

3/21/2025

DATE

MSD DIVISION

 REQUIRED COURSE
 ELECTIVE COURSE

 NEW COURSE
 REVISION

Lake Land College

Course Information Form

COURSE NUMBER:	MAT-210	TITLE: (30 Characters Max)	Finite Mathematics								
SEM CR HRS:	3.0	Lecture:	3.0	Lab:	0.0	ICCB Lab:	0.0	ECH:	3.0		
Course Level:	<input checked="" type="checkbox"/> Gen Ed / IAI <input type="checkbox"/> Career/Technical <input type="checkbox"/> Baccalaureate /Non-IAI <input type="checkbox"/> Dev Ed/ Not in Degree Audit		Clinical Practicum:	0.0	Work-based Learning:	0.0	WBL ECH:	0.0			
COURSE PCS #	11 - 27.0301		IAI Code	M1 906		Contact Hours (Minutes/Week)					
Repeatable (Y/N):	N	Pass/Fail (Y/N):	N	Variable Credit (Y/N):	N	Min:	Max:	16 Wks	150	8 Wks	300
Prerequisites:	Placement by assessment or either MAT-129 or MAT-130 or MAT-140 with a grade of "C" or higher. Also one year of high school geometry or MAT-009.										
Corequisite	None										
Catalog Description: (40 Word Limit)	An introduction to Finite Mathematics, matrices, linear systems of equations and inequalities, linear programming, counting theory and probability.										

List the Major Course Segments (Units)	Contact Lecture Hours	Contact Lab Hours	Clinical Practicum	Work-based Learning
Linear systems	6			
Matrix operations/applications	6			
Linear programming	12			
Sets and probability	12			
Expected value	2			
Counting theory, permutations and combinations	4			
Binomial distributions	3			
TOTAL	45	0	0	0

EVALUATION

QUIZZES <input checked="" type="checkbox"/>	EXAMS <input checked="" type="checkbox"/>	ORAL PRES <input type="checkbox"/>	PAPERS <input type="checkbox"/>
LAB WORK <input type="checkbox"/>	PROJECTS <input checked="" type="checkbox"/>	COMP FINAL <input checked="" type="checkbox"/>	OTHER <input type="checkbox"/>

COURSE MATERIALS

TITLE:	Mathematics with Applications
AUTHOR:	Lial, Hungerford, Holcomb, Mullins
PUBLISHER:	Pearson/Addison Wesley
VOLUME/EDITION/URL:	12th
COPYRIGHT DATE:	2019

MAJOR COURSE SEGMENT	HOURS	LEARNING OUTCOMES
		<i>The student will be able to:</i>
Linear systems		
Systems of linear equations and echelon method	3	1. Solve a linear system by Gaussian elimination to echelon form.
Solution of linear systems by the Gauss-Jordan method	3	1. Solve a linear system by Gauss-Jordan elimination to rref.
Matrix operations/applications		
Basic matrix operations	2	1. Calculate matrix and scalar multiplication
Multiplication of matrices	1	1. Multiply matrices.
Matrix inverses	2	1. Invert a matrix. 2. Apply the inverse to solve a linear system.
Applications of matrices	1	1. Solve application problems using matrices.
Linear programming		
Graphing linear inequalities in two variables	2	1. Graph a system of linear inequalities in x and y.

Solving linear programming problems graphically	2	1. Solve linear programming problems using graphical method.
Applications of linear programming	2	1. Solve linear programming application problems.
The simplex method: slack variables and the pivot	3	1. Calculate the simplex method.
Solving minimization and nonstandard maximization problems	3	1. Solve linear programming problems minimization or nonstandard maximization problems.
Sets and probability		
Sets	2	1. Assess sets, subsets vs. elements, intersections and unions and other set-theoretic concepts.
Applications of Venn diagrams	1	1. Apply Venn diagrams to solve application problems.
Probability	2	1. Determine sample spaces, disjoint events, the basic probability principle, and properties of probability.
Basic concepts of probability	3	1. Calculate the addition rule, the complement rule and odds. 2. Apply them to solve application problems.
Conditional probability	2	1. Apply conditional probability and the product rule.
Bayes' Formula	2	1. Apply Bayes' Formula for two and for n events. 2. Apply them to solve application problems.
Expected value		
Probability distributions and expected value	2	1. Evaluate probability distributions and expected value. 2. Apply them to solve application problems.
Counting theory, permutations and combinations		
Permutations and combinations	2	1. Demonstrate the difference between permutations and combinations of n objects taken r at a time.
Applications of counting	2	1. Apply permutations, combinations, and the multiplication principle to solve application problems.
Binomial distributions		
Binomial experiments	3	1. Apply the binomial distribution to solve application problems.
	45	

Outcomes*	At the successful completion of this course, students will be able to:
Course Outcome 1	Apply matrix operations and determine how they apply to solving systems of equations.
Course Outcome 2	Solve a linear programming problem by graphical method (in two variables) or by the simplex method.
Course Outcome 3	Solve probability problems using basic probability formulas.
Course Outcome 4	Calculate probabilities using the multiplication principle, permutations, and combinations
Course Outcome 5	Set up the equations or inequalities for word problems in linear systems, linear programming, and probability.
Program Outcome	Critical Thinking: Students connect knowledge from various disciplines to formulate logical conclusions.
Laker Learning Competency	Quantitative Literacy: Students analyze data and mathematical patterns in real-life situations.

*Course and program outcomes will be used in the software for outcomes assessment and should include at least 1 Laker Learning Competency. Limit to 3 - 5.