

STAT 541, Advanced SAS Programming -- Spring 2023

Instructor:

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Course Web Page: <http://people.stat.sc.edu/hitchcock/stat541.html>

Class Meeting Times: MWF, 10:50 am - 11:40 am, LeConte College 103
(see below about Blackboard Collaborate Ultra recordings)

Office Hours: Mon 9:30-10:30 am, Tues 10:30 - 11:30 am, Wed 9:30-10:30 am, Fri 9:30-10:30 am, or **please feel free** to make an appointment to see me at other times.

Textbook: *SAS Certified Professional Prep Guide: Advanced Programming Using SAS 9.4* (First edition), by SAS Institute. ISBN: 9781642954678. Publication Date: October 2019

Required Computing Resources: You will need to create a student account in **SAS OnDemand for Academics** in order to access (for free) SAS Studio. Instructions are given on the course web page. You will receive an enrollment link in an email from the course instructor. In addition, SAS is available in some of the labs around campus.

Course Outline: PROC SQL (Queries, joins, table creation and management, indices and views); Macro variables, macro programs and macro storage; Creating and combining data; Lookup tables; formatting data and modifying data sets; Functions, subroutines, and advanced character functions; SAS Programming and best practices; efficient sorting and queries.

Purpose: To help students learn advanced SAS computing programming skills, including SQL queries; data management, modification and formatting; and SAS macro programming. To help students learn efficient methods of SAS programming.

Learning Outcomes: Students should be able to

- Perform SQL queries and data management using PROC SQL
- Interpret and write complex SAS macro programs
- Manage, combine, modify, and format data sets in SAS
- Write SAS code that runs efficiently
- Sort and query SAS data sets efficiently

Class Lectures / Attendance Requirement:

You may attend the lectures live on Mondays, Wednesdays, and Fridays in LeConte 103, or you may watch them after the fact by viewing the recorded lectures that are posted on the Blackboard STAT 541 course page (click Blackboard Collaborate Ultra link, then navigate to the recordings using the top left corner menu). Information about how to access online lectures will be emailed to you.

However, since this is technically an in-person class, you are expected to attend at least half of the class sessions in person. Attendance will be taken each class, and your grade on the attendance component will be double the percentage of class sessions that you attend live (with a maximum of 100% for the attendance grade). For example, if you attend 33% of the class

sessions in person, your attendance grade (which is 5% of the overall course grade) will be 66%. If you attend 50% or more of the class sessions in person, your attendance grade will be 100%.

Homework: Homework exercises will be assigned on the course web page. Due dates will be given on the course web page. Late homework will be penalized and will not be accepted after solutions have been posted. The homework will typically involve writing some programs/code in SAS and both the code and programming comments will be graded.

Each student's homework must be done independently. You may ask each other informal questions about the homework, but everyone is to do his/her own work. If homework is found to be copied, all students involved will receive a 0. Of course, you may always ask me questions about the homework. [To be clearer, students can ask each other informal ORAL questions about homework, but **cannot look at or copy each other's homework papers or code**. All submitted homework must be their own work.]

Quizzes: Short quizzes will be posted occasionally in Blackboard. You may attempt these quizzes multiple times and your highest score will be kept, but these attempts must come BEFORE the due date. You will not be allowed to make up any quizzes once the due date is passed, so be sure to attempt the quiz soon after it is posted!

Honor Code: Every student has a role in maintaining the academic reputation of the university. It is imperative that you refrain from engaging in plagiarism, cheating, falsifying your work and/or assisting other students in violating the Honor Code.

Student Disabilities: Any student with a documented disability should contact the Student Disability Resource Center at 777-6142 to make arrangements for appropriate accommodations.

For Graduate Students:

Since 500-level courses are required to contain more rigor for graduate students than for undergraduates, there will be an extra project required for graduate students. Undergraduate students may do this project for extra credit. The project will be due near the end of the semester. More information will be given out later in class.

Exams: There will be two midterm exams and a final exam. All these exams will consist of multiple-choice questions about the concepts studied in the class, plus a short free-response coding problem. The midterm exams will be given in the classroom during the regularly scheduled class time. If you are not able to come to campus for any of the exams, you must contact the instructor ahead of time to make arrangements to take the exam.

Grading: For **undergraduate students**, the course grade will be based on tests (45%, i.e., 15% each) and homework (45%), attendance (5%), and Blackboard quizzes (5%). For **graduate students**, the course grade will be based on tests (42%, i.e., 14% each), homework (42%), Blackboard quizzes (5%), attendance (5%) and the required project (6%). The overall course average will result in the following grades: 90-100 = A, 87-89 = B+, 80-86 = B, 77-79 = C+, 70-76 = C, 67-69 = D+, 60-66 = D, 59 and below = F.

Wednesday, Feb. 15: Exam 1

Wednesday, March 29: Exam 2

Wednesday, April 26 - 9:00 a.m.: final exam