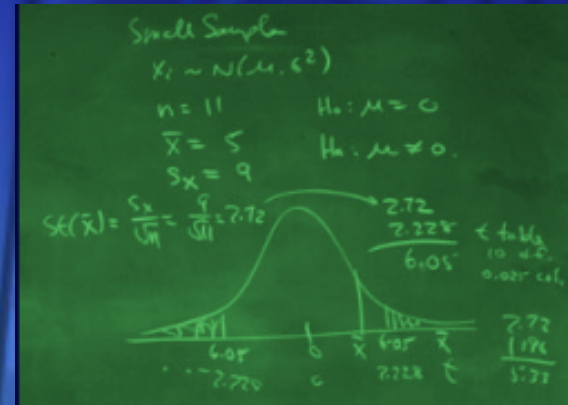


Welcome to AP Statistics

Mr. Felling



$$P(A|B) = \frac{P(B|A)P(A)}{P(B)}$$



Evacuation route



What is Statistics and why should we study it?

Other math classes focus on perfect, provable, mathematical theorems, but statistics is designed to deal with the imperfect world.

Statistics gives us tools to tell what we can, and can't, conclude about a situation and ways to quantify our level of certainty.

Statistics gives us the ability to make predictions about the future.

Statistics is at the heart of scientific study in all fields.

About this course

This course corresponds to a single semester, non-calculus, 'introduction to statistics' college course, but taught over the whole year.

Corresponds to Rio Salado MAT206 Elements of Statistics				
■ ■ ■	MAT187	MAT206	MAT212	MAT221/MAT231
	Precalculus	Statistics	Brief Calculus	AP Calculus AB/BC

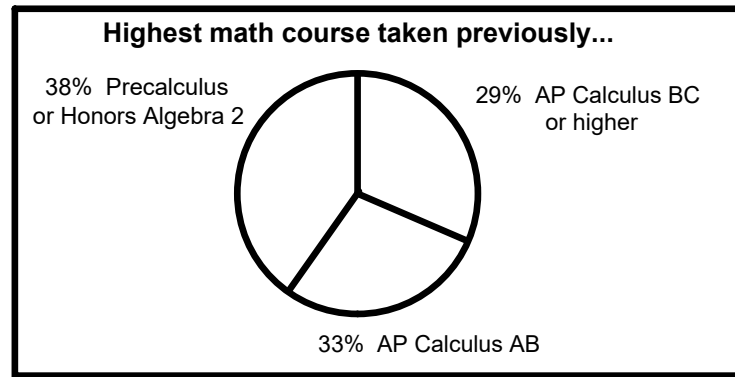
Computational difficulty: closer to precalculus than brief calculus.

What makes it a 200-level class is that you have to explain things (writing sentences).

**Most students find this a refreshing change from other math classes:
less 'mathy' and more about things that are useful in the real world.**

Success in this course...

AP Statistics includes students from a variety of previous math experiences...



...but I have found that success correlates more with the grade you earned in your previous math courses than which courses you've taken. Students who have gotten As and Bs generally do very well in AP Statistics.

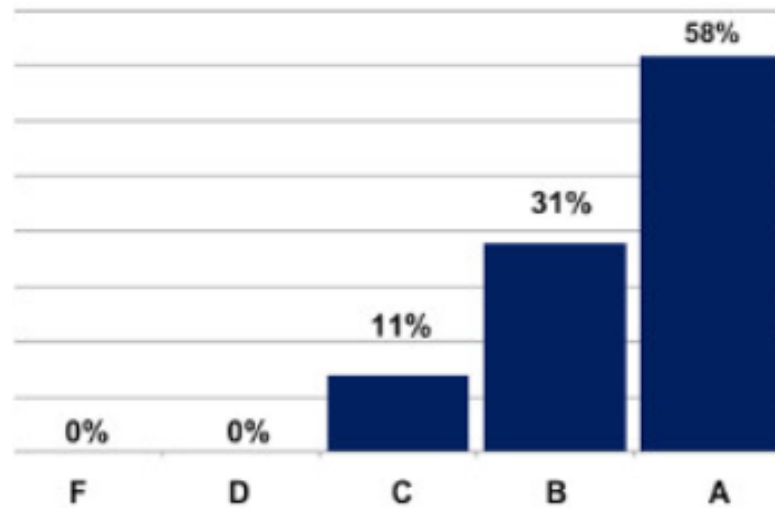
Things to know:

- Pacing is half-speed compared to college - we have time to do most practice in class, so there is very little homework, other than studying for tests and quizzes.
- There are no retakes on tests or quizzes. Steady learning of the material is key to doing well.
- The tests are more challenging the Precalculus tests (it is an AP course, and you really need to study for them) but there is a grading curve to help compensate.

