

## AP Statistics

### High School Course Syllabus, Mr. Felling, 2022-2023

#### Contact Information / Office Hours

##### **Contact Info:**

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Phone: (480) 706-7900 ext. 70556

The best way to contact me is via email, although phone messages work too – I usually respond within a day or two at most - if I don't, try contacting me again, because something happened to your message.

Online information is in our course in Schoology.

I also maintain a mirror of most content on the general internet at: [www.mrfelling.com](http://www.mrfelling.com)

**Office Hours/Tutoring:** I work with students in the math office in C114 after school every school day except Wednesdays (due to early release meetings). I cannot work with students before school because I teach a zero hour class. No appointment needed, just come to the math office after school!

#### Course Description

This 200-level college level course is designed to explore data analysis, standard deviation, scatter plots, correlation, residual plots, experimental design, bias, probability, central limit theorem, margin or error, null hypothesis, alternative hypothesis, assumptions rules of thumb, p-value, alphas level, type I & II errors, confidence intervals, inference by z-tests, I & II sample and tests, I & II proportion tests, Chi-squared tests, 2-sample f-tests, and linear regression t-tests. After completion of this course, the student may wish to take the Advanced Placement Statistics examination.

My goals for you: at the end of this course, I want all students to...

- 1) ...know how to correctly use a large number of statistical analysis mathematical procedures and tools.
- 2) ...have the ability to think critically and utilize these procedures and tools appropriately in order to analyze real-world information and to interpret and present meaningful results and conclusions which can be legitimately drawn from the information.
- 3) ...be prepared to do well on the AP Statistics Exam if they choose to take it at the end of the year.

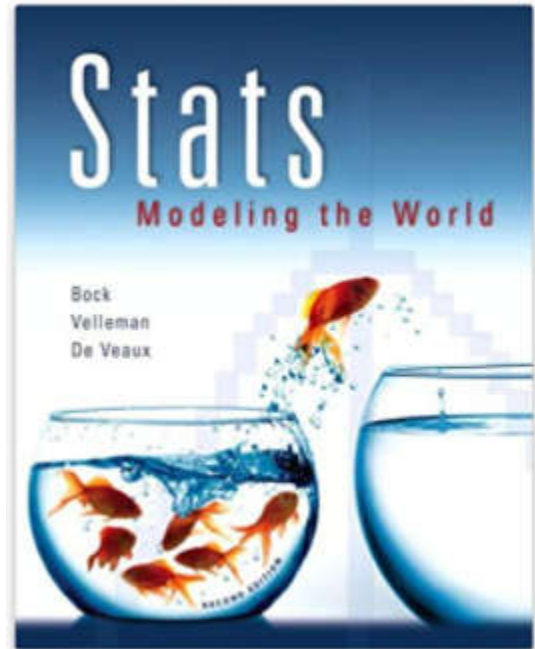
A more detailed course description listing individual topics is available on my website.

## Textbook

We are using “Stats: Modeling the World” by Bock, Velleman, and De Veaux for this course.

I recommend that you check out the textbook from the DV bookstore at the beginning of the year. While we won't be using it for homework (we using homework worksheet packets), this textbook has really excellent explanations and examples and a very conversational, easy to read tone.

While I will be covering the main ideas during our classroom lessons for some topics the textbook will go into more depth and provide additional information that you may wish to read about, especially if you are trying to achieve a '5' on the AP Statistics Exam.



## ***Classroom Policies***

**Respect is expected** – In order to learn, we must have an effective learning environment. We don't usually have behavior issues in honors math classes, but behaviors that disrupt the learning environment will not be tolerated. Learning also requires open communication, and people must feel safe to share their thoughts and ideas. I respect my students, and I expect students to respect me, each other, and themselves.

**Attendance:** Desert Vista policy is to consider students up to 20 minutes late to class tardy, and students more than 20 minutes late to class absent. **Please note:** Students with non-school related absences of 11 or more days from a class (excused or unexcused) in a semester may lose course credit for that semester. Please keep absences (including school-related) to a minimum. If you do need to miss class, information about what we covered and homework is always available at [www.mrfelling.com](http://www.mrfelling.com).

