AP Statistics Syllabus
Mrs. Smith
2020-2021

Primary Text
Josh Tabor and Darren S. Starnes. *The Practice of Statistics*, sixth edition. New York, NY: W.H. Freeman and Company, 2018.

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Course Description
This course is designed to be the equivalent of a one semester college level statistics course. This course follows the curriculum set by College Board and will prepare students for the AP exam. Throughout the course, the students will become competent in four main areas of statistics: analyze data using graphical and numerical techniques, plan and conduct a study by valid methods, probability phenomena will be explored, and statistical inference will be examined using models that are appropriate for the given situations. Students will employ the use of a TI-83/84 graphing calculator, as well as statistical software and other web based applets to inquire more deeply into statistical concepts. TI is not a required brand for buying a graphing calculator; however, the TI will be utilized in teaching this course. Students will be required to complete frequent writing assignments to display their competency in analysis of data as well as to prepare them for the AP examination.

Course Materials
- Text Book (Provided for every AP Stats Student)
- Graphing Calculator (TI-84/84plus or NSpire)
- Either a three ring binder and loose leaf paper or Spiral Bound College Ruled Notebook and Pocket Folder
- Pencil
- Positive Attitude
  If a three ring binder is used I suggest separating the sections of your binder into the following sections: Notes, Homework/Class Work, Quizzes, Tests, Exam Prep (These are not required, but a suggestion. You may organize yourself in the most effective way for you)

Academic Dishonesty
Cheating of any kind will NOT be tolerated in this course. All students involved in the act of cheating will receive zeros on the task and disciplinary action will be taken. Cheating includes but is not limited to the copying others work, looking at another students quiz or test, using any materials not allowed on a quiz or test, sharing

calculators during a quiz or test, and/or sharing exams or quizzes with students who have yet to complete the exam/quiz.

Assessments and Grading Scale
Exams, quizzes, class participation, homework, class work, group assignments, projects, and writing will be used to assess student understanding of concepts and course material. This course will follow the schools' grading scale and the distribution of grades set forth by the math departments. Students Tests and Quizzes will count as 60% of their course grade, while homework and everything else will count as 40% of the students grade. The grading scale is as follows:

100-85**A**   84-75 **B**   74-65 **C**   64-0 **F**

Course Tests, Quizzes, and Assignments
Tests: Tests will be given on a regular basis. Tests will be in an AP format, time restrictions will be in place, and will generally count for 100 points. Some take home tests will be given with the expectation that students complete these assessments individually with assistance from only notes and the textbook.
Quizzes: Quizzes will be given on a regular basis. Students will not be allowed the opportunity to correct quizzes.
Assignments/Homework: Assignments and homework will be given on a regular basis for students to gain mastery of course content. Each assignment will have varying point values. We will review problems assignment daily.
Projects: To further student understanding of content, students will required to complete projects throughout the course. Students will be provided with more information at those times.
Exam Prep and Final Exam: As a class we will utilize released and practice exam questions to prepare each student for the AP exam. A final exam will be given to those not taking the AP exam. The final exam will count as 20% of your course grade mandated by school policy. **You are expected to take the AP exam!**

AP EXAM
The AP statistics exam is scheduled for the afternoon session of Thursday May 14th which will begin at 12. You are expected to take the AP exam! You have an excellent opportunity to earn college credit by passing the exam with a 3 or higher.

Make-Up/Absent Work
If you are absent, it is your responsibility to obtain any and all missed assignments including notes, homework assignments, etc. It would be a good idea to have a friend you can text or call so as to not get behind. According to school policy, you have three days to make-up any missed work. This applies in my classroom as well. However, you are highly encouraged to complete missing assignments as quickly as possible so as to not fall farther behind. Students missing more than one day

consecutively must turn in at least one missing assignment daily after their return until caught up with the rest of the course. If you are absent any work due the day you were absent MUST be handed in on the day of your return. Exams will be announced in advanced, if you are present on the day of an exam you MUST take the exam on the day it is given. My website will be up to date please reference it if absent, and feel free to contact me about any absences or difficulties.

Late Work
Late work will **NOT** be accepted in this course.

Course Outline (Organized based on the Primary Textbook)

Overview: What Is Statistics?
- Data Production: Where do you get good data?
- Data Analysis: Making sense of data
- Data Plots/Data Displays
- The Consequences of Variation
- Activity: Hiring Discrimination – it just won't fly!

