

# STAT 516: STATISTICAL METHODS II

## Information

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## Course Description

(Prereq: a grade of C or higher in STAT 515 or STAT 509 or equivalent) Applications and principles of linear models. Simple and multiple linear regression, analysis of variance for basic designs, multiple comparisons, random effects, and analysis of covariance. Statistical packages such as SAS.

For a list of topics covered, the order in which they are covered, and other details about the course, please visit:

[https://sc.edu/study/colleges\\_schools/artsandsciences/statistics/  
my\\_stat/courses/descriptions/undergrad\\_courses/stat516.php](https://sc.edu/study/colleges_schools/artsandsciences/statistics/my_stat/courses/descriptions/undergrad_courses/stat516.php)

## Course Objectives

To complete a basic two course sequence (in conjunction with STAT 515 or 509) in statistical techniques available to the general practitioner for analyzing experimental data. To introduce students in many different disciplines to multiple regression and analysis of variance for basic experimental designs. To provide students with the knowledge to implement and interpret these standard linear models.

## Textbook & Software

Textbook: *Statistical Methods*, 4th Ed., by Mohr

The textbook can be extremely useful and I find that zealous students will utilize it often. Homework will most likely use the textbook as well.

## Course Webpage

You should be automatically added to our Blackboard course. This will be where I post assignments and announcements. If you have not been added, please *talk to me immediately about getting added to our Blackboard course!*

## Grading

The course grade is determined by the following components:

Exam #1	25%
Exam #2	25%
Exam #3 (Final)	15%
Homework	20%
Quizzes	15 % [Drop Lowest]

## Exams

**Both midterms and the final exam will be in person during a scheduled class time.** The midterm dates will be announced at the beginning of the semester. The final exam will be during finals week and the course should automatically get a date and time assignment from the university.

Note: I may implement a take-home final if it fits the course well. I may also cancel the final exam and replace it with extra quizzes or more time/weight toward the final project. Realistically, these will never happen, but I do reserve the right to do so, if necessary.

**There are NO make-up exams. If you miss an exam, you missed an exam. If you have a planned religious holiday or major event (medical, but others will be considered), you must tell me by the end of the first week of the course!** This includes events that fall on non-exam dates because if you do not tell me and an exam must be moved, your event cannot be accounted for since I was never told about it and your reason will not be valid at that point in time.

If you have a planned serious medical event that falls on an exam date, you must tell me by the end of the first week of the course! Failure to notify me about exam conflicts by the end of the first week, for any conflict reason, will result in the original exam dates staying put. Valid exemptions will move the exam date for everyone.

Emergency medical procedures, testing positive for COVID, etc.. will require a special edition exam. This is not taken lightly, I will require all non-confidential information from your doctor to consider a make-up exam.

Please note that missing an exam and telling me about a complication **after the fact** will result in **NOT receiving a make-up exam**. You must tell me about any complications before the exam is given out.

## Homework

**My homework policy is the most intricate part of the grading system so make sure you understand this entire section.**

Homework will be submitted: Hand-written (if theory homework) or typed, in question order, on the due date via Blackboard. Anything hand-written must be scanned with a method that preserves quality. I recommend R Studio or LaTeX or R Markdown for homework that will be typed. Any computational or software question (SAS, R) must be typed.

You will receive no credit for homework that is illegible. You will not have the opportunity to re-do illegible homework.

This is a foundational course that is designed to make you think and promote challenging ideas. In order to incentivize you to prioritize reflective thought and true understanding over a "better grade", homework will be carried out in a unique way:

**Your homework will be self graded. Submitting a homework without self-grading it will result in a zero after the first homework. For the first homework, if you do not self-grade, you will be contacted for the opportunity to submit your self-grading (assuming you handed it in on time). You will NOT receive solutions before you self grade your homework. Do not wait for solutions to self grade. Your self grading is based on effort and overall understanding of the process, NOT on a correct answer.** For each question you turn in, grade yourself in the following manner:

0 points for anything in the range of *no effort to little/some effort*, resulting in no coherent answer. 1 point for *a serious effort*, resulting in some part of a coherent answer. 2 points for *a serious effort*, resulting in a very coherent and complete answer, one that you are confident is mostly correct.

