

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: Math for Engineering, Sciences, and Math Students		Number of Courses: 7		Date Updated		Submitted by Junko Forbes Ext. 7217					
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	2					
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. <i>Include PLO #, Short Title, and PLO statement. Example: PLO #2 Ethics and Professionalism</i>						ILOs to PLOs Alignment (Rate 1-4)					
						I	II	III	IV	V	VI
PLO #1 UNDERSTANDING CONCEPTS - Students will explain and demonstrate mathematical concepts relevant to the course content.						4	4	2	2	2	2
PLO #2 SOLVING PROBLEMS - Students will solve problems, including application problems, relevant to the course concepts and content.						4	4	2	2	2	2
PLO #3 GRAPHS - Students will create, interpret and analyze graphs relevant to the course concepts and content.						4	4	2	2	2	2
PLO #4 – PROOFS - Students will analyze and construct proofs relevant to the course concepts and content.						4	4	2	2	2	2

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.	Course to PLO Alignment <i>Mark with an X if you will use the course when assessing your PLO</i>				ILOs to Course SLOs Alignment (Rate 1-4)					
	P1	P2	P3	P4	I	II	III	IV	V	VI
Mathematics 170 Trigonometry: SLO #1 UNDERSTANDING CONCEPTS - Students will explain and demonstrate basic trigonometric concepts and definitions.	X				4	4	2	2	2	2
Mathematics 170 Trigonometry: SLO #2 SOLVING PROBLEMS Students will solve trigonometric application problems, including those involving the laws of sines and cosines.		X			4	4	2	2	2	2
Mathematics 170 Trigonometry: SLO #3 GRAPHS Students will create, interpret and analyze the graphs of trigonometric functions and their inverses.			X		4	4	2	2	2	2
Mathematics 170 Trigonometry: SLO #4 PROOFS Students will analyze and construct proofs of trigonometric identities.				X	4	4	2	2	2	2
Mathematics 180 Pre-Calculus: SLO #1 UNDERSTANDING CONCEPTS Students will explain and demonstrate basic precalculus concepts by solving equations, inequalities and systems involving algebraic, exponential, logarithmic, trigonometric, and absolute value expressions.	X				4	4	2	2	2	2
Mathematics 180 Pre-Calculus: SLO #2 SOLVING PROBLEMS Students will use polynomial, rational, exponential, logarithmic, and trigonometric equations and functions to set up and solve application and modeling problems.		X			4	4	2	2	2	2
Mathematics 180 Pre-Calculus: SLO #3 GRAPHS Students will create, interpret and analyze the graphs of polynomial, rational, exponential, logarithmic, trigonometric, parametric, polar and conic equations.			X		4	4	2	2	2	2
Mathematics 180 Pre-Calculus: SLO #4 PROOFS Students will analyze and construct proofs, including proofs by induction.				X	4	4	2	2	2	2
Mathematics 190 Single Variable Calculus and Analytical Geometry I: SLO #1 UNDERSTANDING CONCEPTS Students will explain and demonstrate the idea of the limit, the derivative and the integral.	X				4	4	2	2	2	2
Mathematics 190 Single Variable Calculus and Analytical Geometry I: SLO #2 SOLVING PROBLEMS solve problems, including problems involving velocity and acceleration, by using derivatives and integrals.		X			4	4	2	2	2	2
Mathematics 190 Single Variable Calculus and Analytical Geometry I: SLO #3 GRAPHS Students will use techniques of calculus to determine maxima, minima, and points of inflection on the graph of a function.			X		4	4	2	2	2	2
Mathematics 190 Single Variable Calculus and Analytical Geometry I: SLO #4 PROOFS Students will analyze and construct proofs involving limits, derivatives, and integrals.				X	4	4	2	2	2	2

