AREA II: Mathematics - 3 credit hours required			
Area II Goal 1: To develop students knowledge, skills and disposition for responsibility regarding various mathematical: principles, disciplines, analyses, logic, reasoning, problem-solving techniques, modeling techniques, communication and/or expressions			
Courses	**Student Learning Outcomes**	**NM HED Core Area: Competency #**	**UNM Learning Goals: Knowledge, Skills & Responsibility (K,S & R)**
MATH 121: College Algebra	By the end of the course, students will be able to communicate clearly the steps to solve problems using the correct notation and terminology.	Algebra Math II: 3	S
	By the end of the course, students will be able to solve various kinds of equations, such as polynomial, rational, radical, exponential, logarithmic and systems of linear equations.	Algebra Math II: 2	S
	By the end of the course, students will be able to identify and apply the properties and operations of various functions.	Algebra Math II: 2	S
	By the end of the course, students will be able to construct and analyze graphs of a variety of relations and functions.	Algebra Math II: 1	S
	By the end of the course, students will be able to demonstrate problem solving skills for application problems.	Algebra Math II: 4	K & S
MATH 129: Survey of Mathematics	By the end of the course, students will be able to use proper mathematical notation and terminology to communicate mathematical phrases, concepts and methods found in various areas of mathematics.	Liberal Arts Math II: 4	K & S
	By the end of the course, students will be able to model and solve a variety of mathematical applications using various approaches.	Liberal Arts Math II: 2	S
	By the end of the course, students will be able to write and support mathematical explanations using appropriate definitions and symbols.	Liberal Arts Math II: 3	K, S & R
	By the end of the course, students will be able to investigate, represent and interpret data in different ways.	Liberal Arts Math II: 1	S
	By the end of the course, students will be able to apply and organize information in numerous representations of real world scenarios.	Liberal Arts Math II: 4	K, S & R
MATH 215: Math for Elementary Teachers	By the end of the course, students will be able to display, analyze and interpret data.	Liberal Arts Math II: 1	S
	By the end of the course, students will be able to construct valid mathematical explanations.	Liberal Arts Math II: 3	S
	By the end of the course, students will be able to model and solve a variety of mathematical applications using various approaches relevant to the K-8 curriculum.	Liberal Arts Math II: 2	K & S
	By the end of the course, students will be able to communicate how various mathematical concepts are interconnected and describe the application of mathematics in a diverse range of fields.	Liberal Arts Math II: 4	K, S & R
	By the end of the course, students will be able to solve a variety of problems using the algebraic concepts of the K-8 curriculum.	Liberal Arts Math II: 2,4	K & S

MATH 150: Pre-Calculus	By the end of the course, students will be able to communicate clearly the steps to solve problems using the correct notation and terminology.	Algebra II: 3	K
	By the end of the course, students will be able to solve various kinds of equations, such as polynomial, rational, radical, exponential, logarithmic, and systems of linear and non-linear equations.	Algebra II: 2	S
	By the end of the course, students will be able to analyze and interpret various functions, including construction of their graphs.	Algebra II: 1-2	S
	By the end of the course, students will be able to demonstrate knowledge of conic sections and parametric equations.	Algebra II: 2	K
	By the end of the course, students will be able to demonstrate problem solving skills for applied problems.	Algebra II: 4	K
MATH 153: Pre-Calculus and Trigonometry (5cr)	By the end of the course, students will be able to use correct mathematical notation and terminology.	Algebra II: 3	K & S
	By the end of the course, students will be able to graph and interpret functions. Course level instruction objectives: Include sketch and interpret graphs in context of applications; apply appropriate transformations for the following: polynomial functions (linear, quadratic, followed by those with degree three and higher), trigonometric functions, exponential and logarithmic functions, rational functions, parametric equations, and conic sections; create and graph piece-wise functions from all of those above; and create graphs to model situations.	Algebra II: 1,4	K & S
	By the end of the course, students will be able to perform operations on functions. Course level instruction objectives: Include being able to use function notation to evaluate expressions and perform operations on functions such as addition, subtraction, multiplication, division, composition and difference quotients of functions; and being able to find the domain and range of functions as well as their inverses (if they exist).	Algebra II: 2	K & S
	By the end of the course, students will be able to analyze the behavior of functions. Course level instruction objectives: Include being able to determine the end behavior and intercepts of functions; being able to determine extreme values of functions and intervals where functions increase or decrease; and being able to apply this analysis to interpreting an applied problem.	Algebra II: 3,4	K, S & R
	By the end of the course, students will be able to solve equations. Course level instruction objectives: Include being able to solve exponential, logarithmic, trigonometric, quadratic, radical and rational equations; being able to solve linear and non-linear systems of equations; and being able to interpret solutions in context of applications.	Algebra II: 2,4	S

