

Statistics 2301 Section 804
Fall 2020 Syllabus

Instructor: Dr. Monnie McGee
Office: Heroy Hall, Room 142

Contact: mmcgee@smu.edu
Office Hours: By appointment

Course Description

A non-calculus based introduction to statistical methods, and how to use statistical concepts in decision making. Topics include; descriptive statistics, simple linear regression, elementary probability theory, confidence intervals, and hypothesis tests. Introduces the use of Excel for statistical analysis.

Course Objectives: At the end of this course, the student will be able to

- Create appropriate graphs, tables, and summary statistics (e.g., means, proportions, and standard deviations) for a given set of data using paper or software.
- Interpret graphs, tables, and summary statistics for a given set of data orally and in writing.
- Apply the basic principles of sampling, experimental design, and probability in the assessment of calculations others have made.
- Validly calculate probabilities for some key probability distributions (e.g., normal and binomial).
- Explain the critical concept of variability in data and summary statistics.
- Correctly interpret the results of a hypothesis test for means and proportions.
- Calculate test statistics and p-values for means and proportions.
- State the assumptions for hypothesis tests for means and proportions
- Concisely and coherently communicate results of a data analysis in writing.

Common Curriculum Supporting Skills for Quantitative Reasoning

Statistics 2331 satisfies the Quantitative Reasoning requirement for the Common Curriculum.

- Students will be able to interpret and translate between multiple, different representations of information, such as visual, numerical, symbolic, and/ or verbal representations.
- Students will be able to use equations and/or principles to solve for an unknown quantity
- Students will be able to evaluate whether an argument or conclusion is valid and/or reasonable.

- Students will be able to articulate an argument for an issue that uses quantitative data in a meaningful way.

Required Materials:

- **Text:** Stat 2331: Introduction to Statistical Methods, Southern Methodist University. MacMillan Learning Curriculum Solutions, 2017. Available only at the SMU Bookstore.
- **Laptop:** MAC or PC is acceptable. Excel must be loaded onto your laptop. Excel is free to SMU students through Office365 or Citrix servers. You will specifically need to include the "Data Analysis ToolPak". We will be using Excel extensively... it is a great tool and a very desirable if not required tool to know in nearly any industry! Definitely a resume builder!
- **Webcam:** required for recording activities and taking exams. If your device does not have a built-in webcam, one can be purchased at a local consumer electronics store or through an online retailer.
- A **calculator** that keeps lists in memory and calculates simple statistics. Does not have to be a graphing calculator. Whatever you had in high school is probably fine.

Assessment

The table below gives a summary of assessments for this course and their percentage values. Each category is explained below the table.

Activity	Frequency	Percentage
Warm Ups	Most class days	3 points per exam
Homework	Weekly	15%
Problem Sets	Worked during class time	10%
Labs	Every Wednesday, due by 11:59 p.m.	20%
Videos	Tuesday and Thursday at noon	10%
Midterm Exams	October 1 and November 5	15% each
Final Exam	Wednesday, December 16, 11:30 – 2:30	15%

The final exam is Wednesday, December 16 from 11:30 – 2:30 p.m. CST. There is no other time you can take it. Please plan accordingly.

Warm Up Exercises (Bonus Points)

There will be a short warm up exercise (5 minutes or less) at the beginning of most class periods. Sometimes the exercise will be a question about yourself (e.g. How far is it in miles from SMU to your high school? Convert that to kilometers.) Other times, it will be about the class reading for the day (i.e. Define "explanatory variable" in the context of

regression). Turning in the warm up exercise by 2:05 p.m. will count as being present. If you are late to class and arrive after the warm up exercise is picked up, you will be counted as absent for the class. Early departure will also count as an absence even if you turned in the exercise on time. The cumulative grade on all warm up exercises will count towards 3 bonus points on the next exam. The percent of warm up questions answered correctly will be the same percent of the 3 bonus points you earn on the exam. For example, suppose we have 10 warm up exercises before the first exam, and there are a total of 20 questions on the exercises. Further suppose that you get 14 of the 20 (70%) warm up questions correct. Then your bonus points for the first exam will equal $0.7 * 3 = 2.1$ points added to your exam grade - just for being on time to class and participating!

Homework [10% of Grade]

It has been said that "repetition is the mother of learning". Therefore, you must practice what we learn in class. I will provide you with several problems to work on between each class. I will also provide you with the full solutions to each of these problems so that you can check your solution and work yourself closer to understanding. The strategy I have found that works best is to attempt these problems on your own first and then to check your answer afterwards. If you have found a mistake, you should then rework the problem until you can solve it without looking at the solution. You will submit the problems and your grading of them to get credit for this assignment.

Problem Sets [15% of Grade]

Each class period will consist of 5 minutes of a warm up exercise, about 10 - 20 minutes of Q&A, and the rest of the time on a problem set. The problem sets will be turned in at the end of each class period. The purposes of the problem set is (1) Practice, practice, practice and (2) Acquaint you with the kinds of problems you will see on exams. The problem sets count as review for the exams.

