		MAT 203	MAT 204	MAT 205	MAT 206
		Calculus I	**Calculus II**	**Calculus III**	**Differential Equations**
1	Use computational techniques and algebraic skills essential for success in an academic, personal, or workplace setting. (Computational and Algebraic Skills)	Technical competency in the methods of calculus to find limits, derivatives and integrals of real valued functions of a single variable.,	Technical competency in the methods of calculus to find limits, derivatives and integrals, and to find convergence of sequences and series.	Technical competency in the methods of calculus to find limits, derivatives and integrals of vector valued and multivariable functions.,	Several methods of solving linear differential equations.
		Conceptual understanding of limits, continuity, differentiation and integration of real valued functions of a single variable through numeric and algebraic perspectives.	Conceptual understanding of limits, continuity, differentiation integration, and convergence of sequences and series through numeric and algebraic perspectives.	Conceptual understanding of limits, continuity, differentiation and integration of vector valued and multivariable functions through numeric and algebraic perspectives.	To solve given types of non-linear differential equations.
		Utilize the methods of calculus to solve applied problems that require computational or algebraic techniques..	Utilize the methods of calculus to solve applied problems that require computational or algebraic techniques..	Utilize the methods of calculus to solve applied problems that require computational or algebraic techniques..	To classify a given differential equation and determine a method to use to solve that equation.
2	Use visualization, special reasoning, as well as geometric properties and strategies to model and solve problems. (Geometric Skills)	Conceptual understanding of limits, continuity, differentiation and integration of real valued functions of a single variable through geometric perspectives.	Conceptual understanding of limits, continuity, differentiation, integration, and convergence of sequences and series through geometric perspectives.	Conceptual understanding of limits, continuity, differentiation and integration of vector valued and multivariable functions through geometric perspectives.	To use differential equations to solve application problems.
		Utilize the methods of calculus to solve applied problems that are geometric or spatial..	Utilize the methods of calculus to solve applied problems that are geometric or spatial..		

3	Collect, organize, and display data as well as use appropriate statistical methods to analyze data and make inferences and predictions. (Statistical Skills)		Use integrals to compute probabilities and means for probability density functions.		
4	Critically analyze and construct mathematical arguments. (Proof and Reasoning)	Conceptual understanding of limits, continuity, differentiation and integration and their related theorems through written and verbal perspectives.	Conceptual understanding of limits, continuity, differentiation, integration, and convergence of sequences and series and their related theorems through written and verbal perspectives.	Conceptual understanding of limits, continuity, differentiation and integration of vector valued and multivariable functions and their related theorems through written and verbal perspectives.	Prove basic results in the course content using algebra and calculus skills.
		Utilize the methods of calculus to solve applied problems that require critical analysis and mathematical arguments.	Utilize the methods of calculus to solve applied problems that require critical analysis and mathematical arguments.	Utilize the methods of calculus to solve applied problems that require critical analysis and mathematical arguments.	
5	Use technology, where appropriate, to enhance and facilitate mathematical understanding, as well as an aid in solving problems and presenting solutions. (Technological Skills)	Use of CAS (Computer Algebra System) or calculator to acquire technical competency in the methods of calculus to find limits, derivatives and integrals.	Use of CAS (Computer Algebra System) or calculator to acquire technical competency in the methods of calculus to find limits, derivatives, integrals, and convergence of sequences and series.	Use of CAS (Computer Algebra System) or calculator to acquire technical competency in the methods of calculus to find limits, derivatives and integral of vector valued and multivariable functions.	To use technology, in the form of a computer algebra package, the graphing calculator and other programs, to assist in the problem-solving process.
		Conceptual understanding of limits, continuity, differentiation and integration of real valued functions of a single variable through numeric, algebraic and geometric perspectives as presented by CAS or calculator.	Conceptual understanding of limits, continuity, differentiation, integration, and convergence of sequences and series through numeric, algebraic and geometric perspectives as presented by CAS or calculator.	Conceptual understanding of limits, continuity, differentiation, integration, and curves and surfaces of vector valued and multivariable functions through numeric, algebraic and geometric perspectives as presented by CAS or calculator.	
		Use CAS or calculator to assist in utilizing the methods calculus to solve applied problems.	Use CAS or calculator to assist in utilizing the methods calculus to solve applied problems.	Use CAS or calculator to assist in utilizing the methods calculus to solve applied problems.	