Course Level SLOs Minimum of 3 and maximum of 6 SLOs. <i>Include SLO #, Short Title, and SLO Statement</i> <i>Example: Math 170 SLO #3 Vectors and Complex Numbers</i>	Course to PLO Alignment <i>Mark with an X if you will use the course when assessing your PLO.</i>				ILOs to Course SLOs Alignment (Rate 1-4)					
	P1	P2	P3	P4	I	II	III	IV	V	VI
Mathematics 191 Single Variable Calculus and Analytical Geometry II: SLO #1 UNDERSTANDING CONCEPTS Students will explain and demonstrate advanced integration techniques and convergence of sequences and series.	X				4	4	2	2	2	2
Mathematics 191 Single Variable Calculus and Analytical Geometry II: SLO #2 SOLVING PROBLEMS Students will use integrals to evaluate volumes, surface area and arc length.		X			4	4	2	2	2	2
Mathematics 191 Single Variable Calculus and Analytical Geometry II: SLO #3 GRAPHS Students will use limits, derivatives and integration to analyze graphs of parametric equations, polar equations, and conic sections.			X		4	4	2	2	2	2
Mathematics 191 Single Variable Calculus and Analytical Geometry II: SLO #4 PROOFS Students will analyze and construct proofs to determine convergence and divergence of sequences and series.				X	4	4	2	2	2	2
Mathematics 210 Introduction to Discrete Structures: SLO #1 UNDERSTANDING CONCEPTS Students will explain and demonstrate an understanding of the key principles of logic, number theory, combinatorics, probability and graph theory.	X				4	4	2	2	2	2
Mathematics 210 Introduction to Discrete Structures: SLO #2 SOLVING PROBLEMS Students will use logic, functions, number theory, and combinatorics to solve a variety of problems, including application problems and computer science algorithm analysis.		X			4	4	2	2	2	2
Mathematics 210 Introduction to Discrete Structures: SLO #3 GRAPHS Students will analyze and solve problems in graph theory.			X		4	4	2	2	2	2
Mathematics 210 Introduction to Discrete Structures: SLO #4 PROOFS Students will analyze and construct proofs in logic, number theory, combinatorics, probability and graph theory.				X	4	4	2	2	2	2
Mathematics 220 Multi-Variable Calculus: SLO#1 UNDERSTANDING CONCEPTS Students will explain and demonstrate partial derivatives, multiple integrals and the major theorems of vector calculus.	X				4	4	2	2	2	2
Mathematics 220 Multi-Variable Calculus: SLO#2 SOLVING PROBLEMS Students will calculate partial derivatives for a function of more than one variable and use them to solve multivariable optimization problems; and evaluate double and triple integrals, and apply them to physical problems such as moments and centers of mass.		X			4	4	2	2	2	2
Mathematics 220 Multi-Variable Calculus: SLO#3 GRAPHS Students will analyze the graphs and equations of curves and surfaces in three-dimensional space, as well as vector fields.			X		4	4	2	2	2	2
Mathematics 220 Multi-Variable Calculus: SLO#4 PROOFS Students will analyze and apply Green's, Stokes, and Gauss' Theorems				X	4	4	2	2	2	2

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	P1	P2	P3	P4	I	II	III	IV	V	VI
Mathematics 270 Differential Equations with Linear Algebra: SLO #1 UNDERSTANDING CONCEPTS Students will explain and demonstrate the key concepts of linear algebra, including determinants, vector spaces and linear transformations.	X				4	4	2	2	2	2
Mathematics 270 Differential Equations with Linear Algebra: SLO #2 SOLVING PROBLEMS Students will use differential equations and linear algebra to solve a variety of problems, including application problems.		X			4	4	2	2	2	2
Mathematics 270 Differential Equations with Linear Algebra: SLO #3 GRAPHS Students will use graphical techniques to solve differential equations or systems of differential equations.			X		4	4	2	2	2	2
Mathematics 270 Differential Equations with Linear Algebra: SLO #4 PROOFS Students will analyze and construct proofs relevant to differential equations and linear algebra.				X	4	4	2	2	2	2