	By the end of the course, students will be able to solve applied problems. Course level instruction objectives: Include being able to set up models from word problems using appropriate functions or laws.	Algebra II: 4	S
	By the end of the course, students will be able to perform operations with complex numbers and vectors. Course level instruction objectives: Include being able to determine the trigonometric and polar form of a complex number; being able to add vectors in two dimensions, project vectors onto one another and determine the angles between vectors; and being able to use vectors and complex numbers to solve applied problem.	Algebra II: 4	K & S
MATH 162: Calculus 1 (4cr)	By the end of the course, students will be able to communicate clearly the steps to solve Calculus problems using the correct notation and terminology.	N/A	S
	By the end of the course, students will be able to demonstrate correct use of concepts of functions, limits, continuity, derivatives and integrals through manipulations.		S
	By the end of the course, students will be able to apply the methods of Calculus to optimization, graphing and approximation.		K & S
	By the end of the course, students will be able to apply differential and integral calculus to problems in geometry, physics and other fields.		K & S
	By the end of the course, students will be able to demonstrate methods for finding the anti-derivative through integration techniques and apply the Fundamental Theorem of Calculus when finding areas of bounded regions on a graph for continuous functions.		K & S
MATH 163: Calculus 2 (4cr)	By the end of the course, students will be able to communicate clearly the steps to solve Calculus problems using the correct notation and terminology.	N/A	S
	By the end of the course, students will be able to demonstrate correct use and application of various integration methods.		S
	By the end of the course, students will be able to solve and graph first-order differential equations.		K & S
	By the end of the course, students will be able to determine convergence and divergence of series and sequences.		K & S
	By the end of the course, students will be able to construct Taylor approximations for elementary functions.		K & S
	By the end of the course, students will be able to use proper mathematical notation and terminology to communicate mathematical phrases and concepts that appear in Calculus.		K
	By the end of the course, students will be able to determine derivatives of simple functions using the limit definition and/or differentiation rules.		S

MATH 180: Elem. of Calculus	By the end of the course, students will be able to use the concept of derivative to understand the relationship between the shape of the graph and the derivative of the function being graphed.	N/A	S
	By the end of the course, students will be able to use the Fundamental Theorem of Calculus and the rules of integration to evaluate definite integrals of simple functions.		K & S
	By the end of the course, students will be able to correctly apply the derivative to real world application.		K, S & R
MATH 181: Elem. of Calculus 2	By the end of the course, students will be able to use proper mathematical notation and terminology to communicate mathematical phrases and concepts that appear in Calculus.	N/A	S
	By the end of the course, students will be able to demonstrate an extended knowledge of the uses for the derivative as the slope of the function, moving into multivariable functions and partial derivatives.		K & S
	By the end of the course, students will be able to demonstrate how differential equations reveal features about functions, and solve first-order differential equations using various techniques.		K & S
	By the end of the course, students will be able to expand their techniques for integration, demonstrating the ability to integrate using substitution and by parts.		K, S & R
	By the end of the course, students will be able to demonstrate a basic knowledge of series and sequences.		K & S
STAT 145: Intro to Statistics	By the end of the course, students will be able to utilize basic vocabulary, logic, and procedures for data exploration, data production and statistical inference.	Statistics Math II: 1	K & S
	By the end of the course, students will be able to use principles of data exploration and differentiate between quantitative and categorical variables using graphs and tables.	Statistics Math II: 1,2	K & S
	By the end of the course, students will be able to use procedures for data production and distinguish between observational studies and experiments.	Statistics Math II: 2,3	K, S & R
	By the end of the course, students will be able to use the basic rules for probability to solve problems, working with simple models, both discrete and continuous.	Statistics Math II: 1,3	K, S & R
	By the end of the course, students will be able to recognize and apply the terms population, sample, parameter and statistics as they pertain to sampling distributions (e.g. Chi Square), and apply the concept of the Law of Large Numbers and Central Limit Theorem.	Statistics Math II: 1,3	K, S & R

	NM HED Business Articulation Agreement: Required Common SLOs By the end of the course, students will be able to: -Use descriptive statistics (graphic representation, numerical measures). -Apply basic probability concepts. -Use both discrete and continuous probability distributions. -Use the various sampling methods. -Calculate point estimates and construct confidence intervals. -Conduct one-sample and two-sample tests of hypothesis. -Develop a regression line and determine the strength of a correlation. -Apply statistical analysis to decision-making.	Statistics Math II: 1-4	K, S & R
UHON 202: Mathematics in the World	By the end of the course, students will be able to effectively solve mathematical problems via appropriate methods.	Liberal Arts Math II: 3,4	S
	By the end of the course, students will be able to communicate mathematical ideas effectively in writing.	Liberal Arts Math II: 1,2,3,4	S
	By the end of the course, students will be able to orally communicate mathematical ideas effectively.	Liberal Arts Math II: 1,2,3,4	K & S
	By the end of the course, students will be able to communicate mathematical thinking through the appropriate use of symbolic and visual forms.	Liberal Arts Math II: 1,3	K, S & R