Labs [20% of Grade]

This course has a lab component to it, and you should have registered for a lab (typically on Wednesday) in addition to registering for the lecture portion of the course. During this time, you will be learning data analysis using Excel. Each lab will require a lab write-up to be turned in for a grade.

Videos [10% of Grade]

Because we have so little time in class, I have chosen to use the time in class to answer questions and work examples. Background material will be presented via videos. You must watch the videos before class for three reasons: 1. They contain information and definitions that you will need for class. 2. They contain short quizzes which are part of your grade, and 3. You can't access the problem set for the day until you watch the video.

Exams [3 @ 15% each]

There will be two mid-term exams and one final exam. The final will be cumulative. There are no make-ups for exams. If you miss a mid-term exam, the final exam will count double. And, yes, there will be Excel on the final exam.

Attendance

Attending class sessions is crucial to your understanding of the course material; therefore, attendance to all lectures and labs (whether online or in person) is mandatory. **Do not schedule anything else during class time. This includes interviews and doctor appointments.**

You are expected to be on time at every class meeting, whether via Zoom or in-person. We have only 50 minutes in each class to cover each lesson in the course. Each class has been designed to maximize these 50 minutes and is exactly enough time to fully cover the material. Missing more than 5 minutes will significantly impair your learning. Equally important, arriving late or leaving early is very distracting to others in the class and will significantly impair their learning. If everyone is there for the full 50 minutes we will see that the whole is greater than the sum of the parts and everyone will have a transformative experience ... mastering introductory statistics!

University Policies

Incompletes will only be given in the case of extraordinary circumstances that prevent you from finishing the semester. You must have completed at least 50% of the course with a passing grade to be eligible for an incomplete.

Disability Accommodations: Students needing academic accommodations for a disability must first register with Disability Accommodations & Success Strategies (DASS). Students can call 214-768-1470 or visit <http://www.smu.edu/Provost/SASP/DASS> to begin the process. Once approved and registered, students will submit a DASS Accommodation Letter to faculty through the electronic portal DASS Link and then communicate directly with each instructor to make appropriate arrangements. Please note that accommodations are not retroactive and require advance notice to implement.

Religious Observance: Religiously observant students wishing to be absent on holidays that require missing class should notify their professors in writing at the beginning of the semester, and should discuss with them, in advance, acceptable ways of making up any work missed because of the absence. (<https://www.smu.edu/StudentAffairs/Chaplain/ReligiousHolidays>).

Excused Absences for University Extracurricular Activities: Students participating in an officially sanctioned, scheduled University extracurricular activity should be given the opportunity to make up class assignments or other graded assignments missed as a result of their participation. It is the responsibility of the student to make arrangements with the instructor prior to any missed scheduled examination or other missed assignment for making up the work. (See 2020-2021 SMU Undergraduate Catalog under "Enrollment and Academic Records/Excused Absences.")

Student Academic Success Programs: Students needing assistance with writing assignments for SMU courses may schedule an appointment with the Writing Center through Canvas. Students wishing support with subject-specific tutoring or success strategies should contact SASP, Loyd All Sports Center, Suite 202; 214-768-3648; <https://www.smu.edu/sasp>.

Pregnant and Parenting Students: Under Title IX students who are pregnant or parenting may request academic adjustments by contacting Elsie Johnson (elsiej@smu.edu) in the Office of the Dean of Students, or by calling 214-768-4564. Students seeking assistance must schedule an appointment with their professors as early as possible, present a letter from the Office of the Dean of Students, and make appropriate arrangements. Please note that academic adjustments are not retroactive and, when feasible, require advance notice to implement.

Covid-19 Attendance Statement: Students who are experiencing COVID-19 symptoms or who have been notified through contact tracing of potential exposure and need to self-quarantine or isolate must follow the protocols laid out in SMU's Contact Tracing Protocol. To ensure academic continuity, students in these situations will not be penalized and will be provided appropriate modifications to assignments, deadlines, and testing. Please also note that SMUFlex classes might, in rare circumstances, go remote for two-week periods to accommodate COVID-related issues. To ensure these necessary accommodations, affected students must:

- Provide as much advance notification as possible to the instructor about a change in circumstances. Students must notify their instructor about a potential absence as well as plans for a return to class. For cases in which students test positive for COVID-19, they should fill out a CCC form at this link.
- Communicate promptly with the instructor to establish, as necessary, alternative assignments and/or changes to deadlines and exams. Students are then responsible for meeting the expectations laid out in these alternative arrangements.
- Continue participation in class via Zoom, as health circumstances permit. Attend class regularly, when not in a situation outlined above, in accordance with safety measures laid out by SMU CAN in the Pledge to Protect (including wearing masks, maintaining social distancing, and cleaning personal space after class). In-person participation in SMUFlex classes is required on students' assigned red/blue rotation days except in cases when students are experiencing illness, are in self-quarantine or in isolation.

Students facing multiple or extended COVID-19-related absences or illness can work with the Office of the Dean of Students to consider options such as fully remote learning or medical withdrawal.