### **Bathroom:**

- Students should only use the bathroom for emergencies, please do not assume that you will go to the bathroom during class every day. If a student is using the bathroom frequently, I contact parents to report this. Time away from the classroom makes it difficult to stay caught up and learning.
- Only 1 student can be out of the room at a time, and they must obtain the bathroom pass from me.
- Students must return within a reasonable amount of time.
- Per school-wide policy this year, students must give me their cell phone in order to obtain the bathroom pass from me, and they must sign-in and sign-out noting the times out of the room.

### **Electronics:**

- If I see electronics out at inappropriate times, I may choose to confiscate put the item on the teacher desk at the front of the classroom. Students may reclaim their item from the desk when the bell has rung at the end of class if I have not returned the item before then.
- For frequent offenders – at my discretion, I may opt to keep the item and turn it in to the front office administrators. School policy is to confiscate – and require parents to retrieve at the front office.
- **Please note that, in accordance with school policy, I am not, and the school is not, liable for loss of, or damage to confiscated items.** To be safe, students should not have electronics out of their backpacks in the classroom unless I specifically indicate it is appropriate.

**Cheating:** - Any communication during or after a test or quiz, or any other form of cheating, may result in penalties up to and including receiving a zero on the entire test or assignment..

## How Your Grade is Determined

### **Letter Grade**

A letter grade is issued for each semester separately for the high school transcript. (If a student is taking the course for Rio Salado college credit, because this is a single-semester course in college, the college-credit transcript grade will be the average of the two semester grades.) The semester grade is made up of 40% for each quarter plus 20% for the semester final exam. The quarter grades are each determined by a percentage of total points (and all points count the same in this course).

### **Grading Scale:**

A: 90%-100%

B: 80%-89%

C: 70%-79%

D: 60%-69%

F: 59% or lower

**Rounding:** For students earning borderline grades (for example, 89.5%) I determine rounding on a case-by-case basis, generally by considering your chapter test scores and your score on the final exam.

**Grades will be updated on a regular basis (usually every weekend).** You can check your grades online using your parent or student login for the Synergy online grade system. If you have questions about your grade, please feel free to email me at any time.

**Late work policy:** Late work will be accepted, but will receive no more than half the usual amount of credit.

## What Makes Up Your Quarter Grade

- 80%-90%: **Assessments of your knowledge**

- **Unit tests:** each unit (which is a series of chapters) culminates in a summative test which covers all major ideas learned in the unit. The expectation is that students will use the lessons, practice, and quizzes to thoroughly learn and review the material in a unit by the date of the unit test. Tests will usually be worth 100 points each.

The tests in this class are patterned after the AP Statistics Exam, but focusing only on a single unit. As a result, there is an 'AP Statistics grading curve' which is applied to all unit tests, and is usually adding 12% to the raw score. This is because the unit/AP-like tests are more difficult than exams would be in the corresponding college course because we are helping students prepare to take the very difficult AP Statistics Exam, so the curve allows us to give a very challenging AP-like exam, but have the scores fall in the range where typical scores would be for students taking this course in college. **Note: in order to receive the AP Statistics grading curve on a unit exam, the exam must be taken on the test day with the class and if a student is absent, a specific procedure must be followed to notify the instructor prior to the day of the exam, or the student will not receive the grading curve and the raw score will be used.**

- **Chapter quizzes:** Throughout the unit, we will usually check understanding of each chapter with a chapter quiz, usually worth 10-30 points each. (Quizzes are not grade-curved, only unit tests and the final exam are curved).
- **Projects:** We may assign project to provide a variety of ways of thinking about and demonstrating understanding in statistics.