**When you submit your homework, each question should be clearly self-graded (red pen, red text, etc..) and your entire homework should have your overall self-grade (add up each self-graded question score).To reiterate, each question should be graded 0,1,or 2, AND your entire homework should also have a total grade.** For example, a HW with 12 parts will be graded out of 24 total points. The homework will have the point total and each question/part when it is posted.

This is a lenient homework grading system where I trust you to provide honest grading on how much *effort* you put into the homework. If you spent an hour thinking about a question, tried some coding or math to figure it out, and showed what you did try while explaining your thought processes, yet you didn't really get a solid answer, *that is perfectly fine!* Give yourself a 1 for that question. A self-grade of a 1 should always come with some work, whether it is:

- (1) an explanation of your thought process for the question, what you tried, etc..
- (2) some code that wouldn't execute and you couldn't figure out why, what you think the problem might be with your code, etc..
- (3) some mathematical approaches to the problem that didn't work out and some intuition behind your approach. do you know the correct approach but couldn't figure out the math? etc..
- (4) or some combination of (1),(2),(3).

Besides you grading your own homework, we will have a Grader to grade homework. They will notify me if you receive too many 0's for homework question self-grades, and we will have to discuss why that is happening and try to get you back on track. They will also ensure that you do not abuse this system by keeping track of your homework self-grades and timeline, and if needed, their formal grading of your homework will be implemented. **I reserve the right to formally grade your homework if I believe you are abusing my system. If this happens, you will be graded on a strict 0 or 2 grading scheme, where 2 is reserved for completely correct solutions and 0 for anything else.**

All homework must be submitted on Blackboard.

**Late homework will not be accepted.** I do not break this policy, please do not ask. Your will generally get 1-2 weeks for each homework. Blackboard shuts down assignment uploads at a specific time. One minute late or 2 days late is the same thing, neither will be accepted.

Note for clarity: I expect you to do the homework in the first 24 hours of posting it. If you are sick for those 24 hours, I expect to hear from you with a doctors note from that day. The doctor will excuse you for a few days. It is then expected that you do the homework within the next 24 hours, and if you are still sick, I expect to hear from you with a new doctors note from that day. Repeat this

process until you hand in your homework. If you are sick for the entirety of a homework, and you have communicated with me with each new doctors note, you will need to visit the Ombuds Office or other academic office and report it in order for me to consider forgiving a missed homework. At this point, you have most likely missed 1-2 weeks of class and homework and will need to discuss it with them. They will email me with the situation and all necessary documents and we will go from there.

If you end the course with an overall homework grade of 75% or more, you will get full homework credit.

Missing two or more homework assignments will result in you receiving your earned grade, i.e. if you miss two or more homework assignments, the "75% or more becomes full credit" policy will not apply to you.

Homework will be an overwhelming time investment in this course. We will review everything about it in detail during the first class.

## **Attendance**

Attendance is your own decision and will not be reflected in your grade. The *expectation* is that you are in class. Keep in mind that not attending means you could miss a quiz or details about the course, exams, etc.. and the consequences would be on you if that did happen.

## **Quizzes**

There should be around 4 quizzes. I try not to have less than 4, and if the class requests it, we can have more. I will drop the lowest quiz. If you miss a class without an approved reason, you will receive a zero. Quizzes will be announced in class, not on Blackboard. I will announce it 1 or 2 class periods before the quiz.

## **Student Athletes**

Student athletes cannot use travel, practice, or any other athletic reasoning for an excused absence. If you miss a quiz because you are traveling, that quiz will count as your dropped quiz. If you miss two quizzes, one will be dropped and one will be a zero. If you miss an exam, you will receive a zero. As I usually get multiple student-athletes per semester, you can only block off dates during the first week that are confirmed meets.

## **Graduate students**

If this class has undergraduate and graduate students, graduate students will be graded separately and will be required to do extra work. This might be specific homework, quiz, or exam questions. It also might be a small project. Depending on the graduate student count, I usually discuss it with you. Please come see me if you are a graduate student.

