STAT 540/J540 SYLLABUS
Fall 2020

John M. Grego
MW 9:40-10:55
Office Hrs: TTh 11-12:30

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Text Required: *The Little SAS Book: A Primer;* 6^{th} *Edition*, by Delwiche and Slaughter (The 5^{th} edition is appropriate for most of the material in the course). Supplementary material includes *SAS Certification Prep Guide: Base Programming for SAS 9,* 5^{th} *Edition*, SAS Publishing; *Basics of R: A Primer*, by Don Edwards. Other R resources are available through the website.

Disabilities If you qualify for accommodations because of a disability, please submit a letter to me from the Student Disability Resource Center in a timely manner so that your needs can be addressed. The Student Disability Resource Center determines accommodations based on documented disabilities. Contact: 777-6741, Close-Hipp 102, sadrc@mailbox.sc.edu (`sc.edu/about/offices_and_divisions/student_disability_resource_center/`)

Learning Outcomes Students should be able to

- Identify different object types in R and understand their uses
- Carry out arithmetic and logical operations in R and SAS
- Manage datasets in R and SAS, including sorting and subsetting
- Input, output, and manage complex datasets in SAS
- Produce high-quality graphics in R
- Save SAS output in presentation-quality formats
- Understand macro commands in SAS and construct simple macro
- Produce code in an environment that follows recent trends in R and SAS

Excused Absences and How to Report an Illness. All absences due to documented illness or quarantine will be excused, and no grade penalty will be assessed for missing classes for this reason. If you experience COVID-19 symptoms, please stay home, contact the COVID-19 Student Health Services (SHS) nurse line (803-576-8511), complete the COVID-19 Student Report Form (`go.sc.edu/covidstudentreport`), and select the option allowing the Student Ombuds to contact your professors. When talking with the SHS nurse, be sure to ask for documentation of the consult as you will need this to document why you missed class. You will also use the COVID-19 Student Report Form if you have tested positive for COVID-19 or if you have been ordered to quarantine because of close contact with a person who was COVID-19 positive. In each of these situations you will be provided appropriate documentation that can be shared through the Student Report Form.

Student Well-Being Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live and believes this may affect their performance in the course, is urged to contact the Division of Student Affairs and Academic Support. If you are comfortable doing so, please notify me as the professor so that we can find resources that may be helpful.

Students do not learn when they do not feel safe. If you feel unsafe on campus at any time in any place, please contact Police Dispatch at 803-777-4215 (in an emergency, please call 911) and reach out to the Division of Student Affairs and Academic Support. Again, if you are comfortable doing so, please notify me as the professor, and I will do my best to make appropriate accommodations.

Students may experience situations or challenges that can interfere with learning and interpersonal functioning including stress, anxiety, depression, substance use, concern for a family/friend, or feelings of hopelessness. Pay attention to what is happening in the classroom and in the lives of your fellow students. There are numerous campus resources available to students including University Counseling Psychiatry Service and University Student Health Services. Help is available 24/7. Students who need immediate help should call 803-777-5223. An outside resource is the National Suicide Prevention Lifeline (800-273-8255).

Grading Grades will be weighted in the following way:

Exam 1 (on-line)	100 points
Exam 2 (on-line)	100 points
Homework/Classwork	100 points
Project	100 points
Final Exam	100 points
Total	500 points

The project will be a simulation, coding or methodology project that can be undertaken with a partner (or partners) and will consist of a project proposal (25%), computer work (25%), and written draft (50%). I anticipate that many of these projects will explore features of SAS or R not covered in class. I use the project to enhance (or reinforce) skills you will need in your future (or current) career: written communication, practical problem-solving and teamwork.

Students will take the two tests remotely using Respondus Lockdown and Monitor; the final exam will be a take-home exam.

The grading scale will be:

90 to 100	A
85 to 90-	B+
80 to 85-	B
75 to 80-	C+
70 to 75-	C
65 to 70-	D+
60 to 65-	D
0 to 60-	F

In accordance with standards outlined in the *Graduate Studies Bulletin*, graduate students will be assigned additional work. The class exercises and each of the three exams will have supplemental problems at the graduate level that graduate students must complete. This work will count toward graduate students' overall score for a given assignment.

