Glendale College

Course Outline of Record Report

Course ID 010379

Revision - June 2023

MATH90+ : Intermediate Algebra for BSTEM with Support

General Information

Author:	• Suzanne Palermo
Course Code (CB01) :	MATH90+
Course Title (CB02) :	Intermediate Algebra for BSTEM with Support
Department:	MATH
Proposal Start:	Fall 2024
TOP Code (CB03) :	(1701.00) Mathematics, General
CIP Code:	(27.0101) Mathematics, General.
SAM Code (CB09) :	Non-Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000602419
Curriculum Committee Approval Date:	06/14/2023
Board of Trustees Approval Date:	11/21/2023
Last Cyclical Review Date:	10/01/2018
Course Description and Course Note:	MATH 90+ is a one-semester Intermediate Algebra course with a built-in support lab component to prepare students for success in transfer-level Precalculus, Business Calculus, and College Algebra courses . Students explore fundamental laws, curve plotting, linear equations, fractional exponents, quadratic equations and inequalities, radical and rational expressions and equations, factoring, functions and inverse functions, algebra of functions, graphs of functions, systems of linear and nonlinear equations and inequalities, and exponential and logarithmic functions. MATH 90+ is intended for students considering a major in BSTEM (business, science, technology, engineering and math). Note: This course may not be taken for credit by students who have completed MATH 90, 101, 118, 120, 220A, 220B or 220S. A maximum of 6.5 units will be granted for MATH 90+ and any of the following courses: MATH 119, 219A, 219B, 219C, 146, 246A, or 246B. A maximum of 8.5 units will be granted for MATH 90+ and either of the following: MATH 30, 30+, 130 or 131.
Justification:	Coding/Category Change Updating the prerequisites, SLOs catalog note and catalog statement. removing MATH 15 as prerequisite
Academic Career:	• Credit
Author:	• Suzanne Palermo

Academic Senate Discipline

Primary Discipline:	• Mathematics
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08)

Course is not a basic skills course.

☐ Allow Students to Gain Credit by Exam/Challenge

Course Special Class Status (CB13)

Course is not a special class.

Pre-Collegiate Level (CB21)

One level below transfer.

Grading Basis

- Grade with Pass / No-Pass Option

Course Support Course Status (CB26)

Course is not a support course

Transferability & Gen. Ed. Options

General Education Status (CB25)

Local GE Requirement

Transferability

Not transferable

Transferability Status

Not transferable

Units and Hours

Summary

Minimum Credit Units (CB07)	6.5
Maximum Credit Units (CB06)	6.5
Total Course In-Class (Contact) Hours	153
Total Course Out-of-Class Hours	216
Total Student Learning Hours	369

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

☐ Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

☐ Cooperative Work Experience Education Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	6	12
Laboratory Hours	2.5	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	

Studio Hours	0	0

Lecture	108
Laboratory	45
Studio	0
Total	153

Course Out-of-Class Hours

Lecture	216
Laboratory	0
Studio	0
Total	216

Time Commitment Notes for Students

No value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Advisory

ABSE121 - Basic Algebra Review

Objectives

- Solve equations and inequalities in one-variable including using coefficients represented by letters.
- Identify the effects on a graph by changing part of a function.
- Solve quadratic equations by graphing, by factoring, square roots, and completing the square.
- Utilize linear and quadratic equations to solve industry related problems.
- Develop fluency in algebraic terminology.

Entry Standards

Entry Standards

No value

Specifications

Methods of Instruction

Methods of Instruction	Lecture
Methods of Instruction	Laboratory

Methods of Instruction	Discussion
Methods of Instruction	Multimedia
Methods of Instruction	Collaborative Learning
Methods of Instruction	Guest Speakers
Methods of Instruction	Presentations

Out of Class Assignments

- homework (e.g. problems sets related to course content)
- online assignments (e.g. problems sets related to course content)
- projects (e.g. analyze a real life situation and create a mathematical model)

Methods of Evaluation	Rationale
In-Class Activity (answering journal prompt, group activity)	Group work
Exam/Quiz/Test	Quizzes
Exam/Quiz/Test	Five to eight examinations are required
Exam/Quiz/Test	A comprehensive final examination is required

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
Martin-Gay, Elayn	Beginning & Intermediate Algebra	Pearson	2017	0-13-419309-1

Other Instructional Materials (i.e. OER, handouts)

Description	Division generated materials

Author	No value
Citation	No value
Online Resource(s)	No value

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

Solve absolute value equations and inequalities.

Solve linear equations and compound inequalities.

Perform operations with polynomials.

Simplify complex fractions.

Perform operations with radical expressions.

Simplify expressions with rational exponents.

