COURSE DESCRIPTION

Course Title: Statistics Virtual
Course Number: 10281
Course Prerequisites: None

Course Description: Students enrolled in Probability and Statistics build a strong foundation in calculating probabilities and evaluating statistics. Students enrolled in the course explore representation of statistical data, working with scatter plots, analyzing statistical data using properties and theorems, and more.

Suggested Grade Level: Grades 9-12
Length of Course: One Semester
Units of Credit: .5
PDE Certification and Staffing Policies and Guidelines (CSPG) Required Teacher Certifications:
CSPG 50
To find the CSPG information, go to CSPG
Certification verified by the WCSD Human Resources Department: ☒Yes   ☐No

WCSD STUDENT DATA SYSTEM INFORMATION

Course Level: Academic
Mark Types: Check all that apply.
    ☒F – Final Average   ☒MP – Marking Period   ☒EXM – Final Exam

GPA Type: ☐ GPAEL-GPA Elementary ☐ GPAML-GPA for Middle Level ☒ NHS-National Honor Society

    ☒ UGPA-Non-Weighted Grade Point Average ☒ GPA-Weighted Grade Point Average

State Course Code: 02205
To find the State Course Code, go to State Course Code, download the Excel file for *SCED*, click on SCED 6.0 tab, and choose the correct code that corresponds with the course.

TEXTBOOKS AND SUPPLEMENTAL MATERIALS

Board Approved Textbooks, Software, and Materials:
  Title: Statistics
  Publisher: Schools PLP
  ISBN #:   N/A
  Copyright Date: N/A
  WCSD Board Approval Date: N/A

Supplemental Materials: Word processing software, Calculator

Curriculum Document

WCSD Board Approval:
  Date Finalized: 1/20/2022
  Date Approved: 2/7/2022
  Implementation Year: 2021-2022

SPECIAL EDUCATION, 504, and GIFTED REQUIREMENTS

The teacher shall make appropriate modifications to instruction and assessment based on a student's Individual Education Plan (IEP), Chapter 15 Section 504 Plan (504), and/or Gifted Individual Education Plan (GIEP).

Unit 1: Statistics Data Representation
What will you learn in this unit?
- Quantitative Variables
- Real Number Line
- Data and Frequency Tables
- Dot Plots, Histograms, and Box Plots
- Mean, Median, Mode
- Standard Deviation Interquartile Range
- Data Distribution
- Outliers – Represent, Calculate, Identify
- Population Standard Deviation and Percentages
- Normal Distributions
- Single Variable
- Two Way Tables
- Conditional, Marginal, and Joint Frequencies

Unit 2: Scatter Plots

What will you learn in this unit?
- Scatter Plots
- Correlation within Scatter Plots
- Regression – Regression Lines and fit, residuals, models, residual plots
- Equations – Linear functions, prediction equations, slope, and intercept
- Define and Interpret Correlation
- Coefficient of Determination
- Correlation versus Causation

Unit 3: Analyzing Data

What will you learn in this unit?
- Population and Samples
- Random Sampling, Simulations, and Statistical Investigations
- Sample Mean
- Standard Deviation
- Proportions
- Central Limit Theorem
- Z-scores and t-scores
- Margin of Error
- Confidence Intervals
- Problems in Research

Unit 4: Probability

What will you learn in this unit?
- Events, Subsets, and Unions
- Intersection
- Complements
- Independent Events and Joint Probabilities
- Calculations and Evaluations
- Two Way Frequency Tables
- Equation Setup
- Proofs
- Using Calculations and Words
- Conditional Translation
- Confirming Independence and Conditional Probability

Unit 5: Operations with Probability

What will you learn in this unit?
- Translating Venn Diagrams
- Probability Notation and Application
- Multiplication Rule
- Describing Conditional Probability
- Fundamental Counting Principle
- Permutations and Combinations

Unit 6: Probability Outcomes

What will you learn in this unit?
- Random Variables
- Probability Distribution
- Theoretical Probability
- Expected Value
- Empirical Probability
- Expected Payoff
- Develop Probability Distributions
- Calculating Expected Value
- Evaluate and compare payoffs in real-world situations
- Low, Fair, and High Outcomes
- Fair Events
- Evaluating Games of Chance

ASSESSMENTS

PDE Academic Standards, Assessment Anchors, and Eligible Content: The teacher must be knowledgeable of the PDE Academic Standards, Assessment Anchors, and Eligible Content and incorporate them regularly into planned instruction.

Formative Assessments: The teacher will utilize a variety of assessment methods to conduct in-process evaluations of student learning.

   Effective formative assessments for this course include: quizzes and discussions

Summative Assessments: The teacher will utilize a variety of assessment methods to evaluate student learning at the end of an instructional task, lesson, and/or unit.

   Effective summative assessments for this course include: projects, essays, tests, and exams