Mathematical Sciences
Institutional (ILO), Program (PLO), and Course (SLO) Alignment

Use the checklists provided to evaluate your SLO statements. Please add or revise PLO and SLO statements directly on this form.
Or, if you prefer to make changes on the electronic version contact your Facilitator Junko Forbes, or Angie Snider in your Division Office, to have the grid emailed to you. When SLO, PLO and ILO alignment changes are made, please make changes in red.
Return the completed grid to your Facilitator by Friday, Nov 8th .

Program: Developmental Math	**Number of Courses: 11**	**Date Updated**	**Submitted by**

ILO Rating Rubric

4 - A major focus of the course. Direct instruction is provided. Students are evaluated multiple times (and possibly in various ways) throughout the course.

3 - An important part of the course. Some direct instruction is provided and students are evaluated on the concepts once or twice within the course.

2- Only a minor focus of the course. Some instruction is given in the area but students are not formally evaluated on the concepts.

1- May be tangentially part of the class, but is not directly taught or evaluated or is not part of the course at all.

Institutional Learning Outcomes (ILOs)	I. Content Knowledge	II. Critical, Creative, and Analytical Thinking	III. Communication and Comprehension	IV. Professional and Personal Growth	V. Community and Collaboration	VI. Information and Technology Literacy
Overall Program Rating Rate each from 1-4 based on above rubric.	4	4	2	2	2	1

Program Level SLOs A minimum of 3 and maximum of 6 PLOS. There are, however, exceptions. For example, if department faculty have developed one or two comprehensive PLO statements that reflect the program mission and covers the major components and the overarching goals of the program, they may present them to their Dean and Facilitator for approval as is. In cases where the facilitator or dean or faculty disagree with the rigor of the statements, the PLO statement will be forwarded to the Assessment of Learning Committee (ALC) for review and recommendations. *Include PLO #, Short Title, and PLO statement. Example: PLO #2 Ethics and Professionalism*	**ILOs to PLOs Alignment** (Rate 1-4)					
	I	II	III	IV	V	VI
PLO #1 Application Problems A student completing Pre-Collegiate Mathematics will recognize the underlying mathematical concepts in a given context (word problems, data, diagrams, etc.) and apply those concepts correctly.	4	4	2	2	2	1
PLO #2 Solving Equations and Manipulating Expressions A student completing Pre-Collegiate Mathematics will demonstrate the ability to identify and correctly implement techniques to symbolically solve equations and manipulate expressions.	4	4	2	2	1	1
PLO #3 Visual and Graphical Methods A student completing Pre-Collegiate Mathematics will use visual and graphical methods to represent and analyze information and to solve problems.	4	4	2	2	1	1
PLO #4 Articulating Mathematical Reasoning A student completing Pre-Collegiate Mathematics will verbally articulate (orally or in writing) the mathematical reasoning they used to solve a problem or analyze a situation.	4	4	2	2	1	1

Course Level SLOs A minimum of 3 and maximum of 6 SLOs. There are, however, exceptions. For example, if department faculty have developed one or two comprehensive SLO statements that cover the major components and the overarching goals of the course, they may present them to their Dean and Facilitator for approval as is. In cases where the facilitator or dean or faculty disagree with the rigor of the statements, the SLO statement will be forwarded to the Assessment of Learning Committee (ALC) for review and recommendations. *Include SLO #, Short Title, and SLO Statement Example: Math 170 SLO #3 Vectors and Complex Numbers.*	**Course to Program SLO Alignment** *Mark with an X if you will use the course when assessing your PLO.*				**ILOs to Course SLOs Alignment** (Rate 1-4)					
	P1	**P2**	**P3**	**P4**	**I**	**II**	**III**	**IV**	**V**	**VI**
Mathematics 12 Basic Arithmetic Skills: SLO #1 Application Problems Students will be able to recognize addition, subtraction, multiplication, division, exponentiation, factoring and order of operations in a given context (word problem, data, diagram, etc.) involving non-negative real numbers to write corresponding mathematical expressions and solve authentic, real-world application problems.	X				4	4	2	2	1	1
Mathematics 12 Basic Arithmetic Skills: SLO# 2 Solving Equations and Manipulating Expressions Students will be able to use numerical and symbolic representations to correctly perform operations (addition, subtraction, multiplication, division, exponentiation, factoring, and order of operations) on non-negative real numbers to simplify expressions.		X			4	2	2	2	1	1
Mathematics 12 Basic Arithmetic Skills: SLO#3 Visual and Graphical Methods A student completing Pre-Collegiate mathematics will use visual and graphical methods to represent and analyze information and to solve problems using non negative real numbers, including demonstrating correct ordering of values and testing reasonableness of solutions.			X		4	4	2	2	1	1
Mathematics 12 Basic Arithmetic Skills: SLO#4 Articulating Mathematical Reasoning A student completing Pre collegiate mathematics will verbally articulate (orally or in written form) the mathematical reasoning they used to solve a problem or analyze a situation				X	4	4	2	2	1	1
Mathematics 23 Pre - Algebra: SLO #1 Application Problem Students will recognize the underlying mathematical concepts in order to successfully evaluate expressions and formulas in a given context (word problems, data, diagrams, etc.) and apply those concepts correctly in authentic, real-world application problems.	X				4	4	2	2	1	1
Mathematics 23 Pre -Algebra: SLO #2 Solving Equations and Manipulating Expression Students will use numerical and symbolic representations of mathematical ideas to simplify linear expressions and solve linear equations.		X			4	4	2	2	1	1
Mathematics 23 Pre -Algebra: SLO #3 Visual and Graphical Methods Students will be able to use visual or graphical methods to solve linear equations and problems involving geometry and measurement.			x		4	4	2	2	1	1
Mathematics 23 Pre -Algebra: SLO #4 Articulating Mathematical Reasoning Students will verbally articulate (orally or in written form) the mathematical reasoning they used to solve a numeric or linear problem or analyze a numeric or linear situation				x	4	4	2	2	1	1

