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Course Title: AP Statistics

2020-2021

Prerequisites:

Prerequisites for the student include two years of algebra and a year of geometry. Attitude prerequisites include a willingness to work both in and out of class, a willingness to collaborate with classmates to foster mutual understanding, and a sincere intent to place out of the first semester of college statistics rather than repeat it.

Course Description:

AP Statistics is the high school equivalent of a one semester, introductory college statistics course. In this course, students develop strategies for collecting, organizing, analyzing, and drawing conclusions from data. Students design, administer, and record results from surveys and experiments. Probability and simulations aid students in constructing models for chance behavior. Sampling distributions provide the logical structure for confidence intervals and significance tests. Students use a TI-83/84 graphing calculator and online applets to investigate statistical concepts. Use of statistical software is demonstrated and examples of output from statistical software are provided. To develop effective statistical communication skills, students are required to prepare frequent written and oral analyses of real data.

Goals:

In AP Statistics, students are expected to learn:

- *Skills*
 - To produce convincing oral and written statistical arguments, using appropriate terminology, in a variety of applied settings.
 - When and how to use technology to aid them in solving statistical problems
- *Knowledge*
 - Essential techniques for producing data (surveys, experiments, observational studies), analyzing data (graphical & numerical summaries), modeling data (probability, random variables, sampling distributions), and drawing conclusions from data (inference procedures - confidence intervals and significance tests)
- *Habits of mind*
 - To become critical consumers of published statistical results by heightening their awareness of ways in which statistics can be improperly used to mislead, confuse, or distort the truth.

Required Text:

The Practice of Statistics (6th edition), by Starnes and Tabor, BFW Publishers, 2018, Sapling Learning (online textbook)
hs.saplinglearning.com

Google Classroom Code: tvn7ryk

Supplies:

- notebook or filler paper
- binder to hold 3 hole punch notes
- graphing calculator (required), please see me if you need a calculator

Technology Requirement:

A Texas Instrument (TI-84 Plus CE) is required of all students. The calculator will facilitate conducting explorations, graphing functions, solving equations numerically, analyzing and interpreting results, and justifying and explaining results of graphs and equations. **Use of the calculator by students to solve problems includes, but is not limited to, standard statistical univariate and bivariate summaries, through linear regression, common univariate and bivariate displays such as histograms, boxplots, and scatterplots.** The calculator will not be allowed on ALL assessments.

Grading Policy:

- Summative (Tests, Projects) 40%
- Interim Assessments (Quizzes) 35%
- Course Assignments (POWs, AP Problem Sets, Group Problems, Online Assignments) 15%
- Homework 10%
- Questions on assessments may be taken from old AP exams and materials. The AP level questions are designed to be challenging for a knowledgeable student. There will be a combination of multiple choice and free response format. Multiple choice questions are either correct or incorrect, no partial credit will be given. The time limit for assessments will be strictly adhered to.
- Exams will be part of semester averages; all students are required to take a midterm and final exam

Sample **AP Problem sets** will be assigned and practiced throughout the coverage of the course content. These sample AP problems will be in both multiple choice and free-response formats.

The **AP Problem sets** provide students with the opportunity to:

- Review the course material for the exam.
- Discover weaknesses in understanding concepts or in communicating the understanding of topics.
- Practice proper notation expected when taking the exam.

The AP Statistics Exam:

Visit <http://apcentral.collegeboard.com> to learn about the calculator usage policy and showing work in free-response sections, as well as to practice sample problems.

Section I. Multiple Choice 40 problems, 90 min.	Part A	40 problems, 90 min. Calculator allowed. (about 2 min/problem) 50% weighted
Section II. Free-Response 6 problems, 90 min.	Part A	5 problems, 65 min. Calculator allowed. (13 min/problem) 37.5% weighted
	Part B	1 problem, 25 minutes Calculator allowed. 12.5% weighted

Homework & Makeup Policy:

- Homework will be assigned on a regular basis. All homework assignments are due the following class meeting unless otherwise stated (NO EXCEPTIONS!). Homework is checked at the beginning of the class and will not be accepted during, end, or after class unless it was an absence.
- When students are absent, it is the responsibility of the student to get all missed material and assignments. Do not interrupt the class for missed work.
- If you are absent the day before an assessment and knew about the assessment and return the following day, you are still responsible for taking the assessment at that time (NO EXCEPTIONS!)
- Due to the fast pace and depth of the material in the course, it is expected that you are in class every day unless you are seriously ill.

Course Outline

Prerequisites

Successful completion of the following yearlong courses:

1. Algebra 1
2. Geometry
3. Algebra 2

Curricular Requirements

Big Idea 1: Exploring One-Variable Data

Chapter 1- Data Analysis *summer assignment*

Introduction to Statistics
Analyzing Categorical Data
Displaying Quantitative Data with Graphs
Describing Quantitative Data with Numbers

Big Idea 2: Exploring Two-Variable Data

Chapter 2- Modeling Distributions of Data

Describing Location in a Distribution
Density Curves and Normal Distributions

Chapter 3 - Describing Relationships

Scatterplots and Correlation
Least-Squares Regression

Big Idea 3: Collecting Data

Chapter 4 - Collecting Data

Sampling and Surveys
Experiments
Using Studies Wisely

Big Idea 4: Probability, Random Variables, and Probability Distributions

Chapter 5 - Probability: What are the chances?