- 10%-20%: **Level of Effort**

- **Required Practice Packets:** Each chapter will have a required practice packet which must be completed and submitted by its deadline. Because we are teaching a semester long college course over a full year, we have more time to devote to practice work during class, so about 75% of the course practice work is done during class rather than as homework. However, any remaining work to finish the packet will need to be completed at home. Practice packet work is graded for completeness and quality of the work, but not for correctness. The required practice packet for a chapter is usually due on the day of the quiz for that chapter.

- In-class activities/'share your thinking': We will participate in a variety of in-class activities including data collecting experiments, group statistical analysis activities, and competitive games. These may or may not be graded, and may be graded for correctness, completion, or quality of effort. In some cases, sharing your thinking during class may give you extra credit.
- **Extra Credit Opportunities**

For Rio Salado college credit classes at DV, we follow Rio Salado's policy that the student's grade be a reflection of degree of math understanding and not be artificially boosted by excessive extra credit. However, we do include some ability for students to earn extra credit (always tied to math knowledge). The intent of this extra credit is to allow students to demonstrate math understanding in alternate ways to compensate if they happen to score lower than expect on one or two unit exams (which are more difficult than a usual statistics college course due to preparing students to AP-level exams).

There are two main ways to earn extra credit:

- **Extra Credit Packets**

For each chapter, there is a required practice packet which contains the main practice for the chapter and all students are required to complete, but a 2<sup>nd</sup> 'extra' credit practice packet is also available which provides additional enrichment and advanced practice which can be helpful for students, especially those students wanting to score a 4 or 5 on the AP Statistics exam. To encourage students to complete this extra work, some extra credit is earned by completing and submitting extra practice packets by the deadline (which is usually on the day of the unit exam for that section).
- **Share-Your-Thinking**

To encourage active participation in class, I note every time you share your thinking in class. You can share you thinking by answering a question posed or solving a problem and providing a solution we can discuss. What you share *doesn't have to be correct*, it just needs to be something reasonable that advances our class discussion.

**For every 5 times you share in class, you earn 1 extra credit point up to a maximum of 5 extra credit points per quarter.** Because I do not use scaling in this course, every point counts the same, so 5 extra credit points is equivalent to half a letter grade on one 100 point unit test.

So it is always advantageous to you to share your thinking during class!

## Absences, Makeup and Retakes Policy

The goal of this class is to guide students toward a complete mastery of course material. This is done by making incremental progress steadily throughout the course – much of the later material depends upon mastery of the previous course material. **It is very important that student attend class. New material or very important practice work happens every day.**

If you miss class, that class lesson is generally no longer available to you (although during the virtual instruction period recordings of the lesson portions of the Google Meets will be available). So you will need to find alternate ways to learn the material (read the textbook, review online lecture notes, ask other students in class for help, come to before/after school tutoring for help, etc.) Note that you are still responsible for knowing the material, even if you miss class. Our makeup and retake policy aims to encourage students to stay caught up at all times because this is so critical to overall success in the class.

**Retakes:** We allow no retakes for tests or quizzes in this course.

**Makeups:** Test must be taken by the date of the test except in very exceptional circumstances. In college, if you know you cannot attend on a test day, you usually have to make arrangements with the professor to take the test early. If you just fail to show up on the day of the test, you may simply get a zero which cannot be made up. The policy for our class regarding makeups is similar, but less extreme.

**If you know ahead of time that you cannot attend on a test day, you must notify me before the day of the test, and we will arrange a time for you to take an alternate version of the test (usually taking it early).** Here are the times you can take the makeup test:

- In the math office after school, the day before the test is scheduled.
- In my zero hour AP Calculus classroom (C105) before school, the day before the test is scheduled.
- During our class time, the day before (in another room).
- After the scheduled test date in our classroom (rarely, and with prior arrangement).

