



**KENOSHA UNIFIED SCHOOL DISTRICT NO. 1  
CURRICULUM AND INSTRUCTIONAL SERVICES**

**HIGH SCHOOL COURSE SYLLABUS**

**MATHEMATICS DEPARTMENT**

**Advanced Placement Statistics (343031 & 343032)**

**Number of Credits: 1**

**Prerequisites**

Algebra 2 (331010 or 332020)

This course can be taken concurrently with math analysis (351010), precalculus—honors (352020), or advanced placement calculus AB (353030).

**Course Description**

Advanced Placement (AP) Statistics acquaints students with the major concepts and tools for collecting, analyzing, and drawing conclusions from data. Students are exposed to four broad conceptual themes: 1) exploring data, 2) sampling and experimentation, 3) anticipating patterns, and 4) statistical inference. Students work on projects involving the hands-on gathering and analysis of real-world data. Ideas and computations presented in this course have immediate links and connections with actual events. The use of computers and graphing calculators allows students to focus deeply on the concepts involved in statistics. Students are strongly encouraged to successfully complete this class and take the AP examination to potentially earn college credit.

**Relevance**

AP Statistics is effective preparation for students interested in the fields of social sciences, health sciences, business, engineering, and mathematics. This course will allow students to build interdisciplinary connections with other subjects and with their world outside school. AP statistics will give students opportunity to connect to college by providing them the challenges and reward of a rigorous academic program.

**Course Standards**

- |                           |                |                               |
|---------------------------|----------------|-------------------------------|
| A. Mathematical processes | C. Geometry    | E. Statistics and probability |
| B. Number relationships   | D. Measurement | F. Algebraic relationships    |

Most essential benchmarks may be viewed at: [www.kusd.edu](http://www.kusd.edu).

**Lifelong Learning Standards**

- |                        |                          |                        |
|------------------------|--------------------------|------------------------|
| • Knowledgeable person | • Effective communicator | • Quality producer     |
| • Complex thinker      | • Self-directed learner  | • Contributing citizen |

Lifelong learning benchmarks may be viewed at: [www.kusd.edu](http://www.kusd.edu).

**Course Outline**  
**FIRST SEMESTER**

Chapter 1 – The Role of Statistics and The Data Analysis Process

Chapter 2 –Collecting Data Sensibly

(11 days)

- Reasons to study Statistics
- Variability
- Data Analysis Process
- Bar Charts
- Dotplots
- Estimating size
- Sampling
- Observation and Experimentation
- Communicating and interpreting results

Chapter 3 – Graphical Methods for Describing Data

(6 days)

- Bar Charts and Pie Charts
- Stem and Leaf Displays
- Frequency Dist. And Histograms
- Displaying Bivariate Numerical Data

Chapter 4 – Numerical Models for Describing Data

(6 days)

- Describing Center of a data set
- Describing Variability of a data set
- Summarizing a Data Set: Boxplots
- Interpreting center and variability: Chebyshev's Rule, Empirical Rule,  $z$  scores

Chapter 5 – Summarizing Bivariate Data

(6 days)

- Correlation
- Linear Regression
- Assessing the Fit of a Line
- Coefficient of determination
- Nonlinear Relationships and Transformations

## Chapter 6 - Probability

(9 days)

- Chance Experiments and Events
- Definition of Probability
- Basic Properties of Probability
- Conditional Probability
- Independence
- General Probability Rules
- Estimating Probabilities Empirically/Using Simulation

First semester exam (2 review days)

## **SECOND SEMESTER**

### Chapter 7 – Random Variables and Probability Distributions

(9 days)

- Random Variables
- Probability Distributions for Discrete Random Variables
- Probability Distributions for Continuous Random Variables
- Mean and Standard Deviation of a Random Variable
- Binomial and Geometric Distributions
- Normal Distributions
- Checking for Normality and Normalizing Transformations

### Chapter 8 – Sampling Variability and Sampling Distributions

(6 days)

- Statistics and Sampling Variability
- The Sampling Distribution of a Sample Mean
- The Sampling Distribution of a Sample Proportion

### Chapter 9 – Estimation Using a Single Sample

(5 days)

- Point Estimation
- Large-Sample Confidence Interval for a Population Proportion
- Confidence Interval for a Population Mean

### Chapter 10 – Hypothesis Testing Using a Single Sample

(8 days)

- Hypotheses and Test Procedures
- Errors in Hypothesis Testing
- Large-Sample Hypothesis Tests for a Population Proportion
- Hypothesis Tests for a Population Mean
- Power and Probability of Type II Error

Chapter 11 – Comparing Two Populations or Treatments  
(6 days)

- Inferences Concerning the Difference Between Means Using Independent Samples
- Inferences Concerning the Difference Between Means Using Paired Samples
- Large-Sample Inferences Concerning a Difference Between Two Proportions

Chapter 12 – The Analysis of Categorical Data and Goodness-of-Fit Tests  
(4 days)

- Chi-Square Tests for Univariate Categorical Data
- Tests for Homogeneity and Independence in a Two-Way Table

Chapter 13 – Simple Linear Regression and Correlation: Inferential Methods  
(2 days)

Second semester final exam (2 review days)

**Board-Approved Instructional Materials**

- Peck, Olsen, and Devore. *Introduction to Statistics and Data Analysis, Third Edition*. 2008, Belmont, CA: Brooks/Cole. (ISBN 0-495-11873-7)

**Methods of Assessment**

Final exams should be cumulative in nature, emphasizing the most essential benchmarks for the course. Results of the final exam represent 20 percent of the final grade, but this single measure *may not* drop a student’s grade by more than one letter grade. In courses that rely heavily on a major project, performance exhibition, etc., the project should be divided into stages or components and each of those should be graded separately, providing students with frequent and specific feedback.

**Board-Approved Grading Scale**

Excerpts taken from School Board Rule 6452

GRADING SCALE

A+=98-100 percent	B+=86-89 percent	C+=76-79 percent	D+=66-69 percent
A=93-97 percent	B=83-85 percent	C=73-75 percent	D=63-65 percent
A-=90-92 percent	B-=80-82 percent	C-=70-72 percent	D-=60-62 percent
			F=0-59 percent

MAKE-UP WORK

Students submitting work up to ten school days late without prior approval may receive up to two grades lower on the work than they would have received if the work had been submitted on time (i.e., B+ lowered to A D+). Student work submitted after ten school days without prior approval shall not be accepted for credit and shall be recorded with a score of zero.

Upon returning to school after an absence, a student has the responsibility within the number of days equal to the length of the absence or suspension to meet with the teacher to develop a plan for making up missed work, quizzes, and examinations. A truant student has the responsibility on the first day he or she returns to the course/class to meet with the teacher to develop a plan for making up missed work, quizzes, and examinations. Lower grades may not be given for late work due to excused absences, suspension, or truancy unless the work is submitted later than agreed upon deadlines.

**See Rule 6452 in its entirety at: [www.kusd.edu](http://www.kusd.edu).**