Randomness, Probability, and Simulation
Probability Rules
Conditional Probability and Independence

Chapter 6 - Random Variables

Discrete and Continuous Random Variables
Transforming and Combining Random Variables
Binomial and Geometric Random Variables

Big Idea 5: Sampling Distributions

Chapter 7- Sampling Distributions

What is a Sampling Distribution

Sample Proportions

Sample Means

Big Idea 6: Inference for Categorical/Quantitative Data: Proportions/Means

Chapter 8 - Estimating with Confidence

Confidence Intervals: The Basics

Estimating a Population Proportion

Estimating a Population Mean

Chapter 9 - Testing a Claim

Significance Tests: The Basics

Tests About a Population Proportion

Tests About a Population Mean

Chapter 10 - Comparing Two Populations or Groups

Comparing Two Proportions

Comparing Two Means

Comparing Two Means: Paired Data

Big Idea 7: Inference for Categorical Data: Chi-Square

Chapter 11 - Inference for Distributions of Categorical Data

Chi-Square Test for Goodness of Fit

Inference for Two-Way Tables

Big Idea 8: Inference for Quantitative Data: Slopes

Chapter 12 - More About Regression

Inference for Linear Regression

Transforming to Achieve Linearity

AP Statistics Summer Assignments 2020

Getting Started with Google Classroom and Sapling Learning	Check school email with username and password for Sapling Learning by mid-June	Google Classroom Code: tvm7ryk
Chapter 1 Section 1.0 - Data Analysis Introduction	Read Additional practice if needed, problems at the end of section 1.0	Do Sapling Learning Assignment***
Chapter 1 Section 1.1 - Analyzing Categorical Data	Read Additional practice if needed, problems at the end of section 1.1	Do Sapling Learning Assignment***
Chapter 1 Section 1.2 - Displaying Quantitative Data with Graphs	Read Additional practice if needed, problems at the end of section 1.2	Do Sapling Learning Assignment***
Chapter 1.3 - Describing Quantitative Data with Numbers	Read Additional practice if needed, problems at the end of section 1.3	Do Sapling Learning Assignment***
Chapter 1 - Wrap-Up (Review)	Chapter 1 Review on Google Classroom	Due 9/3/20 (first day of class)
Chapter 1 TEST		2nd day of class (9/4/20)

***Due Dates will be posted on Google Classroom (as well as listed next to assignment on Sapling Learning) after the email is sent with usernames and passwords....you will have 2-3 weeks to complete each assignment

RESOURCES:

- Each example in the book has videos on Sapling Learning if you need extra help
- Khan Academy also has a great AP Statistics section with videos

- Keep a notebook with your notes as you read each section.
- Pace yourself accordingly. Practice the skills and concepts required or you will be at a disadvantage at the beginning of the year.
- This class requires a good amount outside of the class in order to do well and also even more time to do well on the AP exam. You will need to dedicate an extra amount of outside studying in order to do well such as practicing AP practice sets.
- Complete and sign the classroom expectation sheet attached with **the school email** that you will use frequently for teacher notes and notifications through Google Drive. It is the student's responsibility to manage their school email through the summer and throughout the year.
- If you lose this syllabus, there is a copy on the school department website, <http://npsd.k12.ri.us/nphs/> under "Academics". Good Luck and have a great summer!

Advanced Placement Statistics STUDENT CONTRACT

Please fill out the following information accurately and clearly

Carefully read each of the following contract terms. INITIAL each item in the space provided.
When finished, both YOU and your PARENT must sign and date the contract.

_____ I have read the ENTIRE course syllabus and understand that every part of the syllabus pertains to me; I know that I will be held directly and immediately accountable for my actions should I choose to violate or ignore any of those provisions.

_____ I understand that this is a college course with college-level expectations, and I understand that my work will be held to a college-level standard. I understand the class will be rigorous and move quickly through the required curriculum as prescribed by the College Board. I will take AP style assessments to help prepare me for the AP exam.

_____ I understand that the teacher is available to help me (by appointment) during Coaching.

_____ One objective of this course is to prepare me for the AP Statistics test.

_____ I will read the text as assigned, I will take notes on the chapters, and I will bring the book to class when asked to do so by the teacher.

_____ I will not cut/or intentionally be absent from this class to avoid taking tests.

_____ I will make up or turn in missed tests/work by email &/or the next day even if I don't have this class, and I understand the penalties for work marked late.

_____ I will complete the Summer Assignment by the assigned deadlines.

_____ I will behave appropriately in class, treating the teacher and my fellow students with respect. I understand that failure to do so will result in disciplinary action per the NPHS Student Handbook.

_____ I understand the standards for academic and participation grades, especially those that pertain to cheating/plagiarism and absences; I understand the consequences for cheating/plagiarism, and for failure to make up work or tests due to absences.

_____ I understand that by signing off on this contract, I **cannot** drop this course after the **last day of school on June 15, 2020.**

By signing this contract, you verify that you have read and understand the student contract, course syllabus, and summer assignments and deadlines:

STUDENT:

Printed Name: _____ Signature _____

Date: _____

PARENT:

Printed Name: _____ Signature _____

Date: _____