Course Level SLOs Minimum of 3 and maximum of 6 SLOs. *Include SLO #, Short Title, and SLO Statement* *Example: Math 170 SLO #3 Vectors and Complex Numbers*	**Course to Program SLO Alignment** Mark with an X				**ILOs to Course SLOs Alignment** (Rate 1-4)					
	P1	**P2**	**P3**	**P4**	**I**	**II**	**III**	**IV**	**V**	**VI**
Mathematics 33 Extended Elementary Algebra, Part I: SLO #1 Application Problems Students will be able to recognize linear and quadratic equations in a given context, and use mathematical reasoning and problem solving skills to solve authentic, real-world application problems.	X				4	4	2	2	1	1
Mathematics 33 Extended Elementary Algebra, Part I: SLO #2 Solving Equations and Manipulating Expressions Students will be able to use numerical and symbolic representations of mathematical ideas to simplify linear and quadratic expressions, and to solve linear equations and quadratic equations (using factoring only).		X			4	4	2	2	1	1
Mathematics 33 Extended Elementary Algebra, Part I: SLO #3 Visual and Graphical Methods Students will be able to use graphical methods to represent linear and quadratic relations and to find solutions for linear and quadratic equations.			X		4	4	2	2	1	1
Mathematics 33 Extended Elementary Algebra, Part I: SLO #4 Articulating Mathematical Reasoning Students will be able to articulate the mathematical reasoning used in a variety of problems, orally or in writing.				X	4	4	2	2	1	1
Mathematics 40 Elementary Algebra: SLO #1 Application Problems Students will be able to recognize linear and quadratic equations in a given context, and use mathematical reasoning and problem solving skills to solve authentic, real world application problems.	X				4	4	2	2	1	1
Mathematics 40 Elementary Algebra: SLO #2 Solving Equations and Manipulating Expressions Students will be able to use numerical and symbolic representations of mathematical ideas to simplify or solve linear, quadratic, rational, and radical expressions or equations.		X			4	4	2	2	1	1
Mathematics 40 Elementary Algebra: SLO #3 Visual and Graphical Methods Students will be able to use graphical methods to represent linear and quadratic relations as well as systems of linear relations and to find solutions to linear and quadratic equations, as well as solve systems of linear equations.			X		4	4	2	2	1	1
Mathematics 40 Elementary Algebra: SLO #4 Articulating Mathematical Reasoning Students will be able to articulate the mathematical reasoning used in a variety of problems, orally or in writing.				X						

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	P1	**P2**	**P3**	**P4**	**I**	**II**	**III**	**IV**	**V**	**VI**
Mathematics 43 Extended Elementary Algebra, Part II: SLO #1 Application Problems Students will be able to recognize linear and quadratic equations in a given context, and use mathematical reasoning and problem solving skills to solve authentic, real world application problems.	X				4	4	2	2	1	1
Mathematics 43 Extended Elementary Algebra, Part II: SLO #2 Solving Equations and Manipulating Expressions Students will be able to use numerical and symbolic representations of mathematical ideas to simplify or solve linear, quadratic, rational, and radical expressions or equations.		X			4	4	2	2	1	1
Mathematics 43 Extended Elementary Algebra, Part II: SLO #3 Visual and Graphical Methods Students will be able to use graphical methods to represent linear and quadratic relations as well as systems of linear relations and to find solutions to linear and quadratic equations, as well as solve systems of linear equations.			X		4	4	2	2	1	1
Mathematics 43 Extended Elementary Algebra, Part II: SLO #4 Articulating Mathematical Reasoning Students will be able to articulate the mathematical reasoning used in a variety of problems, orally or in writing.				X	4	4	2	2	1	1
Mathematics 67 General Education Algebra: SLO #1 Application Problems Students will be able to recognize and apply appropriate mathematical concepts and models involving a variety of functions to contextualized problems involving authentic, real-world data.	X				4	4	2	2	1	1
Mathematics 67 General Education Algebra: SLO#2 Solving Equations and Manipulating Expressions Students will be able to symbolically (algebraically) solve a variety of equations, inequalities and linear systems and manipulate symbolic (algebraic) expressions that arise in contextualized problems using authentic, real-world data.		x			4	4	2	2	1	1
Mathematics 67 General Education Algebra: SLO #3 Visual and Graphical Methods Students will use visual and graphical methods to represent, analyze and solve contextualized problems involving authentic, real-world data.			x		4	4	2	2	1	1
Mathematics 67 General Education Algebra: SLO #4 Articulating Mathematical Reasoning Students will be able to articulate the mathematical reasoning used in solving a variety of contextualized problems using authentic, real-world data, orally or in writing.				x						

