

## STAT W21 – Introduction to Probability and Statistics for Business Syllabus 2015

### Course Description

- Statistics W21 is an online course designed for business majors. It does not require knowledge of calculus, or anything beyond high school algebra, but does require strong logical reasoning. The course emphasizes critical thinking about quantitative data. Logic is introduced, along with reasoning, at the beginning, and there is a more detailed treatment in the later chapters.
- Topics covered in the course include reasoning and fallacies, descriptive statistics, association, correlation, regression, elements of probability, set theory, propositional logic, chance variability, random variables, expectation, standard error, sampling, hypothesis tests, confidence intervals, experiments and observational studies, as well as common techniques of presenting data in misleading ways.
- The course uses the online (and free) interactive statistics text **SticiGui** created by Professor Philip Stark.

### Course Information for Stat W21

Welcome to W21: the online version of Stat 21 (Introduction to Probability and Statistics for Business). Please **read this page carefully**, especially the instructions and troubleshooting advice. The first assignment checks to see if you have read these materials carefully.

To use the online materials, you may use Firefox, Chrome, or Safari. Internet Explorer is **not** recommended. If you ever have a problem with examples or assignments, please send me an email with the problem you encountered, the browser you were using at the time (along with the version). You must have Javascript enabled in your browser.

There are **FOUR** assignments **due the first week**. The first assignment (Set 0) checks to see if you have read the syllabus. Set 1, the second assignment, makes sure that you have the math prerequisites for this course. The third and fourth assignments are due on Wednesday and Thursday of the first week. The first week gives you a flavor of what to expect. This is a VERY fast-paced course.

Late assignments are **NEVER** accepted, not for any reason. There is no method for accepting late assignments. More information on the assignments follows below.

## Course Instructor

### Shobhana Murali Stoyanov

University of California, Berkeley

325 Evans Hall

Email: [shobhana@berkeley.edu](mailto:shobhana@berkeley.edu)

## Graduate Student Instructors (GSIs)

### TBD

There will be other GSIs, we will announce their information as soon as it is known.

### Office Hours

- The GSIs will be holding both in-person and online office hours for this course. There will be many office hours to choose from throughout the week.
- Adobe Connect will be used for the online office hours. You do not need an account, but can log in as a guest.
- More details about the in-person office hours will be listed on the [Office Hours page](#).
- You will also need a webcam and working headset (or built in camera and microphone) in order to participate in office hours.
- You must enter the online office hour within the first 15 minutes.

## Student Learning Center

- The SLC will be offering drop-in STAT tutoring support TBD.
- Mike Wong will hold office hours TBD.

Michael J Wong - [mjwong@berkeley.edu](mailto:mjwong@berkeley.edu)

Mathematics and Statistics Program Coordinator

Student Learning Center

103 Chavez Student Center, on Lower Sproul Plaza

Information can be found at [slc.berkeley.edu](http://slc.berkeley.edu)

## Discussion Forum (Piazza)

- We will be using Piazza as a discussion forum. There is a link on the left navigation menu, which will take you to our class page on Piazza. Please sign up there.

- If you have a general question, about the material in the text, or a clarification regarding homework, please post it on Piazza. DO NOT send an email about your question. You will have to search the forum to see if your question has already asked, and if not, go ahead and post it.
- I encourage you to try and answer each other's questions. The GSIs and I will monitor the discussion forum, and endorse correct answers. I have used Piazza for a quite a few classes, and found it enormously useful.

## Required Textbook and Other Readings

- The text is [SticiGui](#). It is written by Professor Philip Stark, and is freely available online. You must have Javascript enabled in the browser. The browser must accept cookies from the originating server. You should have the latest version that is available at the beginning of the summer.
- A recommended text is *Statistics*, by Freedman, Pisani, and Purves (4th Edition, W.W. Norton and Co.) This is an excellent book to further your understanding of the subject.
- A recent book that has received good reviews is Nate Silver's book [The Signal and the Noise \(Links to an external site.\)](#), which is about predictions in the face of uncertainty. Silver was in the news for his 100% success rate in his predictions for the 2012 US presidential elections. I have not read it yet, but will be reading it soon.
- Another fun book is [How to lie with Statistics \(Links to an external site.\)](#) by Darren Huff. It is not a recent book, but still relevant.
- If you are a soccer fan, then [The numbers game: Why everything you know about soccer is wrong \(Links to an external site.\)](#) is an interesting read.
- The author of [Naked Economics \(Links to an external site.\)](#), Charles Wheelan, has also written a book on Statistics, called [Naked Statistics \(Links to an external site.\)](#), also fun to read.

## Lectures

- There are recorded lectures of Professor Philip Stark that are embedded within the text. Please use the [SticiGui](#) page to view them. There is also a link from the drop down menu on that page to the lectures, if you wish to view them independently of the text.