## **Student-centric experience**

If you think you may have a good idea, whether it has to do with grading, exams, programming,

or really any topic, feel free to discuss with me during office hours or in class during the first class meeting. I'm usually open to changing around the course to fit the needs of the students, which may be more difficult if the class size is large, but I will certainly try.

## Grade Scale & Calculating Your Grade

The thresholds 96%, 92%, 90%, 86%, 82%, 78%, and 75% will be used to determine the assignment of the letter grades A, B+, B, C+, C, D+, and D, respectively. A grade of F will be assigned to those earning less than 75%. Curves can ONLY benefit students, I will never negatively curve grades.

To calculate your grade, refer to this grading scheme:

Exam #1	25%
Exam #2	25%
Exam #3 (Final)	15%
Homework	20%
Quizzes	15 % [Drop Lowest]

$$25 * \frac{Exam1}{100} + 25 * \frac{Exam2}{100} + 15 * \frac{Final}{100} + 20 * HWPercent + 15 * \frac{QuizAverage}{10}$$

HWPercent = Calculate each homework grade as a percent, i.e.  $\frac{18}{20} = 0.9$

Then, average the percentages to get HWPercent. Keep in mind that a HW worth 30 points is worth the same course percent as a HW worth 15 points. It is NOT worth double. Each homework is represented as a percent of the total. Also keep in mind that as long as HWPercent is above 75% and you haven't missed two or more homework assignments, then you will get the full 20 points!

QuizAverage = Drop your lowest quiz and then average the numbers. Keep in mind that this isn't a percent, just average your actual scores after dropping the lowest.

## Common Courtesy

This list will grow as I teach more and realize what some students do that does not belong in a healthy learning environment. If you have SDRC accommodations, they will take priority. Keep in mind that I have never had to use any of these policies and I hope to never use them. They are in place to provide a good space for everyone to learn.

1. Do not wear headphones in class and expect to stay.
2. If you are constantly on your phone, distracting other students, playing games, etc., I do not give a warning.
3. If you need to take a phone call, use the bathroom, etc.. it is not a big deal, just do it quietly without needing to ask me.
4. If you arrive late or leave early, I assume that you have a life outside of class and things happen. You don't need to tell me beforehand or explain it to me at all, you can come and go as you please. The important part is that you do so quietly and with as little disruption to the class as possible. If it becomes an issue, I will discuss it with you.

If any of these issues arise, I will simply suspend you from all assignments until the chair of the department has met with you and decided how to continue. Anything you miss (quizzes, exams, homework) while that is happening will result in a zero for you. If you are suspended and complete assignments, they will still result in a zero.

### **SDRC & University Policies**

SDRC students will take quizzes in class. Speak to me in person if this is the case. SDRC students who want to take exams in the SDRC facility will need to arrange everything on their end and I will complete the process via email with SDRC. I do not communicate with SDRC at all besides responding to your request for exams. The SDRC process is completely done on your end. **EXAMS TAKEN AT SDRC MUST BE TAKEN DURING THE ALLOCATED TIME SLOT FOR THE COURSE EXAM. ANY REQUEST OUTSIDE OF THIS TIME SLOT WILL BE DENIED, AND IF IT SLIPS THROUGH SOMEHOW, WILL BE GIVEN A ZERO IF REALIZED AFTER-THE-FACT.**

Please note that the *Assignment Extensions* accommodation with SDRC does not apply to this course since quizzes and exams cannot be extended with this accommodation (you will need the *Extra Time* accommodation for that) and homework is assumed finished within the first 24 hours so the '48-hour prior' policy means that you are already over a week late to notify me as per this syllabus.

Below this section will be useful university policies.

## **1 Accommodation for Disabilities**

If you require special accommodations, they must be arranged in advance through the Office of Student Disability Services in room 112A LeConte (777-6142, TDD 777-6744, [sasds@mailbox.sc.edu](mailto:sasds@mailbox.sc.edu)).

## **2 Honor Code**

See the Carolinian Creed in the Carolina Community: Student Handbook Policy Guide. Violations of the USC Honor Code may result in a 0 for the work in question, and, in accordance with University policy, other punishments up to and including expulsion from the University.