STAT 540: Computing in Statistics
Fall 2024
MW 14:20- 15:35PM, Close-Hipp 436

Instructor: Yen-Yi Ho

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Class Website: https://people.stat.sc.edu/hoyen/STAT540/Stat540.html

Class Meeting Times: MW 14:20- 15:35PM, Close-Hipp 436

Office Hours: Th 16:00 – 17:30PM, Friday 14:00-15:00PM or by appointment.

Teaching Assistant: Kaniz Fatema (KFATEMA@email.sc.edu)

TA Office Hours: MW 12:30PM- 2PM, Tuesday 11:30 PM – 1PM, LeConte 111

Textbook and required material:

Basics of R: A Primer by Don Edwards (Available on course website).

The Little SAS book: A Primer, 6th edition, by Delwiche and Slaughter.

Introduction to Data Science: Data Wrangling and Visualization with R, by Rafael A. Irizarry (link on course website).

Recommend to read *Introduction to R,* available at CRAN: http://www.r-project.org (click "manuals" under "documentation" at left side of page; then choose the first manual, "introduction to R").

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:

Successful students in this course will learn computing skills that will be useful to them both in academic endeavors and as working statisticians. Specifically, successful students at the end of class should be able to

1. Identify different types of objects in R and understand their uses
2. Carry out arithmetic and logical operations in R and SAS
3. Manage datasets in R and SAS, including data sorting and subsetting
4. Input, output, and save datasets in R and SAS
5. Produce high-quality graphics in R and SAS
6. Understand macro commands in SAS and construct simple macro programs.

Course Content:

Selected chapters in Introduction to Data Science by Rafael Irizarry, Basic of R by Don Edwards, and the Little SAS book by the Delwiche and Slaughter textbooks. Topics to be covered include: Objects in R; Inputting and outputting Data in R; R commands for Graphics, Functions, Arithmetic, Logicals, Conditional Execution, Subsetting, Sorting, and Iteration; Random variable generations and simulations; R functions of root finding, optimization, and integration. Introduction to SAS; Reading and Writing Data; Working with Your Data; Sorting, Printing, Summarizing Data; Modifying and Combining Data Sets; MARCO programming in SAS; Data visualizing techniques; Basic statistics procedures.

Required computing recourses

Access to a computer (64-bit operating system) with **R** (available as a free download from the CRAN home page), **R Studio** (available as a free download), and **SAS** (free access of SAS using SAS Studio; students who want their own SAS can buy a student copy from USC IT Services). Notice that **a Chromebook will not have sufficient computing power** required by this course. **It is encouraged to bring your own laptop** to the class and practice along with the programming code during the class.

Help in using R can be found on the CRAN home page (http://www.r-project.org). Help in using SAS can be found on https://support.sas.com/en/documentation.html.

Details on Graded Assignments:

Homework (50%): There are weekly homework assignments for this course, and they will be posted on the course website. **Late homework will lose 10% of total points per day.** Please hand in a hard copy of your Homework before class and also email your R code to Kaniz Fatema (KFATEMA@email.sc.edu).

One take-home mid-term exam (20%) will be assigned. One week is allowed to complete each exam. The mid-term exam will be assigned on **October 9th** tentatively.

Final Project (20%) and Presentation (10%): The instruction for the final project will be posted on the course website. Each student will have time to present the final project during class time. The written report will be due by **Wednesday December 11 before 5PM**. No late final project report will be accepted.

Grading Components

		Grading Scale:			
Midterm exam	20%	A	90-100%	C	70-76.9%
Homework	50%	B+	87-89.9%	D+	67-69.9
Final Project	30%	B	80-86.9%	D	60-66.9%
TOTAL	100%	C+	77-79.9%	F	Less than 60%

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 A airs 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 inter-personal 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).

Expectations
- Attend the class at the scheduled times and ask questions when getting lost.
- It is fine to discuss homework and class assignments with your classmates and me, but all such assignments must be coded or written independently.
- Do not copy any part of homework, exam work, or computer codes from any other students.

- You are not allowed to discuss take-home exams with your classmates; please consult me if you have any questions.

Course Policies and Procedures
- Please hand in a hard copy of your Homework and R code in class and also email your R code to TBA.
- I encourage you to work together in computing and discussing the problems. However, each student is expected to independently write up the submitted assignment using her or his own computing and giving explanations in her or his own words.
- Late homework will lose 10% of total points per day, unless arrangements have been made with the instructor for an extension. Homework will not be accepted after the time at which graded homework are returned.
- Incomplete Contracts: A grade of incomplete "I" shall be assigned at the discretion of the instructor when, due to extraordinary circumstances (e.g., documented illness or hospitalization, death in family, etc.), the student was prevented from completing the work of the course on time. The assignment of an "I" requires that a contract be initiated and completed by the student before the last official day of class, and signed by both the student and instructor. If an incomplete is deemed appropriate by the instructor, the student in consultation with the instructor, will specify the time and manner in which the student will complete course requirements. Extension for completion of the work will not exceed one year (or earlier if designated by the student's college).

Attendance Policy
When you miss class, you miss important information. If you are absent, you are responsible for learning material covered in class. If you are absent when an assignment is due, you must have submitted the assignment prior to the due date to receive credit. If you miss more than 20% of the classes unexcused, your grade will be dropped one letter grade.