## Homework Assignments

- The assignments are available online at <http://www.stat.berkeley.edu/~stark/SticiGui/Problems/index.htm>. They are due **as posted**. (You use Internet Explorer at your own risk. We do not provide any guarantee that it will work. All other browsers should work fine.)
- Please **check** the due dates, as you work the assignments. There are four extra credit assignments that are due on August 13th. Your maximum homework score will be 100%,

but many of you may want to complete the extra assignments to replace scores that you are not happy with.

- Once you are on the [assignments page](#) on SticiGui, please select our course from the drop down menu. You will then be asked to input your name, email, and SID. **Please use the email and SID that is recognized by UC Berkeley Summer Sessions.** The SID should be numbers only. If you have any problem logging into the assignment page, please let me know. I will check my mail until 5pm only, so please do not email me ten minutes before an assignment is due, since that would be long past my bedtime. I do **not** check email regularly on the weekend.
- There are usually 3 problem sets due each week, on Mondays, Tuesdays and Wednesdays. Some weeks have four assignments due. You may turn them in early but **late assignments will not be accepted for any reason.** If you wait until the last minute to submit your assignment, you will risk not being able to submit it on time due to congestion. Please plan to submit your homework with time to spare.
- You are allowed to submit each assignment **up to five times** before the due date. The **last submission** (not necessarily the one with the highest score) counts. You can see your score after each of the first three submissions. After the fourth and fifth submissions, you can see your score and which problems you missed: The problems you missed are identified on the confirmation screen after you submit - not in the problem set itself. You only get that one chance to write them down, and there is no other way to see which problems you missed until after the due date. The problems are identified as (Qxx), which matches the Q-numbers in the assignment. **Q-numbers and Problem numbers are not the same:** Problems can have many parts, each of which has a Q-number.
- While inputting your answers, do NOT round off numerical answers, not in your final answer, nor in intermediate steps. This can result in your answer being marked incorrect. If you are inputting a number that is at least 1,000, you may input it with commas (but you don't have to). You may use scientific notation if you wish.
- After the due date of each assignment, you can see the correct answers by opening the assignment again. After the due date, when you answer each problem, you will see an X or a check mark, just like in the book chapters.
- This class uses **mastery based grading** for the homework. You get credit for a homework assignment only if you get a score of 80% or higher on that assignment. If you score below 80% on an assignment, you get no credit for that assignment - it counts as a zero in your homework average. You did not master the material adequately. If your score on an assignment 80% or higher, the credit you get is your score. For example, suppose there are 25 homework sets and your scores are five 70s, five 80s, five 90s and ten 100s. You get no credit for the five 70s: They count as zeros. Your homework score is:

$$(5*0 + 5*80 + 5*90 + 10*100)/25 = 74\%$$

- The assignments are significantly harder than the exams, and will require some thinking on your part. Some ask you to apply the material to more complex problems that—superficially—are not like any problem in the book. In contrast, the depth of exam questions is limited by the duration of the exam. Exam questions are more like the questions on the practice exams and in the book chapters. The exams are designed so that the faster students will finish in less than half the time available. Most students do not feel time pressure in the exams. Historically, the first students leave finals after about an hour and ten minutes.

## Exams

- Midterm: There is **no midterm** in this course. You will mark your performance using your assignment scores, which you can see on the assignment page on [SticiGui](#)
- Final exam: The final exam is on **Thursday, August 13, from TBD**. Note that it is NOT on Friday. The room will be announced later. If you are an off-site student, please carefully review the [Proctored Final Exam Process](#) to arrange for your proctor exam.
- The final exam is cumulative. Practice exams are available online.
- You **must** bring a 100-question Scantron form (form 882), a number 2 pencil and your UC Berkeley student ID to the final. If you do not submit your answers to the final on Scantron form 882, I will not grade it. If you are not in the Berkeley area, I would strongly recommend you get some Scantron forms 882 right away. If you leave it to the last minute, you might not be able to find one near you. The forms are for sale online. If you do not bring your student ID to the final (and show it when asked), I will not grade your exam. I do not bring Scantrons to the final for students who may have forgotten. I will **not** grade exams for which the answers are not on the appropriate form. The machine cannot take them.
- You *may* bring two 8.5" by 11" pages of notes, front and back (4 sides, typed or handwritten), a calculator, a sliderule, a pen, extra scantron forms to auction to people who forgot to bring their own, etc.
- You may use two types of calculators for the exam. You may use either a **nonprogrammable** scientific calculator that has **NO** statistical functions, or a basic six function calculator - in which the calculator does not have any functions other than the following six: addition, subtraction, multiplication, division, percent, and square-root. It may have a one-number memory. Calculators with any statistical or probability functions (such as mean, standard deviation, correlation coefficient, regression, factorials, permutations, combinations, t-tests) are **prohibited**. "Financial," and graphing calculators are **prohibited**. Calculators that have wireless communication or the ability to store notes, webpages, images, or the like are prohibited. You **may not** use any wireless device (including cell phones), PDA, computer, scratch paper, etc.