Blackboard and Course Webpage All classwork should be uploaded by the student via Blackboard. I will generally use Blackboard to manage assignments and grading and post updated lectures and assignments, though much of the course material will also be posted on my website. The URL for the class web page is `people.stat.sc.edu/grego/courses/`

`stat540`; the website is also available through Blackboard. The webpage of Professor David Hitchcock(`people.stat.sc.edu/hitchcock/stat540.html`) has much useful information too; be sure to refer to it for additional resources, particularly for R, and different sets of examples and code.

Classwork and Homework For portions of the course in which the texts/notes are exemplary (and that is much of the class), we will have exercises that emphasize active preparation. You will view several of the classes having already completed and posted class exercises that had been posted to Blackboard (see syllabus for dates). These exercises will count toward your homework/classwork grade.

In a typical lecture using Blackboard Collaborate Ultra, I will review any class exercises, then lecture on new material; the lecture will usually be broken into shorter modules for easier online review. Given the need for students to pause and explore code while reviewing lectures, the combined running time of many lectures will be shorter than the allotted 75-minute time period.

You are encouraged to discuss homework and class assignments with your classmates and me, but all such assignments must be written independently. Do not copy any part of another student's work or computer code. You are not allowed to discuss exams with your classmates; please consult me if you have any questions. Incidences of cheating and academic dishonesty will be punished to the full extent allowed under university regulations.

Course Interaction The professor will be available by phone and by e-mail. Students may also communicate with one another by e-mail or other social media. A weekly Discussion Board will be available in Blackboard to encourage student-student and student-instructor interaction on course assignments. Virtual office hours will be held using the Course Room in Blackboard at scheduled times; other Course Room drop-ins are easily arranged (this can be a great way to resolve coding issues in a timely fashion).

Classroom Technology Course viewing information is available on Blackboard. The course lectures can be watched live using Blackboard Collaborate Ultra at regularly-scheduled class times. Recordings will be available an hour or two after the lecture is over–return to Blackboard Collaborate Ultra, float your mouse over the set of parallel lines on the left of the Sessions bar to highlight Menu, and select Recordings to see a current list.

I will use the computer extensively in lectures for demonstrations and introduction of computer software; all computing done by me in class will also be posted on the webpage. We will be using two computer packages throughout the course. Increased familiarity with SAS is an important course objective. In addition, R is an important resource for exploring statistical computing.

Most students will use SAS Studio, an online version of SAS that is available for free through SAS OnDemand; the course enrollment link is included in Blackboard under Course Documents. The link to another free version of SAS Software, SAS University Edition, is available in Blackboard under Course Documents as well. Both packages are available on the PCs in Gambrell's basement for College of Arts and Sciences majors (use your Blackboard login userid and password). SAS is available on computers 1-3 and R is available on all computers in the Cooper Technology Lounge on Level 5 of Thomas Cooper Library. But students may consider copies for laptop use, since limited access to labs can affect course success. SAS licenses are available for student use for $100 from USC (accessed via the Purchase Computer Software tab in Self Service Carolina); the licenses are in effect from 7/1/2020 to 6/30/2021. Be sure to log into SAS Studio or obtain a copy of SAS at the

beginning of the semester to avoid assignment delays once we start SAS in October.

R is available for free download from the CRAN (Comprehensive R Archive Network) website (`cran.r-project.org`). Almost all students prefer to also download RStudio IDE (integrated development environment) as a better-integrated development platform than standard R; a free version can be downloaded (`www.rstudio.com`). Class instruction will be in R Studio.

Date	Assignment/Topic	Graded Work
8/24		
8/26	Edwards 1-4	
8/31		
9/2	Edwards 5-8	Class Exercise 1
9/7	Labor Day (Class)	Class Exercise 2
9/9	Edwards 9-12	Class Exercise 3
9/14		HW 1
9/16		
9/21	Random Variables	Class Exercise 4
9/23	Stochastic Simulation	HW 2
9/28	`dplyr` and `ggplot2`	Class Exercise 5
9/30		Exam 1
10/5	SAS 1	
10/7	SAS 2	Class Exercise 6
10/12	SAS 3	
10/14		Class Exercise 7
10/19	SAS 4	
10/21		HW 3
10/26	SAS 6	
10/28		Class Exercise 8
11/2	SAS 5	Proposal Due
11/4		Exam 2
11/9	SAS 7	
11/11		Class Exercise 9
11/16		HW 4
11/18		
11/23	SAS 8	Project Due
11/25	No Class (Thanksgiving)	
11/30	SAS Supplementary	Class Exercise 10

The final exam will be due Wednesday, December 9 at 5 PM