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	P1	**P2**	**P3**	**P4**	**I**	**II**	**III**	**IV**	**V**	**VI**
Mathematics 37 Basic Accelerated Mathematics: SLO #1 Application Problems Students will be able to recognize and to interpret linear and quadratic equations in a given context, and use mathematical reasoning and problem solving skills to solve authentic, real-world application problems.	X				4	4	2	2	1	1
Mathematics 37 Basic Accelerated Mathematics: SLO #2 Solving Equations and Manipulating Expressions Students will be able to use numerical and symbolic representations of mathematical ideas to simplify linear and quadratic expressions, and to evaluate linear and quadratic expressions and to solve linear equations and quadratic equations.		x			4	4	2	2	1	1
Mathematics 37 Basic Accelerated Mathematics: SLO #3 Visual and Graphical Methods Students will be able to use graphical methods to represent linear and quadratic relations and to find solutions for linear and quadratic equations.			X		4	4	2	2	1	1
Mathematics 37 Basic Accelerated Mathematics: SLO #4 Articulating Mathematical Reasoning Students will be able to articulate the mathematical reasoning used in a variety of problems, both orally and in writing.				X	4	4	2	2	1	1
Mathematics 60 Elementary Geometry: SLO #1 Application Problems Students will be able to define geometric terms, polygons, and shapes and apply characteristics of the shapes to solve geometric problems.	X				4	4	2	2	1	1
Mathematics 60 Elementary Geometry: SLO #2 Solving Equations and Manipulating Expressions Students will be able to calculate perimeter, area, surface area and volume for various 2D and 3D geometric shapes.		X			4	4	2	2	1	1
Mathematics 60 Elementary Geometry: SLO #3 Visual and Graphical Methods Students will be able to construct geometric shapes using the compass and straightedge.			X		4	4	2	2	1	1
Mathematics 60 Elementary Geometry: SLO #4 Articulating Mathematical Reasoning Students will be able to prove geometric conjectures and theorems using deductive logic.				X	4	4	2	2	1	1

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	P1	**P2**	**P3**	**P4**	**I**	**II**	**III**	**IV**	**V**	**VI**
Mathematics 73 Intermediate Algebra for General Education: SLO #1 Application Problems Students will be able to recognize and apply appropriate mathematical concepts and models involving a variety of functions to contextualized problems (authentic, real-world applications).	X				4	4	2	2	1	1
Mathematics 73 Intermediate Algebra for General Education: SLO #2 Solving Equations and Manipulating Expressions Students will be able to symbolically (algebraically) solve a variety of equations, inequalities and linear systems and manipulate symbolic (algebraic) expressions that arise in contextualized problems.		X			4	4	2	2	1	1
Mathematics 73 Intermediate Algebra for General Education: SLO #3 Visual and Graphical Methods Students will use visual and graphical methods to represent, analyze and solve contextualized problems.			X		4	4	2	2	1	1
Mathematics 73 Intermediate Algebra for General Education: SLO #4 Articulating Mathematical Reasoning Students will be able to articulate the mathematical reasoning used in solving a variety of contextualized problems, both orally and in writing.				X	4	4	2	2	1	1
Mathematics 80 Intermediate Algebra for STEM: SLO #1 Application Problems Students will be able to solve application problems involving linear, quadratic, polynomial, rational, radical, exponential and logarithmic functions.	X				4	4	2	2	1	1
Mathematics 80 Intermediate Algebra for STEM: SLO #2 Solving Equations and Manipulating Expressions Students will be able to evaluate numerical operations and manipulate algebraic expressions involving rational and negative exponents, radicals, complex numbers, exponents and logarithms and be able to solve linear, quadratic, polynomial, rational, radical, absolute value, exponential and logarithmic equations and inequalities.		X			4	4	2	2	1	1
Mathematics 80 Intermediate Algebra for STEM: SLO #3 Visual and Graphical Methods Students will be able to use visual and graphical methods to represent, analyze and solve problem involving linear, quadratic, polynomial, rational, absolute value, radical, exponential, logarithmic functions, conic sections, linear and nonlinear systems of equations. Students will also be able to solve such functions and equations using graphical methods			X		4	4	2	2	1	1
Mathematics 80 Intermediate Algebra for STEM: SLO #4 Articulating Mathematical Reasoning Students will be able to explain verbally, both orally or in writing, and the mathematical reasoning used in an application problem involving linear, quadratic, polynomial, rational, radical, absolute value, exponential and logarithmic equations and inequalities.				X	4	4	2	2	1	1