## Grading

- To pass the course (with a D), you must make **at least 66% on the homework and at least 60% on the final**. If you meet both criteria, your course grade is the **average** of your homework and final grades, with **equal** weight. If you get below 66% on the homework or below 60% on the final, **you fail the course**.
- Grades will not be "curved," so you are not in competition with anyone else. It is possible for everyone to make an A (or an F). Grades on assignments will be posted online on SticiGui. The course grade will be posted in BearFacts.
- **Incomplete Grades:** By University policy, for a student to get an Incomplete requires that the student was performing passing-level work until the time that something happened that (through no fault of the student) prevented the student from completing the coursework. **If you take the final, you completed the course.** The time to talk to me about incomplete grades is ***before you take the final***.

## Academic Honesty

- Discussing homework is fine, but copying or getting someone else to do your homework is not. Do your own work, and submit your own homework. Anyone found cheating will receive an F in the course, and reported to the Student Conduct office. Cheating will not be tolerated.

## Notes, Advice, etc.

- This course is not easy, as it is a self-study course. You will have to be very disciplined as you pace yourself, since it moves fast. The homework is demanding, and you will have to think about the concepts, and not just search for the answer, or try to replicate a method without understanding.
- Make sure that you watch the lectures (these are Professor Stark's lectures that are embedded in the textbook), and *read* the book carefully. That means reading it, and *working* through the examples.
- Don't just look for the formula. Try to see why the example real world scenario and the formula are connected. It is not all about calculation.
- Make sure to read the chapter *before* trying the homework, and to work all the examples and exercises in the text. If you reload the page, you will get new ones that you can work.
- Please **write down the answers to your assignments**. This is for two reasons. If you save your answers, they are saved on your computer as a cookie, and you will not see them if you log in from a different machine. Furthermore, cookies are not reliable storage, and your

answers can get lost. I have seen many crestfallen students who have lost answers after working on them a while. Don't let this happen to you!

- If you have a question, you can post it to Piazza. Please do not send emails about the problem to the GSI or me. Search in Piazza, and then post it. You may get a reply from a fellow student in minutes!
- Finally, from Professor Philip Stark's page:

"... On the other hand, students who do well in this course seem genuinely interested in understanding the material. They read the chapters *before* trying the homework. They watch the lectures. They work all the examples and exercises in the chapters, then reload the page to get more examples and exercises and work those, too. When they see something new, they try to relate it to things they have seen before. They try to imagine other situations in which it could be used. They think and grapple with the material before asking for help. They ask probing questions and keep at the homework until it makes sense to them—not just until they have memorized it or gotten the right answer. They go back over their homework after the due date to understand why they missed what they missed. They care more about learning than about their grades. From experience, I think the difference between doing well and doing poorly is much more about having "fire in the belly"—wanting to understand things—than about native intelligence or mathematical aptitude or anything like that. You have to *want* to get to the bottom of things. If you don't, you'll never really understand the material: You cannot master it by mimicking what's done in examples. You have to care about *why* that's what was done in the examples."

### **Stici Gui Bugs and Typo Reports**

Please send reports of SticiGui typos and bugs by email, and they will be sent on. Note that an error message caused by failure to follow directions is not a bug.

**If you are reporting a bug, be sure to include the following information, or it is unlikely that you can be helped:**

1. Your student ID number
2. The browser you are using (Netscape, Mozilla, Opera, Safari, Chrome, Internet Explorer), including the version.
3. The operating system you are using (Mac, Windows, unix, linux), including the version.
4. A description of what you were doing when the problem occurred, including the URL of the page that has the problem.
5. A description of the symptom, including the wording of any error message you received.
6. The time and date the problem occurred.

**Before you conclude that unexpected results are caused by a bug:**

1. Make sure you are using a compatible browser and a compatible version of the browser. Use the latest version, but update it during the semester only if you get a message from me asking you to update your browser.
2. Make sure your browser has JavaScript and cookies enabled. I recommend that you accept only cookies that get sent back to the originating server, not "third-party" cookies.
3. Make sure you do not try to scroll down the page before the page has fully loaded.
4. Try a "hard reload:" hold down the shift key while reloading the page.
5. Clear the browser's cookies and cache. In Firefox 13 on the mac, this is in the Firefox->Preferences->Privacy menu. There's a link for "clear all current history." Click that link. That brings up a dialog box with tick boxes. Tick the boxes for cookies, cache, and offline website data, then the "Clear Now" button.
6. Try restarting the browser after clearing its cache.
7. Try restarting the computer.
8. If the problem is that you cannot access an online assignment or if the problem is that applets display incorrectly, try turning off all graphics acceleration.
  - Make sure you wait for the page to load completely before typing, clicking, or scrolling.
  - Wait after selecting your course before pushing the button to access the problem set.
  - Double check your ID and the spelling of your password. Capitalization matters.
  - Delete the "cookies." as described above.

Not Final