Solve rational equations.

Solve equations with radicals.

Find the equation of a line parallel or perpendicular to a given line.

Solve a system of linear equations using elimination, substitution.

Solve systems of linear inequalities.

Find the composition of two functions.

Solve applied problems.

Solve quadratic equations with real and complex solutions.

Find the inverse of a function.

Use the properties of logarithms to simplify and expand expressions.

Solve logarithmic and exponential equations.

Graph functions (linear, quadratic, exponential, logarithmic).

graph parabolas and circles centered at any point.

SLOs

Solve various types of equations and inequalities and produce graphs of one or two variables, including various types of algebraic and transcendental functions. Expected Outcome Performance: 70.0

Formulate mathematical models for a variety of real-world phenomena and communicate mathematical solutions clearly and effectively. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.
ILOs General Education	apply techniques of analysis and critical thinking to critique real world and theoretical topics and issues

Incorporate academic strategies and mindset in planning and self-assessment of mathematical success. Expected Outcome Performance: 70.0

ILOs Core ILOs	Analyze and solve problems using critical, logical, and creative thinking; ask questions, pursue a line of inquiry, and derive conclusions; cultivate creativity that leads to innovative ideas.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.
ILOs General Education	apply techniques of analysis and critical thinking to critique real world and theoretical topics and issues

Additional SLO Information

Does this proposal include revisions that might improve student attainment of course learning outcomes?

No Value

Is this proposal submitted in response to learning outcomes assessment data?

No Value

If yes was selected in either of the above questions for learning outcomes, explain and attach evidence of discussions about learning outcomes.

No Value

SLO Evidence

No Value

Course Content

Lecture Content

The Real Number System (3 hours)
- Sets and the real number system
- Equality and properties of real numbers
- Inequalities and graphs of sets of real numbers
- Arithmetic of real numbers

Equations and Inequalities (10 hours)
- Linear equations and their solutions
- Applications
- Formulas and literal equations
- Absolute value equations
- Linear inequalities
- Inequalities with absolute values

Graphs of Lines, Equations of Lines, and Variation (10 hours)
- The rectangular coordinate system
- The slope of a line
- Equations of lines
- Graphs of linear inequalities in two variables
- Introduction to functions
- The algebra of functions, composition of functions
- Translations and reflections of functions
- Proportion and variation

Systems of Equations and Inequalities (8 hours)
- Solution by graphing
- Solution by substitution
- Solution by elimination
- Solution of three equations in three variables
- Applications
- Systems of linear inequalities

Exponents, Polynomials, and Factoring (13 hours)
- Exponents and scientific notation
- Adding and subtracting polynomials
- Multiplying polynomials and dividing polynomials

- The greatest common factor and factoring by grouping
- The difference of two squares; the sum and difference of two cubes
- Factoring trinomials
- Solving equations by factoring
- Applications

Rational Expressions (13 hours)
- Simplifying rational expressions
- Multiplying and dividing rational expressions
- Adding and subtracting rational expressions
- Complex fractions
- Equations containing rational expressions
- Applications
- Graph rational functions

Rational Exponents and Radicals (11 hours)
- Rational exponents
- Radical expressions
- Adding and subtracting radical expressions
- Multiplying and dividing radical expressions
- Solving equations with radicals
- Applications of radicals
- Complex numbers

Quadratic Equations (9 hours)
- Completing the square
- Quadratic formula
- The discriminant and its applications
- Equations quadratic in form
- Non-linear inequalities of one variable

Exponential and Logarithmic Functions (11 hours)
- One-to-one functions Inverse functions
- Exponential functions
- Logarithmic functions
- Properties of logarithms
- Common and natural logarithms
- Exponential equations and change of base
- Solving logarithmic equations
- Applications

The Conic Sections (4 hours)
- Parabolas
- Circles

Metacognition and Affective Domain (16 hours)
- Study plans
- Mindset (growth, resilience, hardiness and grit)
- Reading and cognitive techniques
- Study and test taking skills

Total Hours: 108

Laboratory/Studio Content

Laboratory Content (45 hours)
- Arithmetic of real numbers
    - Fractions
- Linear equations
    - Applications
- Formulas and literal equations
- Inequalities with absolute values
- Equations of lines
- Introduction to functions
- Systems of Equations
    - Applications

- Exponents and scientific notation
- Addition and subtraction of polynomials
- Multiplication and division of polynomials
- Factoring
- Solving equations by factoring
- Addition and subtraction of rational expressions
- Proportions/Variations
- Affective domain
    - Metacognition and the brain
    - Skills for success in a math class
    - Productive persistence and struggle
    - Time Management

Total Hours: 45