Danville Area School District
Course Overview and Scope and Sequence

Course Title: Probability and Statistics
Content Area: Mathematics
Grade Level: 12th Grade
Date Developed: June 2023

COURSE OVERVIEW: This course is a senior course that stresses fundamental statistics without the academic rigor of the Advanced Placement Statistics course. Topics will include: the gathering and analysis of data, description and display of a data set, uses for statistics, an introduction to probability theory, probability distributions, confidence intervals, and hypothesis testing.

ANCHOR STANDARDS:

CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.
CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables.
CC.2.4.HS.B.3 Analyze linear models to make interpretations based on the data.
CC.2.4.HS.B.4 Recognize and evaluate random processes underlying statistical experiments.
CC.2.4.HS.B.5 Make inferences and justify conclusions based on sample surveys, experiments, and observational studies.
CC.2.4.HS.B.6 Use the concepts of independence and conditional probability to interpret data.
CC.2.4.HS.B.7 Apply the rules of probability to compute probabilities of compound events in a uniform probability model.
1.A Identify the question to be answered or problem to be solved (not assessed).
1.B Identify key and relevant information to answer a question or solve a problem.
1.C Describe an appropriate method for gathering and representing data.
1.D Identify an appropriate inference method for confidence intervals.
1.E Identify an appropriate inference method for significance tests.
1.F Identify null and alternative hypotheses.
2.A Describe data presented numerically or graphically.
2.B Construct numerical or graphical representations of distributions.

2.C Calculate summary statistics, relative positions of points within a distribution, correlation, and predicted response.
2.D Compare distributions or relative positions of points within a distribution.
3.A Determine relative frequencies, proportions, or probabilities using simulation or calculations.
3.B Determine parameters for probability distributions.
3.C Describe probability distributions.
3.D Construct a confidence interval, provided conditions for inference are met.
3.E Calculate a test statistic and find a p-value, provided conditions for inference are met.
4.A Make an appropriate claim or draw an appropriate conclusion.
4.B Interpret statistical calculations and findings to assign meaning or assess a claim.
4.C Verify that inference procedures apply in a given situation.
4.D Justify a claim based on a confidence interval.
4.E Justify a claim using a decision based on significance tests.

KEY COURSE TEXT AND MATERIALS:

KEY ASSESSMENTS:
Diagnostic:
Formative:
Summative:

SCOPE AND SEQUENCE					
Unit	PRIORITY STANDARDS	SUPPORTING STANDARDS	ASSESSMENT	MATERIALS	TIMEFRAME
Unit 1: Introduction to Statistics	1.A, 1.B, 1.C	CC.2.4.HS.B.1, CC.2.4.HS.B.2, CC.2.4.HS.B.4, CC.2.4.HS.B.5	Section 1.1 True/False Quiz Section 1.2 True/False Quiz	Chapter 1 Guided Notes	12 Days

			Section 1.3 True/False Quiz Chapter 1 Test Chapter 1 Case Study	Chapter 1 PowerPoint Chapter 1 Case Study Chapter 1 Quizzes Chapter 1 Test Textbook Whiteboard Wacom Tablet Chapter 1 Worksheets	
Unit 2: Descriptive Statistics	2.A, 2.B, 2.C, 2.D, 3.A	CC.2.4.HS.B.3	Section 2.1 True/False Quiz Section 2.2 True/False Quiz Section 2.3 True/False Quiz Section 2.4 True/False Quiz Section 2.5 True/False Quiz Section 2.1 Frequency Distribution Quiz Section 2.3 Measures of Central Tendency Quiz	Chapter 2 Guided Notes Chapter 2 PowerPoint Chapter 2 Case Study Chapter 2 Quizzes Chapter 2 Test Textbook Whiteboard Wacom Tablet Chapter 2 Worksheets	

			Section 2.4 Measures of Variation Quiz Chapter 2 Test Chapter 2 Case Study		
Unit 3: Probability	3.A, 3.B	CC.2.4.HS.B.6, CC.2.4.HS.B.7	3.1 True/False Quiz 3.2 True/False Quiz 3.3 True/False Quiz 3.4 True/False Quiz 3.1 Concepts of Probability Quiz 3.2-3.3 Addition and Multiplication Rule Quiz Chapter 3 Exam Chapter 3 Case Study	Chapter 3 Guided Notes Chapter 3 PowerPoint Chapter 3 Case Study Chapter 3 Quizzes Chapter 3 Test Textbook Whiteboard Wacom Tablet Chapter 3 Worksheets	
Unit 4: Discrete Probability Distributions	2.A, 2.C, 2.D, 3.B, 3.C		4.1 True/False Quiz 4.2 True/False Quiz 4.3 True/False Quiz 4.1 Probability Distributions Quiz 4.2 Binomial Distribution Quiz 4.3 Geometric Distribution Quiz	Chapter 4 Guided Notes Chapter 4 PowerPoint Chapter 4 Case Study Chapter 4 Quizzes Chapter 4 Test Textbook Whiteboard	

			4.3 Poisson Distribution Quiz Chapter 4 Exam Chapter 4 Case Study	Wacom Tablet Chapter 4 Worksheets	
Unit 5: Normal Probability Distribution	3.B, 3.C, 3.E		5.1 True/False 5.2 True/False 5.3 True/False 5.4 True/False 5.5 True/False 5.1 Quiz 5.2-5.3 Quiz 5.4 Quiz Chapter 5 Exam Chapter 5 Case Study	Chapter 5 Guided Notes Chapter 5 PowerPoint Chapter 5 Case Study Chapter 5 Quizzes Chapter 5 Test Textbook Whiteboard Wacom Tablet Chapter 5 Worksheets	
Unit 6: Confidence Intervals	1.D, 1.F, 3.D, 3.E, 4.A, 4.B, 4.D		6.1 True/False 6.2 True/False 6.3 True/False 6.4 True/False 6.1 Quiz 6.2 Quiz 6.3 Quiz Chapter 6 Exam Chapter 6 Case Study	Chapter 6 Guided Notes Chapter 6 PowerPoint Chapter 6 Case Study Chapter 6 Quizzes Chapter 6 Test Textbook Whiteboard Wacom Tablet	

				Chapter 6 Worksheets	
Unit 7: Hypothesis Testing with One Sample	1.F, 3.E, 4.B, 4.C, 4.E		7.1 True/False Quiz 7.2 True/False Quiz 7.3 True/False Quiz 7.4 True/False Quiz	Chapter 7 Guided Notes Chapter 7 PowerPoint Chapter 7 Case Study Chapter 7 Quizzes Chapter 7 Test Textbook Whiteboard Wacom Tablet Chapter 7 Worksheets	
Unit 9: Correlation and Regression	2.C	CC.2.4.HS.B.3	9.1 True/False 9.2 True/False 9.1-9.2 Quiz	Chapter 9 Guided Notes Chapter 9 PowerPoint Chapter 9 Quizzes Chapter 9 Test Textbook Whiteboard Wacom Tablet Chapter 9 Worksheets	