



Roosevelt High School

HOME OF THE TEDDIES

AP Statistics Syllabus

2020-2021

Teacher: Beth Trizna	Room: 319
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Office Hours/Availability: TBD depending on our final schedule. As a parent myself, it's very important to me to be available for students and families so please reach out.	
Google Classroom: The class code is for 3 rd hour is drtlac7. The class code for 4 th hour is cktgp5y.	

Course Description:

- AP Statistics is the equivalent of a one semester, introductory college statistics course. In this course, students will develop strategies for collecting, organizing, and analyzing data.
- This class will prepare students for the AP Statistics Exam in May 2021. By doing well on the AP Exam, students may receive college credit, advanced placement, or both. All students will be expected, but not required, to take the AP Exam.

Units:

1: Exploring One-Variable Data	15-23% of AP Exam	Unit 1 introduces students to data and the vocabulary of statistics. Students also learn to talk about data in real-world contexts. Variability in data may seem to suggest certain conclusions about the data distribution, but not all variation is meaningful. Statistics allows us to develop shared understandings of uncertainty and variation. In this unit, students will define and represent categorical and quantitative variables, describe and compare distributions of one-variable data, and interpret statistical calculations to assess claims about individual data points or samples. Students will also begin to apply the normal distribution model as an introduction to how theoretical models for populations can be used to describe some distributions of sample data. Later units will more fully develop probabilistic modeling and inference.
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2: Exploring Two-Variable Data	5-7% of AP Exam	<p>Building on Unit 1, students will explore relationships in two-variable categorical or quantitative data sets. They will use graphical and numerical methods to investigate an association between two categorical variables. Skills learned while working with two-way tables will transfer to calculating probabilities in Unit 4.</p> <p>Students will describe form, direction, strength, and unusual features for an association between two quantitative variables. They will assess correlation and, if appropriate, use a linear model to predict values of the response variable from values of the explanatory variable. Students will interpret the least-squares regression line in context, analyze prediction errors (residuals), and explore departures from a linear pattern.</p>
3: Collecting Data	12-15% of AP Exam	<p>Depending on how data are collected, we may or may not be able to generalize findings or establish evidence of causal relationships. For example, if random selection is not used to obtain a sample from a population, bias may result and statistics from the sample cannot be assumed to generalize to the population. For data collected using well-designed experiments, statistically significant differences between or among experimental treatment groups are evidence that the treatments caused the effect. Students learn important principles of sampling and experimental design in this unit; they will learn about statistical inference in Units 6–9.</p>
4: Probability, Random Variables, and Probability Distributions	10-20% of AP Exam	<p>Probabilistic reasoning allows statisticians to quantify the likelihood of random events over the long run and to make statistical inferences. Simulations and concrete examples can help students to understand the abstract definitions and calculations of probability. This unit builds on understandings of simulated or empirical data distributions and fundamental principles of probability to represent, interpret, and calculate parameters for theoretical probability distributions for discrete random variables. Interpretations of probabilities and parameters associated with a probability distribution should use appropriate units and relate to the context of the situation.</p>
5: Sampling Distributions	7-12% of AP Exam	<p>This unit applies probabilistic reasoning to sampling, introducing students to sampling distributions of statistics they will use when performing inference in Units 6 and 7. Students should understand that sample statistics can be used to estimate corresponding population parameters and that measures of center (mean) and variability (standard deviation) for these sampling distributions can be determined directly from the population parameters when certain sampling criteria are met. For large enough samples from any population, these sampling distributions can be approximated by a normal distribution. Simulating sampling distributions helps students to understand how the values of statistics vary in repeated random sampling from populations with known parameters.</p>

<p>6: Inference for Categorical Data: Proportions</p>	<p>12-15% of AP Exam</p>	<p>This unit introduces statistical inference, which will continue through the end of the course. Students will analyze categorical data to make inferences about binomial population proportions. Provided conditions are met, students will use statistical inference to construct and interpret confidence intervals to estimate population proportions and perform significance tests to evaluate claims about population proportions. Students begin by learning inference procedures for one proportion and then examine inference methods for a difference between two proportions. They will also interpret the two types of errors that can be made in a significance test, their probabilities, and possible consequences in context.</p>
<p>7: Inference for Quantitative Data: Means</p>	<p>10-18% of AP Exam</p>	<p>In this unit, students will analyze quantitative data to make inferences about population means. Students should understand that t^* and t-tests are used for inference with means when the population standard deviation, σ, is not known. Using s for σ in the formula for z gives a slightly different value, t, whose distribution, which depends on sample size, has more area in the tails than a normal distribution. The boundaries for rejecting a null hypothesis using a t-distribution tend to be further from the mean than for a normal distribution. Students should understand how and why conditions for inference with proportions and means are similar and different.</p>
<p>8: Inference for Categorical Data: Chi-Square</p>	<p>2-5% of AP Exam</p>	<p>Unit 6 introduced inference for proportions of categorical data. Unit 8 introduces chi-square tests, which can be used when there are two or more categories. Students need to understand how to select from the following tests: the chi-square test for goodness of fit (for a distribution of proportions of one categorical variable in a population), the chi-square test for independence (for associations between categorical variables within a single population), or the chi-square test for homogeneity (for comparing distributions of a categorical variable across populations or treatments). To integrate conceptual understanding, teachers can make connections between frequency tables, conditional probability, and calculating expected counts. The chi-square statistic is introduced to measure the distance between observed and expected counts relative to expected counts.</p>