Most problem answers involve writing sentences - much less focused on math computation, and more on conceptual understanding and explanation.

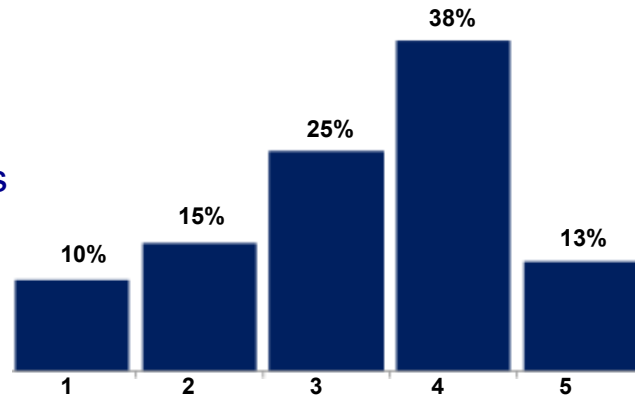
Most students do well in AP Statistics...

Typical class semester grade distribution



...and on the AP Statistics Exam (typical year's results)

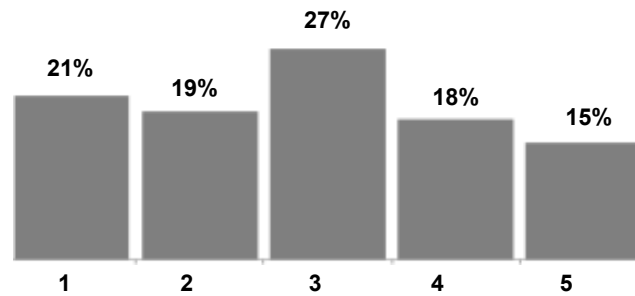
My Classes



$$\bar{X} = 3.27$$

76% 3 or higher

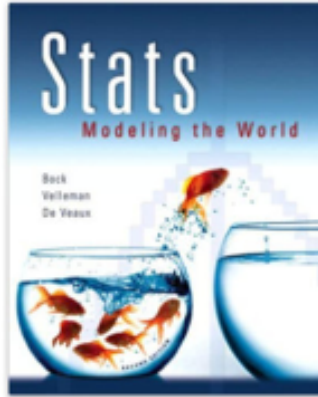
Nationally



$$\bar{X} = 2.87$$

60% 3 or higher

Our Textbook



I teach this course from my own notes (which you'll have links to ahead of time so you can print them if you wish), and we use packets for homework, so it isn't required that you get a textbook.

But if you are the kind of student who wants to see the proofs of theorems we'll use or want all the details, you may wish to check a textbook out from the DV bookstore.

The course consists of seven units, each made up of multiple chapters, and the chapter numbering comes from this textbook (although we start with chapter 3, and skip chapters 1 and 2).

Materials to bring to class

Calculator

- AP Statistics uses a calculator more than any other math class. Much of the class cannot be done without a calculator which includes statistics functions.
- It is a requirement for this course that you bring your own calculator to class every day.
- I have a few extra calculators that stay in the room that you can borrow on a first-come-first-served basis, but you can't count on these being available.
- If you don't have a calculator on a test day and all of mine are lent out, you must just take the test without a calculator which will result in a lower test score.
- We recommend the Ti-84 (any version)...best mix of capabilities and ease of use and all class examples will use Ti-84.
- You can use other calculator models (nSpire, Casio, HP) but then you are responsible for learning how to operate your calculator on your own (use YouTube videos as needed to teach yourself).



Paper/pencils and current unit required packet

- This is primarily a paper class (not online/laptop), so bring something to write with every day.
- Bring the Required Practice Packet for the current unit to class every day (we will be working some problems from it during class as part of the lessons).

Tutoring

Free to any student, no appointment needed, just come to this classroom before or after school any school day (except after school Wednesdays).

On the rare day when I have a meeting and am unavailable, you can also ask the other statistics teacher, Ms. Keyser, for help in her classroom.

Course procedures (stricter this year - admin is focusing on reducing the number of students out during class time)

Bathroom pass

- Only 1 student out of the room for the bathroom at a time.
- Must get the bathroom pass directly from me.
- No passes during the first and last 10 minutes of class (strict rule campus-wide this year).
- If you need to use the bathroom:
 - Bring your phone and give it to me.
 - I will sign you out on my sheet.
 - I will give you your phone back when you return.
- You can always leave immediately if you have an emergency, but I will ask you about it when you return.

