed to meet the needs of students who wish to continue their study of Integrated Mathematics and to earn high school credit in mathematics. Laboratory 100 hours.

CATALOG NOTES

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

Total Lecture Units: 0.00

Total Laboratory Units: 0.00

Total Course Units: 0.00

Total Lecture Hours: 0.00

Total Laboratory Hours: 100.00

Total Laboratory Hours To Be Arranged: 0.00

Total Faculty Contact Hours: 100.00

Total Student Contact Hours: 100.00

Recommended Preparation: ESL 40 or equivalent, ABSE 19 or equivalent.

ENTRY STANDARDS

	Subject	Number	Title	Description	Include
1	ABSE	19	Integrated Mathematics 1B	Compare linear and exponential growth;	Yes
2	ABSE	19	Integrated Mathematics 1B	interpret the parameters in a linear or exponential function in terms of a context;	Yes
3	ABSE	19	Integrated Mathematics 1B	write arithmetic and geometric sequences both recursively and with an explicit formula;	Yes
4	ABSE	19	Integrated Mathematics 1B	make a variety of formal geometric constructions using a variety of tools;	Yes
5	ABSE	19	Integrated Mathematics 1B	experiment with transformations in the plane;	Yes
6	ABSE	19	Integrated Mathematics 1B	understand congruence in terms of rigid motions;	Yes
7	ABSE	19	Integrated Mathematics 1B	explain triangle congruence in terms of rigid motion;	Yes
8	ABSE	19	Integrated Mathematics 1B	prove theorems about lines and angles, triangles, and parallelograms;	Yes
9	ESL	40	ENGLISH AS A SECOND LANGUAGE LEVEL 4	demonstrate mastery of grammatical structures studied at a level sufficient to pass unit tests and the divisional grammar mastery test for this level;	Yes
10	ESL	40	ENGLISH AS A SECOND LANGUAGE LEVEL 4	write a three-paragraph composition that contains an introductory paragraph, a body, and a conclusion;	Yes
11	ESL	40	ENGLISH AS A SECOND LANGUAGE LEVEL 4	converse at a functional level adequate for everyday use on the campus and in the community;	Yes
12	ESL	40	ENGLISH AS A SECOND LANGUAGE LEVEL 4	demonstrate understanding of the majority of face-to-face speech, recorded, and live dialogues in standard dialect at a normal rate, although some repetition may be required;	Yes
13	ESL	40	ENGLISH AS A SECOND LANGUAGE LEVEL 4	decode 3,000-word reading passages, identify main ideas and supporting details, make inferences, and summarize short passages;	Yes
14	ESL	40	ENGLISH AS A SECOND LANGUAGE LEVEL 4	approximate standard American pronunciation well enough to be understood by typical fluent speakers of English.	Yes

EXIT STANDARDS

1   Determine the domain, range, and end behavior of a function;
2   transform the graph of the function f(x);
3   solve absolute value equations and inequalities;
4   write a radical expression with a rational exponent;
5   add, subtract, and multiply monomials, binomials, and polynomials;
6   use the graph of a quadratic function to solve its related quadratic equation;
7   apply the Zero Product Property to solve quadratic equations in factored form;
8   choose a method for solving a given quadratic equation: factoring, using square roots, completing the square, etc.;
9   solve a system of equations when one equation is linear and the other is quadratic;
10 use the linear regression function on a graphing calculator to find the line of best fit for a two-variable data set;
11 utilize exponential functions to model the increase or decrease of a quantity over time;
12 determine whether a given data set is bet modeled by a linear, quadratic, or exponential function;
13 define a complex number and use them to solve addition, subtraction, and multiplication problems;
14 utilize the standard form for the equation of a circle;
15 apply the distance formula for deriving equations for both vertical and horizontal parabolas;
16 find the inverses of functions from their graphs;
17 graph transformations of parent square root functions and parent cube root functions.

STUDENT LEARNING OUTCOMES

1   Analyze piecewise, exponential and quadratic functions using different representations
2   Determine the methods for solving quadratic equations: factoring, using square roots, completing the square, etc.
3   Construct and compare linear, quadratic and exponential models and utilize them to solve problems

COURSE CONTENT WITH INSTRUCTIONAL HOURS

	Description	Lecture	Lab	Total Hours
1	Analyzing Functions • Domain, Range, and End Behavior • Characteristics of Function Graphs • Inverses of Functions	0	7	7
2	Absolute Value Functions, Equations, and Inequalities • Graphing Absolute Value Functions • Solving Absolute Value Equations • Solving Absolute Value Inequalities	0	7	7
3	Rational Exponents and Radicals • Understanding Rational Exponents and Radicals • Simplifying Expressions with Rational Exponents and Radicals	0	5	5
4	Adding and Subtracting Polynomials • Understanding Polynomial Expressions • Adding Polynomial Expressions • Subtracting Polynomial Expressions	0	7	7
5	Multiplying Polynomials • Multiplying Polynomial Expressions by Monomials • Multiplying Polynomial Expressions • Special Products of Binomials	0	7	7
6	Graphing Quadratic Functions • Understanding Quadratic Functions • Transforming Quadratic Functions • Interpreting Vertex Form and Standard Form	0	7	7
7	Connecting Intercepts, Zeros and Factors • Connecting Intercepts and Zeros • Connecting Intercepts and Linear Factors • Applying the Zero Product Property to Solve Equations	0	7	7

8	Using Factors to Solve Quadratic Equations • Solving Equations by Factoring $x^2 + bx + c$ • Solving Equations by Factoring $ax^2 + bx + c$ • Using Special Factors to Solve Equations	0	7	7
9	Using Square Roots to Solve Quadratic Equations • Solving Equations by Taking Square Roots • Solving Equations by Completing the Square • Using the Quadratic Formula to Solve Equations • Choosing a Method for Solving Quadratic Equations • Solving Nonlinear Systems	0	11	11
10	Linear, Exponential, and Quadratic Models • Fitting a Linear Model to Data • Graphing Exponential Functions • Modeling Exponential Growth and Decay • Modeling with Quadratic Functions • Comparing Linear, Exponential, and Quadratic Models	0	12	12
11	Quadratic Equations and Complex Numbers • Solving Quadratic Equations by Taking Square Roots • Complex Numbers • Finding Complex Solutions of Quadratic Equations	0	7	7
12	Quadratic Relations and Systems of Numbers • Circles • Parabolas • Solving Linear-Quadratic Systems	0	7	7
13	Functions and Inverses • Graphing Polynomial Functions • Understanding Inverse Functions • Graphing Square Root Functions • Graphing Cube Root Functions	0	9	9
				100

OUT OF CLASS ASSIGNMENTS

1   Not Applicable

METHODS OF EVALUATION

1   individualized contract
2   assessments at the end of each chapter
3   unit exams

METHODS OF INSTRUCTION

☐ Lecture

☑ Laboratory

☐ Studio

☐ Discussion

☑ Multimedia

☐ Tutorial

☑ Independent Study

☐ Collaboratory Learning

☐ Demonstration

☐ Field Activities (Trips)

☐ Guest Speakers

☐ Presentations

TEXTBOOKS

Title	Type	Publisher	Edition	Medium	Author	IBSN	Date
California Integrated Mathematics 2	Required	Houghton Mifflin Harcourt Publishing Company	1	Print	Timothy D. Kanold	ISBN 9780544389885	2015