LSU Dual Enrollment Program for Math

COURSE PROFILE

4-14-23

**COURSE NAME: Math 1029 Contemporary Math**

**HIGH SCHOOL COURSE CODE: When used in the spring semester with Advanced Math – Functions and Statistics in the fall semester, this course can use 160347 for the high school course code for both semesters.**

**BOARD OF REGENTS COMMON COURSE NUMBER: CMAT 1103 Contemporary Math**

**PRIMARY ONLINE CONTENT SOURCE: *Thinking Mathematically, 8e,* *MyMathLab*, by Robert Blitzer**

**COURSE/UNIT CREDIT: 3 credit hours, 1 Carnegie Unit**

**GRADE(S): 11 or 12**

**CHAPTERS FOR LSU MATH 1029 CONTEMPORARY MATH**

**7 – Algebra: Graphs, Functions, and Linear Systems**

**11 – Counting Methods and Probability Theory**

**12 – Statistics**

**14 – Graph Theory**

| **SECTION NAMES (NUMBER OF EXERCISES) AND LEARNING OBJECTIVES** |
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| **CHAPTER 7: Algebra: Graphs, Functions, and Linear Systems** |
| **7.1 Introduction to the Rectangular Coordinate System (19)**  Plot points in the rectangular coordinate system  Graph equations in the rectangular coordinate system |
| **7.2 Graphing Linear Equations (17)**  Use intercepts to graph a linear equation  Graph horizontal lines  Graph vertical lines |
| **7.3 Solving Systems of Linear Equations (32)**  Determine whether an ordered pair is a solution of a linear system  Solve linear systems by graphing  Solve linear systems by the substitution method  Solve linear systems by the addition method |
| **7.4 Graphing Systems of Linear Inequalities (24)**  Graph a linear inequality in two variables  Graph a system of linear inequalities |
| **7.5 Linear Programming (16)**  Use graphs to determine the maximum and minimum of an objective function  Use linear programming to solve application problems |

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| **CHAPTER 11: Counting Methods and Probability Theory** |
| **11.1 The Fundamental Counting Principle (27)**  Use the Fundamental Counting Principle to find the number of possible outcomes  Understand concepts involving the Fundamental Counting Principle |
| **11.2 Permutations (35)**  Use the Fundamental Counting Principle to count permutations  Evaluate factorial expressions  Use the permutations formula  Find the number of permutations of duplicate items  Understand concepts involving permutations |
| **11.3 Combinations (27)**  Distinguish between permutation and combination problems  Use the combinations or permutations formula to evaluate expressions  Solve problems involving combinations  Use combinations, permutations, or the Fundamental Counting Principle to solve problems  Understand concepts involving combinations |
| **11.4 Fundamentals of Probability (46)**  Compute theoretical probability  Compute empirical probability  Understand concepts involving fundamentals of probability |
| **11.5 Probability with the Fundamental Counting Principle, Permutations and Combinations (23)**  Compute probabilities with permutations  Compute probabilities with combinations  Understand concepts involving probability |
| **11.6 Events Involving Not and Or; Odds (50)**  Find the probability that an event will not occur  Find the probability of one event or a second event occurring  Solve conceptual problems involving probability  Understand and use odds |
| **11.7 Events Involving And; Conditional Probability (44)**  Find the probability of one event and a second event occurring  Compute conditional probabilities  Understand concepts involving conditional probability |
| **11.8 Expected Value (12)**  Compute the expected value  Use expected value to solve applied problems  Use expected value to determine the average payoff or loss in a game of chance |

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| **CHAPTER 12: Statistics** |
| **12.1 Collecting Data and Organizing Data (33)**  Select an appropriate sampling technique  Understand and interpret data  Organize and present data  Apply estimation techniques to information given by graphs  Identify deceptions in visual displays of data  Understand concepts involving sampling, frequency distributions, and graphs |
| **12.2 Measures of Central Tendency (45)**  Determine the mean for a data set  Determine the median for a data set  Determine the mode for a data set  Determine the midrange for a data set  Interpret graphs, tables, and stem-and-leaf plots to be able to find the mean, median, mode and midrange  Understand concepts involving measures of central tendency |
| **12.3 Measures of Dispersion (32)**  Determine the range for a data set  Find the mean, deviation from the mean, and sum of deviations  Determine the standard deviation for a data set  Understand concepts involving mean, range, and standard deviation |
| **12.4 The Normal Distribution (44)**  Find scores at a specified standard deviation from the mean  Use the 68–95–99.7 Rule  Convert a data item to a *z*-score  Solve applied problems involving normal distributions  Understand concepts involving the normal distribution |
| **12.5 Percentiles and z-Scores (19)**  Understand percentiles and quartiles  Solve applied problems involving normal distribution |
| **CHAPTER 14: Graph Theory** |
| **14.1 Graphs, Paths, and Circuits (43)**  Understand relationships in a graph  Model relationships using graphs  Understand and use the vocabulary of graph theory  Understand concepts involving graph theory |
| **14.2 Euler Paths and Euler Circuits (38)**  Understand the definitions of Euler path and Euler circuit  Use Euler’s Theorem  Use Fleury’s Algorithm to find possible Euler paths and Euler circuits  Solve problems using Euler’s Theorem and Fleury’s Algorithm  Understand concepts involving Euler paths and Euler circuits |
| **14.3 Hamilton Paths and Hamilton Circuits (33)**  Understand the definitions of Hamilton paths and Hamilton circuits  Find the number of Hamilton circuits in a complete graph  Understand and use weighted graphs  Use the Brute Force Method to solve traveling salesperson problems  Use the Nearest Neighbor Method to approximate solutions to traveling salesperson problems  Understand concepts involving Hamilton paths and Hamilton circuits |
| **14.4 Trees (31)**  Understand the definition and properties of a tree  Find a spanning tree for a connected graph  Find the minimum spanning tree for a weighted graph  Solve applications using properties of a tree |