Chapter 1: Data Analysis
- Intro: The Science and Art of Data
- Case Study: Nielsen ratings
- Analyzing Categorical Data
- Activity 1A: How fast is your heart beating?
- Activity 1B: The one-variable statistical calculator
- Displaying Quantitative Data with Graphs
- Activity 1C: The mean and median applet
- Displaying Quantitative Data with Numbers
- Chapter One FRAPPY
- Chapter One AP Practice Test

Chapter 2: Modeling Distributions of Data
- Case Study: The New SAT
- Describing Location in a Distribution
- Density Curves and Normal distributions
- Activity 2C: The normal curve applet
- Activity: Team Challenge: Vending Machine Problem
- Chapter Two FRAPPY!
- Chapter Two AP Practice Test

Chapter 3: Describing Relationships
- Case Study: Are baseballs "juiced"?
- Activity 3A: CSI stats: The case of the missing cookies
- Activity: Candy Grab
- Scatter plots and Correlation
- Activity: Guess the Correlation

- Activity 3B: Correlation and Regression applet
- Least-Squares Regression
- Activity 3C: Investigating properties of the least-squares regression line
- Case Closed! Are baseballs "juiced"?
- Chapter Three FRAPPY!
- Chapter Three AP Practice Test

Chapter 4: Collecting Data
- Case Study: It's a matter of life and death
- Activity 4: Who Wrote the Federalist Papers?
- Sampling and Surveys
- Activity 4B: Sampling Sunflowers
- Experiments
- Using Studies Wisely
- Activity 4C: Exploring Sampling Variability
- Activity 4D: Analyzing the Caffeine Experiment
- Case Closed! It's a matter of life and death
- Chapter Four FRAPPY!
- Chapter Four AP Practice Test

Producing Data (if Time Allows)
- Activity 5: Class survey
- Designing Samples
- Activity 5B: The Simple Random Sample applet
- Activity 5C: The class survey revisited
- Designing Experiments
- Activity 5D: Good news for chocoholics!
- Activity 5E: Selecting random samples by calculator

Cumulative AP Practice Test 1 (Midterms)

Chapter 5: Probability: What Are The Chances?
- Case Closed! False alarms at airports are an explosive issue

- Activity 5A: The "1 in 6 wins" game
- Activity 5B: What is Probability?
- Randomness, Probability, and Simulation
- Activity 5C: Investigating Randomness
- Probability Rules
- Conditional Probability and Independence
- Chapter Five FRAPPY!
- Chapter Five AP Practice Test
- Case Closed! False alarms at airports

Chapter 6: Random Variables
- Activity: Casino Labs
- Activity: Bottled Water Versus Tap Water
- Case Study: Lost income and the courts
- Discrete and Continuous Random Variables
- Activity 6B: Means of Random variables
- Transforming and Combining Random Variables
- Activity 6C: Combining random variables
- Binomial and Geometric Random Variables
- Activity 6D: Pop Quiz!
- Activity 6E: Is This Your Lucky Day?
- Activity 6F: The Twelve Days of Christmas
- Case Closed! Lost income and the courts
- Chapter Six FRAPPY!
- Chapter Six AP Practice Test

Chapter 7: Sampling Distributions
- Case Study: Building better batteries
- Activity 7A: A penny for your thoughts?
- What is a Sampling Distributions
- Activity 7B: Craft Stick Problems
- Sample Proportions
- Activity 7C: The Candy Machine
- Sample Means
- Activity 7D: Exploring Sampling Distributions
- Chapter 7 FRAPPY!
- Chapter 7 AP Practice Test

Semester Exam
- Review topics using AP released items and other resources

Chapter 8: Estimating with Confidence
- Case Study: Need help? Give us a call!
- Activity 8A: The Mystery Mean
- Confidence Intervals: The Basics
- Activity 8B: Confidence Interval Applet
- Activity 8C: Exploring Margin of Error with Confidence Interval Applet
- Estimating a Population Proportion
- Activity 8D: The Beads
- Estimating a Population Mean
- Activity 8E: Confidence Interval BINGO!