6	Communicate and Understand mathematical statements, ideas and results, both verbally and in writing, with the correct use of mathematical definitions, terminology and symbolism. (Communication Skills)	Conceptual understanding of limits, continuity, differentiation and integrations of real valued functions of a single variable through written and verbal perspectives.	Conceptual understanding of limits, continuity, differentiation, integration, and convergence of sequences and series through written and verbal perspectives.	Conceptual understanding of limits, continuity, differentiation, integration, and curves and surfaces of vector valued and multivariable functions through written and verbal perspectives.	To effectively communicate results and the thought process that led to those results.
		Written and verbal communication of results to applied problems that utilize the methods of calculus.	Written and verbal communication of results to applied problems that utilize the methods of calculus.	Written and verbal communication of results to applied problems that utilize the methods of calculus.	
7	Work collaboratively with peers and instructors to acquire mathematical understanding and to formulate and solve problems and present solutions. (Collaborative Skills)	Technical competency and conceptual understanding developed though collaborative work with peers and instructor.	Technical competency and conceptual understanding developed though collaborative work with peers and instructor.	Technical competency and conceptual understanding developed though collaborative work with peers and instructor.	To work effectively in groups.

MAT 207	MAT 208
Discrete Math	**Linear Algebra**
Solve counting problems and basic probability problems using combinatorial techniques.	Algebraic and computational competency in representing and solving systems of linear equations by matrices, vectors and determinants.
Understand the relationship between a statement and its converse, inverse, and contra-positive, including how to correctly negate statements.	Competency in the algebra of vector spaces to determine subspaces, spanning sets, linear independence, bases, coordinates, dimension, rank, orthogonality, null space, column space, vector projections and kernel. An algebraic understanding of the isomorphism between a vector space and R^n as determined by the coordinate mapping.
Perform set operations, including intersection, union, and finding the complement.	Algebraic and computational skills to determine eigenvalues and eigenvectors, to diagonalize matrices, perform spectral decomposition, and apply The Principal Axis Theorem.
Demonstrate an understanding of the fundamental concepts of graph theory including but not limited to graphs, digraphs, trees, finding paths and cycles, weighted graphs and graph coloring.	Geometric understanding of systems of linear equations and their solutions, especially as they relate to R^2 and R^3.
	Geometric understanding of the vector space topics of subspaces, spanning sets, linear independence, basis, coordinates, dimension, rank orthogonality, null space, column space, vector projections and kernel, as well as the fundamental geometric understanding that each vector space is isomorphic to R^n.

Solve counting problems and basic probability problems using combinatorial techniques.	In an applied setting be able to create a stochastic matrix. Be able to find the steady state vector for a Markow Chain.
Write a correct proof, including proof by induction.	Mathematical arguments (proofs) and critical analysis are crucial components for understanding the concepts of the course and their relationships and for understanding the theorems, including such key results as The Invertible Matrix Theorem, The Spanning Set Theorem, The Unique Representation Theorem, The Basis Theorem, The Rank Theorem, and The Diagonalization Theorem.
	Use CAS or calculator to solve applied problems from economics, chemistry, and network flow, including Leontief Input-Output Models, as well as applied problems involving a Markov Chain.

Verbally explain the relationship between a statement and its converse, inverse, and contra-positive, including how to correctly negate statements.	Understanding of mathematical arguments (proofs), understanding of the concepts of the course and their relationships, and an understanding of the theorems will be demonstrated through written responses.
	Students will be encouraged to work in groups to acquire an understanding of the content of the course and to assist one another in solving applied project problems.