Curriculum Mapping Mathematics - Finite 1st Nine Weeks Amy Lair – 2020

Module 1 : Set Theory and Logic

Number of School Days: 9 days instruction, 2 days assessments, total 11 days

Chapter Vocabulary: Element, set, set-builder notation, empty set, subset, complement, union, intersection, statement, negation, conjunction, disjunction, conditional, inverse, converse, contrapositive, biconditional

Code for Indiana Standards: Finite Math (FM) S = Sets, MA = Matrices, N = Networks, O = Optimization, P = Probability, PS = Process Standard Probability and Statistics(PS) DA = Data Analysis, Financial Literacy

Lesson	Indiana Standard(s)	Learning Targets and "I CAN" Statements	Resources/Activities	Pacing (in school days)	Assessments
2-1 Intro to Set Theory	FM.S.1	Know and use concepts of sets, elements, subsets.	2-1 Pages 44-57	Day2	Textbook assignment and ALEKS
2-2 to 2-4 Subsets, set operations and Venn	FM.S.2	Perform operations on sets (union, intersection, complement) and illustrate with Venn diagrams	2-2 to 2-4 Pages 58-89	Days 5	Textbook assignment and ALEKS Quiz
3-1 to 3-2 Statements and Truth Tables	PS.3 G.LP.3 *geom.	State, use, and examine the validity of the converse, inverse, and contrapositive of conditional ("if – then") and bi-conditional ("if and only if") statements.	3-1 to 3-2 Pages 100-122	Days 3	Textbook assignment and ALEKS
3-3 to 3-5 Logical Argument	PS.3 G.LP.3	Compute truth tables for compound statements using the five fundamental connectives. Compute truth tables for conditionals and biconditionals.	3-3 to 3-5 Pages 123-143	Days 5	Textbook assignment and ALEKS Unit test.

Number of School Days: 11 days instruction, 2 days assessments, total 13 days

Chapter Vocabulary: graphing, elimination, substitution methods, matrix dimensions, scalar, determinant, identity, inverse, row reduction

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Lesson	Indiana Standard(s)	Learning Targets and "I CAN" Statements	Resources/Activities	Pacing (in school days)	Assessments
5: Systems	AI.SEI.2: *Alg. I	Solve systems of equations graphically, by elimination or by substitution	CK-12 , ALEKS	Days 3	Handouts and ALEKS Quiz
6: Matrix operations	FM.MA.1	Add, subtract and multiply matrices. Multiply matrices by scalars.	CK-12, ALEKS	Days 2	Handouts and ALEKS
7: Determinant of Matrix	FM.MA.2 FM.MA.3	Understand that the zero and identity matrices play a role in matrix addition and multiplication similar to the role of 0 and 1 in the real numbers. Find the determinant of a matrix. Determine if a matrix has a multiplicative inverse	CK-12, ALEKS calculator, online practice	Days 3	Handouts and ALEKS
8: Solving Matrix Equations	FM.MA.4	Solve problems represented by matrices using row-reduction techniques and properties of matrix multiplication.	CK-12, ALEKS calculator, online matrix solving software	Days 2	Handouts and ALEKS
9: Solving with Matrices	FM.MA.5 FM.MA.6	Use Matrices to solve real-world problems that can be modeled by a system of equations in two or three variables.	CK-12, ALEKS calculator, online matrix solving software	Days 3	Handouts and ALEKS Unit test.

Mathematics - Finite 2nd Nine Weeks

Module 3 : Graph Theory

Number of School Days: 9 days instruction, 2 days assessments, total 11 days

Chapter Vocabulary: graph, vertices, Euler's Theorem, Four-color problem, Traveling Salesperson Problem (TSP), Hamilton circuit, brute force, nearest neighbor and best edge algorithms. directed graph

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Lesson	Indiana Standard(s)	Learning Targets and "I CAN" Statements	Resources/Activities	Pacing (in school days)	Assessments
13-1 Intro to Graph Theory	FM.N.1 FM.N.5	Use networks, traceable paths, tree diagrams and Venn diagrams to find the number of outcomes in a problem. Use graph-coloring techniques to solve problems.	13-1 Pages 796-809	Days 2	Textbook assignment and ALEKS
13-2 Euler's Theorem	FM.N.2 FM.N.3 FM.N.6	Optimize networks in different ways and in different contexts by finding minimal spanning trees, shortest paths and Hamiltonian paths. Use critical-path analysis in the context of scheduling problems. Construct vertex edge graph models and use them to solve problems.	13-2 Pages 810-817	Days 3	Textbook assignment and ALEKS Quiz
13-3 Hamilton Paths and Circuits	FM.N.4	Construct and interpret directed and undirected graphs, decision trees, networks and flow charts that model real-world contexts and problems	13-3 Pages 818-827	Days 3	Textbook assignment and ALEKS
13-4 Trees	FM.N.2	Use vertex-edge models to solve problems in real-world settings.	13-4 Pages828-836	Days 3	Textbook assignment and ALEKS Unit test.

