LSU Dual Enrollment Program for Math

 COURSE PROFILE

Content Revised 7-5-2022

**COURSE NAME: Math 1029 Contemporary Math**

**HIGH SCHOOL COURSE CODE: 160347**

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

**PRIMARY ONLINE CONTENT SOURCE: *Thinking Mathematically, 7e,* *MyMathLab*,**

**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 systemGraph equations in the rectangular coordinate system |
| **7.2 Graphing Linear Equations (17)**Use intercepts to graph a linear equationGraph horizontal linesGraph vertical lines |
| **7.3 Solving Systems of Linear Equations (34)**Determine whether an ordered pair is a solution of a linear systemSolve linear systems by graphingSolve linear systems by the substitution methodSolve linear systems by the addition method |
| **7.4 Graphing Systems of Linear Inequalities (24)**Graph a linear inequality in two variablesGraph a system of linear inequalities |
| **7.5 Linear Programming (19)**Use graphs to determine the maximum and minimum of an objective functionUse linear programming to solve application problems |
| **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 permutationsEvaluate factorial expressionsUse the permutations formulaFind the number of permutations of duplicate itemsUnderstand concepts involving permutations |
| **11.3 Combinations (27)**Distinguish between permutation and combination problemsUse the combinations or permutations formula to evaluate expressionsSolve problems involving combinationsUse combinations, permutations, or the Fundamental Counting Principle to solve problemsUnderstand concepts involving combinations |
| **11.4 Fundamentals of Probability (46)**Compute theoretical probabilityCompute empirical probabilityUnderstand concepts involving fundamentals of probability |
| **11.5 Probability with the Fundamental Counting Principle, Permutations and Combinations (24)**Compute probabilities with permutationsCompute probabilities with combinationsUnderstand concepts involving probability |
| **11.6 Events Involving Not and Or; Odds (50)**Find the probability that an event will not occurFind the probability of one event or a second event occurringSolve conceptual problems involving probabilityUnderstand and use odds |
| **11.7 Events Involving And; Conditional Probability (44)**Find the probability of one event and a second event occurringCompute conditional probabilitiesUnderstand concepts involving conditional probability |
| **11.8 Expected Value (12)**Compute the expected valueUse expected value to solve applied problemsUse 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 (39)**Select an appropriate sampling techniqueUnderstand and interpret dataOrganize and present dataIdentify deceptions in visual displays of dataUnderstand concepts involving sampling, frequency distributions, and graphs |
| **12.2 Measures of Central Tendency (53)**Determine the mean for a data setDetermine the median for a data setDetermine the mode for a data setDetermine the midrange for a data setInterpret graphs, tables, and stem-and-leaf plots to be able to find the mean, median, mode and midrangeUnderstand concepts involving measures of central tendency |
| **12.3 Measures of Dispersion (37)**Determine the range for a data setFind the mean, deviation from the mean, and sum of deviationsDetermine the standard deviation for a data setUnderstand concepts involving mean, range, and standard deviation |
| **12.4 The Normal Distribution (49)**Find scores at a specified standard deviation from the meanUse the 68–95–99.7 RuleConvert a data item to a *z*-scoreSolve applied problems involving normal distributionsUnderstand concepts involving the normal distribution |
| **12.5 Percentiles and z-Scores (19)**Understand percentiles and quartilesSolve applied problems involving normal distribution |
| **CHAPTER 14: Graph Theory** |
| **14.1 Graphs, Paths, and Circuits (43)**Understand relationships in a graphModel relationships using graphsUnderstand and use the vocabulary of graph theoryUnderstand concepts involving graph theory |
| **14.2 Euler Paths and Euler Circuits (38)**Understand the definitions of Euler path and Euler circuitUse Euler’s TheoremUse Fleury’s Algorithm to find possible Euler paths and Euler circuitsSolve problems using Euler’s Theorem and Fleury’s AlgorithmUnderstand concepts involving Euler paths and Euler circuits |
| **14.3 Hamilton Paths and Hamilton Circuits (37)**Understand the definitions of Hamilton paths and Hamilton circuitsFind the number of Hamilton circuits in a complete graphUnderstand and use weighted graphsUse the Brute Force Method to solve traveling salesperson problemsUse the Nearest Neighbor Method to approximate solutions to traveling salesperson problemsUnderstand concepts involving Hamilton paths and Hamilton circuits |
| **14.4 Trees (31)**Understand the definition and properties of a treeFind a spanning tree for a connected graphFind the minimum spanning tree for a weighted graphSolve applications using properties of a tree |