<p>9: Inference for Quantitative Data: Slopes</p>	<p>2-5% of AP Exam</p>	<p>Students may be surprised to learn that there is variability in slope. In their experience in previous courses, the slope of the line of best fit does not vary for a particular set of bivariate quantitative data. However, suppose that every student in a university physics course collects data on spring length for 10 different hanging masses and calculates the least-squares regression line for their sample data. The students' slopes would likely vary as part of an approximately normal sampling distribution centered at the (true) slope of the population regression line relating spring length to hanging mass. In this unit, students will learn how</p> <p>to construct confidence intervals for and perform significance tests about the slope of a population regression line when appropriate conditions are met.</p>
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Class Materials:

- Textbook: Introduction to the Practice of Statistics, 5th ed. You are responsible for returning the textbook in good condition to the school library at the end of the year to avoid paying student fees.
- TI-84 Graphing Calculator. Calculators will be distributed at the beginning of the year in student supply bags. You are responsible for returning the calculator in good condition to the school library at the end of the year to avoid paying student fees.
- Daily class materials:
 - Paper (loose-leaf or a notebook)
 - A way to organize (a folder or a binder, whatever works better for you)
 - Textbook and calculator
 - Two different things to write with – maybe a pencil and a pen, or two different color pens, whatever you prefer.

Grading: Letter Grades will be assigned based on your percentage of points:

A: 80-100%	B+: 68-73.9%	C+: 50-55.9%	D+: 32-37.9%	No Credit: 0-19.9%
A-: 74-79.9%	B: 62-67.9%	C: 44-49.9%	D: 26-31.9%	
	B-: 56-61.9%	C-: 38-43.9%	D-: 20-25.9%	

The categories that make up grades are below:

- 40% Summative (Exams and major projects)
 - While this course will include projects and other forms of assessment, most assessments will be tests that help you prepare for the AP Exam. Tests will almost always have multiple choice and free-response sections (like the AP Exam). Time will be limited on assessments, with accommodations provided to students with IEPs and 504s.
- 60% Formative (Homework, Class Assignments and Participation, some Projects)
 - Practice assignments are intended to help students learn. As such, they will be checked for completion rather than correctness. Teacher comments, peer checks, and answer keys will help students self-assess their understanding. Homework must be handed in on time.

Online Expectations:

<p>Expectations for Students Use of Google Meet:</p> <ul style="list-style-type: none">• Intended for educational use only• Try to use in common areas (e.g. no bedrooms, bathrooms, etc)• Wear school appropriate clothing• Use school appropriate language• Mute microphone when not speaking• Use chat for learning specific questions and comments only• Turn on audio, however live video is optional	<p>Courtesy goes a long way in any setting, including virtual classrooms. Your good manners should carry over to online meetings, too.</p> <ul style="list-style-type: none">• Students should use their real names.• Please address the teacher and other virtual school students in a respectful manner, even when disagreeing.• When chatting, avoid using all uppercase letters; this is considered the equivalent of shouting.• Before a virtual classroom session begins, eliminate distractions that may divert their attention away from learning.• Clear the room of playful pets or noisy sibling if you can• Minimize background noise by turning off the TV and radio.• Turn off cell phones. (No multitasking during class!)• Mute your microphone unless they are asked to speak.	<p>It's important that you are prepared before class!</p> <p>Make sure you download any necessary software and connect and test devices like microphones or video cameras before the lesson begins. Please exit other applications on your computer prior to launching the classroom software.</p>	<p>While in a virtual Class</p> <ul style="list-style-type: none">• Focus on the classroom conversation and activities.• Take notes on the information presented.• Ask relevant questions to clarify the material covered or assignments given.• Not join sideline chats with classmates when the teacher is speaking.	<p>Assume good intentions with your fellow students if you engage in discussion posts</p> <ul style="list-style-type: none">• Without seeing their facial expressions, other people may not know when they are kidding or being sarcastic.• Please reread your own messages for friendliness and respect before sending.• What seems like a short or abrupt answer from a classmate (or teacher) probably doesn't mean anger—the other person might just be busy.
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Retakes, Late Work, Attendance

Retakes and Late Work: In general, I want you to be prepared for your assessments and assignments and not rely on retakes. If something comes up, I will consider retakes and late work on a case-by-case basis depending on your situation.

Absences: To be marked present, students should attend class. Other ways to be marked present:

- a phone call with me (on the day of missed class)
- posting completed coursework to the learning management system

Thanks for reading, and let me know if you have questions. I look forward to an exciting year!

Sincerely,

Ms. Trizna