Module 4 : Optimization

Number of School Days: 4 days instruction, 1 day assessments, total 5 days

Chapter Vocabulary: optimization, bin-packing, Simplex method

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Lesson	Indiana Standard(s)	Learning Targets and "I CAN" Statements	Resources/Activities	Pacing (in school days)	Assessments
14	FM.O.1	Use bin-packing techniques to solve problems of optimizing resource usage.	online supplements, notes,	Days 2	Handout Assignment
15	FM.O.2 FM.O.3	Use geometric and algebraic techniques to solve optimization problems. Use the Simplex method to solve optimization problems.	online supplements, notes	Days 3	Handout Assignments, Unit Quest

Mathematics - Finite 3rd Nine Weeks

Module 5: Probability

Number of School Days: 15 days instruction, 2 days assessments, total 17 days

Chapter Vocabulary: Probability, mutually exclusive, independent, permutation, combination, factorial, odds, risk, complementary events, union, intersection

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Lesson	Indiana Standard(s)	Learning Targets and "I CAN" Statements	Resources/Activities	Pacing (in school days)	Assessments
10-1 Basic Concepts of Probability	FM.P.2 FM.P.3	Understand and use the addition rule to calculate probabilities for mutually exclusive and non mutually exclusive events. Understand and use the multiplication rule to calculate probabilities for independent and dependent events	10-1 Pages 554-567	Days 1	Textbook assignment and ALEKS
10-2 Fundamental Counting Principle	FM.P.4	Understand the fundamental counting principle (FCP), permutations and combinations. Use them to solve real-world problems.	10-2 Pages 568-576	Days 2	Textbook assignment and ALEKS
10-3 Combinations	FM.P.6 FM.P.7	Calculate the expected value of a random variable. Analyze decisions and strategies using probability concepts. Analyze probabilities to interpret odds and risk of events.	10-3 Pages 577-583	Days 1	Textbook assignment and ALEKS
10-4 Tree Diagrams Tables Sample Space	FM.P.5 FM.P.8	Calculate the probabilities of complementary events. Describe events as subsets of a sample space using characteristics of the outcomes or as unions, intersections or complements of other events.	10-4 Pages 583-591	Days 2	Textbook assignment and ALEKS

10-5 Probability using Permutations, Combinations	FM.P.9 FM.P.10	Develop a probability distribution for a random variable defined for a sample space in which theoretical probabilities can be calculated; find the expected value. Use the relative frequency of a specified outcome of an event to estimate the probability of the outcome and apply the law of large numbers in simple examples.	10-5 Pages 592-597	Days 2	Textbook assignment and ALEKS Quiz
10-6 Odds and Expectations	FM.P.7	Analyze decisions and strategies using probability concepts. Analyze probabilities to interpret odds and risk of events.	10-6 Pages 597-606	Days 2	Textbook assignment and ALEKS
10-7 The Addition Rules for Probability	FM.P.2	Understand and use the addition rule to calculate probabilities for mutually exclusive and non mutually exclusive events.	10-7 Pages 606-613	Days 2	Textbook assignment and ALEKS
10-8 Multiplication Rules and Conditional Probability	FM.P.3	Understand and use the multiplication rule to calculate probabilities for independent and dependent events. Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.	10-8 Pages 614-624	Days 2	Textbook assignment and ALEKS
10-9 Markov Chains	FM.P.1	Use Markov chains to solve problems with and without technology.	Online supplements	Day 3	Handout ALEKS

Mathematics - Finite 4th Nine Weeks

 Module 6 :Statistics
 Number of School Days: 8 days instruction, 2 day assessments, total 10 days

 Chapter Vocabulary: histogram, stem-and-leaf plots, box-and-whisker plots, mean, median, mode range, standard deviation, normal curve, raw score, z-score

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Lesson	Indiana Standard(s)	Learning Targets and "I CAN" Statements	Resources/Activitie s	Pacing (in school days)	Assessments
11-1&11-2 Gathering, organizing an picturing data	PS.DA.1 *Prob. & Statistics	Create, compare, and evaluate different graphic displays of the same data, using histograms, pie charts, scatter plots, stem- and-leaf plots, and box-and-whisker plots	11-1 & 11-2 Pages 641-666	Days 2	Textbook assignment, ALEKS
11-3 Measures of Averages	PS.DA.2	Compute the mean, median and mode of distributions. Find the five number summary of a distribution. Use box and whiskers plots to summarize data.	11-3 Pages 666-679 Group activity: collect data to solve all statistical values.	Days 3	Textbook assignment, ALEKS Group Project Quiz
11-4 Measures of Variation	PS.DA.2	Compute the range and standard deviation of a data set.	11-4 Pages 679-686	Days 1	Textbook assignment, ALEKS
11-6-11-7 Normal Distribution & Applications	PS.DA.2	Understand the basic properties of the normal curve.Make conversions between raw scores and z-scores. Use normal distribution to solve applied problems.	11-6 & 11-7 Pages 695-716	Days 4	Textbook assignments, Unit test.

Module 7 :Consumer Math

Number of School Days: 7 days instruction, 2 day assessments, total 9 days

Chapter Vocabulary: Simple interest, Compound interest, add-on loan, finance charge, annuity ,sinking fund, amortized loan

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Lesson	Indiana Standard(s)	Learning Targets and "I CAN" Statements	Resources/Activities	Pacing (in school days)	Assessments
7-2 Personal Budgeting	12-3.1.2 *Financial Literacy	Demonstrate budgeting to manage spending and achieve financial goals.	7-2 Pages 373-377	Days 1	Textbook Assignments, ALEKS
7-3 &7-4 Simple & Compound Interest	12-4.1.1 *Financial literacy	Understand and make calculations involving simple interest and compound interest formulas	7-3 & 7-4 Pages 377-400	Days 3	Textbook Assignments, ALEKS
7-5 Installment Buying	12-4.1.1	Determine payments for add-on loans. Compute finance charges on credit cards.	7-5 Pages 400-414	Days 2	Textbook Assignments, ALEKS
7-6 Student Loans and Home Buying	12-4.1.1	Calculate the payment to pay off an amortized loan. Construct an amortization schedule Find the present value of an annuity. Calculate the unpaid balance on a loan.	7-6 Pages 414-427	Days 3	Textbook Assignments, ALEKS