Bathroom Schedule

	Lower C East	Upper C East	Lower C West	Upper C West	A Building	E Building	Cafeteria
0 Hour	Open	Closed	Closed	Closed	Open	Open	Open
1st Period	Open	Open	Open	Open	Open	Open	Closed
2nd Period	Open	Open	Open	Open	Open	Open	Closed
3rd Period	Open	Open	Open	Open	Open	Open	Open (EVTT students only)
4th Period	Open	Closed	Closed	Closed	Closed	Closed	Open
5th Period	Open	Closed	Closed	Closed	Open	Open	Open
6th Period	Open	Open	Open	Open	Open	Open	Closed
7th Period	Open	Open	Open	Open	Open	Open	Closed
8th Hour	Open	Closed	Closed	Closed	Closed	Open (Athletics Only)	Closed

Times Open:

0 Hour: 7:40am - 8:35am

1st Hour: 8:45am - 9:25am

2nd Hour: 9:50am - 10:30am

3rd Hour: 10:55am - 11:35am

During Lunch Hours: 11:50am - 1:25pm

6th Hour: 1:40pm - 2:20pm

7th Hour: 2:45pm - 3:30pm

8th Hour: 3:50pm - 4:30pm

Course procedures (stricter this year - admin is focusing on reducing the number of students out during class time)

Other passes

- If you need to go anywhere other than the bathroom, I need to write you a paper pass to that specific location.
- You'll need to leave your phone with me while you are out of the room.
- You'll need to return the paper pass to me signed by an adult at your destination.

Cellphones/headphones/ear buds

- All teachers have been directed to have cellphones "physically away from students bell-to-bell".
- Phones/electronics must stay in your backpack at all times during class.
- If I see a phone, I will confiscate it and return it to you at the end of the hour.
- There will be times when I want you to access the internet for educational reasons...you'll need to use your laptop for that.

Food/Drink

- No food out at any time (every period has at least one person with life-threatening food allergies).
- Water okay...other drinks okay if in covered container.

About me

- Married (Kristen)
- 2 kids (Rachel and Brian)
- Hobbies: watching movies/tv with my wife, and music (singing and playing piano, acoustic/electric guitar, bass)
- B.S. Electrical Engineering,
- M.Ed. Secondary Education (math)
- Electrical/Software Engineer for 20 years:
Motorola (now General Dynamics), Orbital Sciences (now Northrup Grumman), Acoustic Imaging, EF Data, Intel) Some things I did:
 - Military radar systems
 - RF Communications systems design for space vehicles
 - Medical ultrasound design
 - Digital camera design
 - Media software (video, audio/video synchronization)
 - Freelance software engineering business.



About you

Survey:

- Tell me what you prefer to be called.
- Tell me if you have seating preferences (and reason).
- Tell me a little about yourself!

**When finished, leave your
survey on your desk, face down
- Stretch break!**

Course Content

First Semester: Descriptive (Analytical) Statistics

- **Unit 1 (ch3,4,5,6): Single-variable data analysis**
 - Displaying data (bar charts, histograms, etc.)
 - Computing statistics for a data sample (categorical vs. numerical variables, mean, median, mode, standard deviation, independence of categorical variables, etc.)
 - Working with Normal distributions
- **Unit 2 (ch7,8,9,10): Bivariate (x-y) data analysis**
 - Linear Regression and plots (LSRL, correlation coefficient, residuals, scatterplots, residual plots)
 - Straightening non-linear data

----- Fall Break -----

- **Unit 3 (ch11,12,13): Collecting Data**
 - Observational Studies vs. Experiment Design, using randomness to simulate data
 - Sampling Techniques and Biases
- **Unit 4 (ch14,15,16,17): Probability**
 - Probability foundations (conditional probability, AND/OR rules, independent vs. disjoint events)
 - Random variables, combining and transforming probability distributions
 - The Binomial and Geometry probability models

----- Winter Break -----

Course Content

Second Semester: Inferential Statistics and Course Review

----- Winter Break -----

- **Unit 5 (ch18,19,20,21,22): Inferential Statistical Analysis (inferring things about a populaton from a sample)**
 - Sampling Distributions, Confidence Intervals, Hypothesis tests, Type I/II Errors and Power of the Test
 - Focusing mainly on 1 and 2-sample categorical (proportions) data
- **Unit 6 (ch23,24,25): Inferential Analysis for Numerical Data**
 - Sampling Distributions, Confidence Intervals, Hypothesis tests, Type I/II Errors and Power of the Test for single sample and two-sample (independent and matched-pairs) samples

----- Spring Break -----

- **Unit 7 (ch26,27): Inferential for x-y data and other data types**
 - Inference on slope of LSRL for x-y data
 - Chi-Squared Analysis
- **Thorough review of the entire course and preparation for the AP Statistics exam and final exam (5 weeks)**

This Course Satisfies Three Different Requirements...