**What happens if you are absent on the day of the test and didn't notify me beforehand?**

That depends upon why you were absent:

- If it is an extremely extraordinary situation which could not have been anticipated (car accident, sudden extreme illness, death in the family, etc.) then you can take the test at the next possible opportunity before or after school or in class. The test will be graded as usual with the grading curve.
- If it is anything other than an extreme, rare circumstance then you will take the test at the next opportunity in class **but you will not receive the AP Statistics grading curve and your raw score will be used as your scaled score.**

## Materials and Supplies

Please have the following with you during all class sessions:

- Graphing calculator: You will need a graphing calculator which includes statistical test and matrix functions. I recommend the Ti-84 calculator (any edition). Ti-83 will also work but is missing a couple of features we use in this course (however, there are workarounds for these functions available). We do not need any of the more advanced features of calculators like the Ti-89 or nSpire and those calculators have more complicated user interfaces.

We will use a Ti-84 for all class demonstrations and also show how to use the Ti-83 with workarounds. You can use other calculators (including Casio) although you will be responsible for learning your calculator's interface, as long as they have the following capabilities:

- Matrices
  - Normal curve functions: normalcdf, invNorm
  - T-distribution functions: tcdf, (invT is also helpful)
  - Statistical graphs: scatterplot, histogram, boxplot, normal probability plot
  - 1-variable statistics: mean, median, standard deviation, Q1, Q3
  - Linear Regression functions: LinReg ( $a+bx$ ) and ability to generate a residual plot.
  - Statistical inference tests: Hypothesis tests and confidence intervals for 1,2-proportions, 1,2-means, Chi-squared test, Chi-squared goodness-of-fit test, and Linear Regression hypothesis test and confidence interval.
- Paper and pencil/eraser
  - Note taking materials: You'll need to take notes during class sessions. Blank notes which include what is displayed on my Smartboard presentation are available beginning the weekend before we use them. If you are able to print blank notes and bring them to class, this greatly speeds note taking. If not, you'll need paper/pencil to take your own notes.



## Keys to Success in this Course

**Class Notes:** Lessons parallel the topics covered in our textbook, but I usually explain things in alternative ways. On Schoology and [www.mrfelling.com](http://www.mrfelling.com), I provide printable 'blank class notes' for each chapter. We do need to spend some time in 'lecture mode' but to minimize time spent in lecture so you can spend more time practicing during class, the class notes greatly speed note-taking. Alternatively, you may choose to take your own, more abbreviated, notes. Class notes are not graded, but I highly recommend saving all class notes for the course, and bringing them every day for use during practice.

**Calculators:** Calculators are required for this class. We start using them the early in the course, and you will need them every day, including on some of the tests.

**Recommended models:** The Ti-84 family of calculators are highly recommended (Ti-83 will also work). All class examples will be done using a Ti-84plus.

Can I use other calculators? Yes, but you are responsible for learning how to use them on your own. We teach how to use the Ti-84. We do not use the additional functionality of Ti-89, Ti-86, or Ti-Inspire and these calculators have different (and more complicated) user interfaces.

### **Supplies:**

- Paper – any kind.
- Pencil w/eraser.
- Graphing Calculator.
- Class notes for the course to date.

You do not need to bring your textbook to school, but please bring your calculator and all other supplies with you to class every day.

**Use the online schedule to stay caught up:** Please use Schoology or the [www.mrfelling.com](http://www.mrfelling.com) website to find the latest information on homework, upcoming tests and assignments. Our class page always displays the current week's schedule and homework. For previous or future weeks' homework assignments please click on the chapter calendar links below the weekly schedule.

**A plan for success:** If you do the following, you greatly improve your chances of succeeding in this class:

- Attend all lessons and work all the examples with me during class.
- If you are unable to get correct answers, or don't understand anything, ask questions as soon as possible in class. Keep asking questions until you understand. If there isn't enough time during class, come to after school tutoring.
- Don't wait until just before the unit test to ask questions - ask questions as soon as you don't understand something.
- Read the chapters in the textbook to get an additional explanation beyond what I provide in the chapter lessons in class.

- Use all the provided review materials to spend significant time at home reviewing for unit tests.
- Complete all required homework on time.
- Take full advantage of any extra credit opportunities and participate regularly in during class.

I am looking forward to exploring this important and useful area of mathematics with you!

- Mr. Felling