- Case Closed! Need help? Give us a call!
- Chapter Eight FRAPPY!
- Chapter Eight AP Practice Test

Chapter 9: Testing a Claim
- Case Study: I'm getting a headache
- Activity 9A: I'm a great free throw shooter!
- Significance Tests: The Basics
- Tests About a Population Proportion
- Use and Abuse of Tests
- Tests About a Population Mean
- Activity 9B: Powerful Batteries
- Case Closed! I'm getting a headache!
- Chapter Nine FRAPPY!
- Chapter Nine AP Practice Test

Chapter 10: Comparing Two Populations or Treatments
- Case Study: Fast-food frenzy!
- Activity 10A: Who likes Tattoos?
- Comparing Two Proportions
- Comparing Two Means
- Comparing Two Means: Paired
- Activity 10B: Get your heart beating
- Case Closed! Fast-food Frenzy
- Chapter Ten FRAPPY!
- Chapter Ten AP Practice Test

Cumulative AP Practice Test 2 (Midterm)

Chapter 11: Inference for Distributions of Categorical Variables
- Case Study: Does Acupuncture promote pregnancy?
- Activity 11A: The candy man can
- Chi-Square Tests for Goodness of Fit
- Inference for Two-Way Tables
- Case Closed! Does acupuncture promote pregnancy?
- Chapter Eleven FRAPPY!
- Chapter Eleven AP Practice Test

Chapter 12: Inference for Regression
- Case Study: Three-pointers in college basketball
- Activity 12A: Sampling from Old Faithful
- Inference for Liner Regression
- Transforming to Achieve Linearity
- Chapter Twelve FRAPPY!
- Chapter Twelve AP Practice Test

Cumulative AP Practice Test 3
AP Test Review
Post AP Exam
- Review for final exam
- School Service Project

Course Timeline

First Semester

WEEK 1— Review of syllabus and course expectations. Overview of Statistics

WEEK 2— Chapter 1 Data Analysis

WEEK 3— Continue with Data Analysis, Chapter 1 TEST

WEEK 4— Chapter 2 Modeling Distributions of Data, Density curves and Normal Distributions

WEEK 5— Continue with z scores and normal distributions
Chapter 2 TEST

WEEK 6— Chapter 3 Describing Relationships, Stats on the calculator

WEEK 7— Continue with Chapter 3
Regression line
Correlation, r and r squared
Chapter 3 TEST

WEEK 8— Chapter 4 Collecting Data

WEEK 9— Continue with Chapter 4
Simpson's Paradox
Chapter 4 TEST / **Midterm Exam**

WEEK 10— Chapter 5 Probability, Probability Models, Rules of Prob

WEEK 11— Continue with Chapter 5
Simulation Chapter 5 TEST

WEEK 12— Chapter 6 Random Variables
Discrete and Continuous Random Variables

WEEK 13— Continue with Chapter 6
Probability Histrograms Chapter 6 TEST

WEEK 14— Chapter 7 Sampling Distributions
Sample Proportions and Sample Means

WEEK 15— Continue with Chapter 7
Chapter 7 TEST

WEEK 16— "Binomial and Geometric Distributions"
Binomial setting and distributions
Binomial formulas

WEEK 17—
Binomial probabilities
Binomial mean and standard deviation
Binomial distribution with calculator
Geometric Distribution

WEEK 18— Finish Chapter 8
Chapter 8 TEST / Semester Exam

Second Semester

WEEK 1— Practice AP Exam review
Practice AP exam

WEEK 2— Chapter 8 Estimating with Confidence
Confidence Intervals, Estimating Population Parameters

WEEK 3— Continue with Chapter 8
Chapter 8 TEST

WEEK 4— Chapter 9 Testing a Claim
Significance Test, Use and Abuse of Tests

WEEK 5— Continue with Chapter 9
More with z's and t's
Chapter 9 TEST

WEEK 6— Chapter 10 Comparing Two Populations or Treatments
Comparing Two Proportions
Comparing Two Means
Comparing Two Means: Paired

WEEK 7— Continue with Chapter 10
Chapter 10 TEST
Midterm Exam

WEEK 8— Chapter 11 Inference for Distributions of Categorical Variables
Chi-Squared Tests for Goodness of Fit
Inference for Two-Way Tables

WEEK 9— Continue with Chapter 11
Chapter 11 TEST

WEEK 10— Chapter 12 Inference for Regression
Inference for Linear Regressions

WEEK 11— Chapter 12 Continued
Transforming to Achieve Linearity/ Chapter 12

WEEK 12—**AP Practice Exam**

WEEK 13— Review for AP Exam

WEEK 14— Review for AP Exam

WEEK 15— Review for AP exam

WEEK 16— AP TEST

WEEK 17— Final Project

WEEK 18— Final Project