Tempe Union High School course, AP Statistics

- Our course is designed to meet the curriculum requirements for high school credit in our district's course catalog.

Rio Salado's course MAT206, Elements of Statistics

- Because you can choose to pay tuition to Rio Salado to take this course for the 3-credit, single-semester course MAT206, we also include all of the curriculum required for this college course.

College Board AP Statistics Exam preparation

- This is also an AP course, so we also include instruction and practice to help you prepare if you choose to take the AP Statistics Exam in May for college credit.

College Board has always had strict requirements on how to format written responses to do well, and the way college board requires statistics to be reported is also an excellent, precise way to do statistics work, and College Board has also traditionally included all of the topics required for Rio Salado's and Tempe Union's curriculum.

So we have traditionally based our course around using College Board standards (all students do the same work and we grade everyone according to the way College Board grades so that everyone is well-prepared for the AP Statistics Exam if they choose to take it).

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College Board AP Statistics Exam preparation

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But, as you may have heard, College Board has changed their Course and Exam Description for AP Statistics, effective this year, and is changing the AP Statistics Exam beginning this year to match those changes. These sorts of changes are rare (the last one happened about 10 years ago).

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College Board AP Statistics Exam preparation

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The changes removes some of the content of the course to allow a greater and slightly different focus on other parts of the course. We don't have the option to remove anything from our course, though, because we are still teaching the full curriculum of the Rio Salado and Tempe Union courses.

However, we will need to make a few changes from previous years to help prepare you for the updated AP Statistics Exam.

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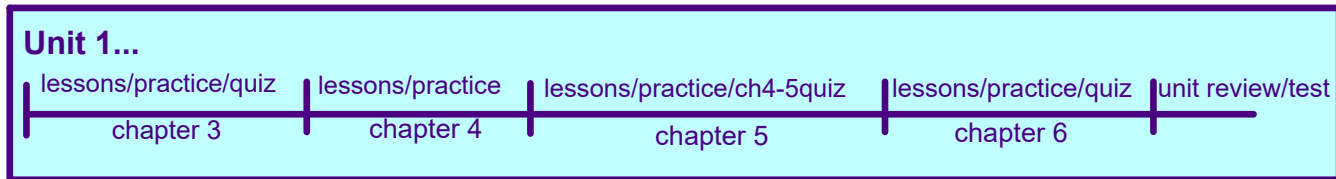
College Board AP Statistics Exam preparation

- This is also an AP course, so we also include instruction and practice to help you prepare if you choose to take the AP Statistics Exam in May for college credit.

Our plan is to teach the majority of the course the same way we have traditionally taught it, and then during the 5 week period in 4th quarter when we are reviewing the entire course to prepare you for the AP Statistics Exam and course final exam, we will make the changes needed to prepare you to do well on the updated AP Statistics Exam this year.

About this course

- The course is divided into just 7 units, so there are only 7 unit tests, each with 2-5 chapters.



- There is a required practice packet and an extra practice packet for each chapter.
- Required practice packets count towards your grade and include a parallel practice quiz to help you study for the chapter quiz.
- Each chapter ends with a quiz (or sometimes we quiz two chapters together).
- When we've finished all chapters in a unit, I'll hand out unit review materials (not collected or graded).
- Unit Tests are like mini-AP Exams, including FRQ and MCQ parts and include a grading curve.

Point values (no scaling in this course - points are just points):

- Required Practice Packets: 5 pts per chapter (due on day of chapter quiz)
- Quizzes: 10 pts per chapter
- Unit Tests: 100 pts per unit
- Extra Practice Packets: 2 pts extra credit per chapter (due on day of Unit Test)

You can find information about our course in 2 places:

- 1) [Canvas](#)
- 2) [General internet website: www.mrfelling.com](http://www.mrfelling.com)

Content is mirrored on both sites, so you can use either or switch to the other one if one becomes unavailable.

(The one exception is in 4th quarter, when we are reviewing the entire course to prep for the AP Exam, I publish that material only in Canvas so that it isn't on the general internet to avoid copyright issues with College Board.)

Taking this course for college credit *(Go over the handout)*

Please take the info sheet about college credit home
and discuss your options with your parents.

- It is very beneficial to be taking AP level classes in high school, whether or not you are taking them for college credit! Exposure to college level material early greatly increases the probability of you doing well in college!
- Whether it makes sense for you to pay money to get college credit now depends upon a number of factors - I've tried to discuss these fully in the handout.

Questions?

The 'Hiring Discrimination' Activity