Academic Integrity
You are expected to practice the highest possible standards of academic integrity. Any deviation from this expectation will result in a minimum academic penalty of your failing the assignment and will result in additional disciplinary measures. This includes improper citation of sources, using another student's work, and any other form of academic misrepresentation.
The first tenet of the Carolinian Creed is, "I will practice personal and academic integrity."
Below are some websites for you to visit to learn more about University policies:
Carolinian Creed (http://www.sa.sc.edu/creed)
Academic Responsibility (http://www.sc.edu/policies/staf625.pdf)

Office of Student Conduct and Academic Integrity
(https://www.sa.sc.edu/academicintegrity/)
Network Guidelines for Responsible Computing
(http://www.sc.edu/about/offices_and_divisions/university_technology_services/p
olicies_procedures/networkguideline.php)

Plagiarism

Using the words or ideas of another as if they were one's own is a serious form of
academic dishonesty. If another person's complete sentence, syntax, key words, or
the specific or unique ideas and information are used, one must give that person
credit through proper citation.

Class Conduct

Professionalism will be expected at all times. Because the university classroom is a
place designed for the free exchange of ideas, we must show respect for one
another in all circumstances. We will show respect for one another by exhibiting
patience and courtesy in our exchanges. Appropriate language and restraint from
verbal attacks upon those whose perspectives differ from your own is a minimum
requirement. Courtesy and kindness is the norm for those who participate in my
class.

Instructional Methods

The course will be taught using multiple instructional methods. These methods will
include lecture, computer programming exercise sections.

Diversity and Inclusion

The university is committed to a campus environment that is inclusive, safe, and
respectful for all persons, and one that fully embraces the Carolinian Creed. To that
end, all course activities will be conducted in an atmosphere of friendly
participation and interaction among colleagues, recognizing and appreciating the
unique experiences, background, and point of view each student brings. You are
expected at all times to apply the highest academic standards to this course and to
treat others with dignity and respect.

Expectations of the Instructor

I am expected to facilitate learning, answer questions appropriately, be fair and
objective in grading, provide timely and useful feedback on assignments, maintain
adequate office hours, and treat you as I would like to be treated.

Course Communication

I will be communicating with you regarding grades and assignments. If you need
to get in touch with me, the best method is via email.
If you are having trouble with this course or its material, you should contact me via
email to set up an appointment to discuss the issues.

Emails will be sent your email address. In addition, announcements may be posted on the course website. If you primarily use another email account, you should make sure that the Blackboard account is linked to that address. It is your responsibility to ensure that your email account works properly in order to receive mail.

Please be sure that the email you check regularly is set in Blackboard:
- Click on the My USC tab along the top of the page in Blackboard
- In the Tools module, click on "Personal Information"
- Click on "Edit Personal Information"
- Scroll down to the listing for Email
- In the box will be listed what Blackboard has as your email address. If you wish to change it, delete the email address in the box and type in the email address you want to use.
- Click on the Submit button at the top or bottom of the page.

Disability Services
Student Disability Resource Center (http://www.sa.sc.edu/sds/): The Student Disability Resource Center (SDRC) empowers students to manage challenges and limitations imposed by disabilities.

Student Success Center
In partnership with USC faculty, the Student Success Center (SSC) offers a number of programs to assist you in better understanding your course material and to aid you on your path to success. SSC programs are facilitated by professional staff, graduate students, and trained undergraduate peer leaders who have previously excelled in their courses. Resources available to you in this course may include:
- Peer Tutoring: You can make a one-on-one appointment with a Peer Tutor (www.sc.edu/success). Drop-in Tutoring and Online Tutoring may also be available for this course. Visit their website for a full schedule of times, locations, and courses.
- Supplemental Instruction (SI): SI Leaders are assigned to specific sections of courses and hold three weekly study sessions. Sessions focus on the most difficult content being covered in class. The SI Session schedule is posted through the SSC website each week and will also be communicated in class by the SI Leader.

- Peer Writing: Improve your college-level writing skills by bringing writing assignments from any of your classes to a Peer Writing Tutor. Similar to Tutoring, you can visit the website to make an appointment, and to view the full schedule of available drop-in hours and locations.
- Success Consultations: In Success Consultations, SSC staff assist you in developing study skills, setting goals, and connecting to a variety of campus resources. Throughout the semester, I may communicate with the SSC via Success Connect, an online referral system, regarding your progress in the course. If contacted by the SSC, please schedule a Success Consultation. Success Connect referrals are not punitive and any information shared by me is confidential and subject to FERPA regulations.

SSC services are offered to all USC undergraduates at no additional cost. You are invited to call the Student Success Hotline at (803) 777-1000, visit the SSC website (www.sc.edu/success), or stop by the SSC in the Thomas Cooper Library on the Mezzanine Level to check schedules and make appointments.

Writing Center
Writing Center (http://artsandsciences.sc.edu/write/university-writing-center)
This course has many of writing assignments. The University Writing Center is an important resource you should use! It's open to help any USC student needing assistance with a writing project at any stage of development. The main Writing Center is in Byrnes 703.

Library Resources
Library Resources (http://library.sc.edu)
The university library has great resources for finding out how to cite materials in your projects. Remember that if you use anything that is not your own writing or media (quotes from books, articles, interviews, websites, movies – everything) you must cite the source in MLA format.

Blackboard and Technology
(http://www.sc.edu/about/offices_and_divisions/university_technology_services/)
As a student in this course, you have access to support from the Division of Information Technology (DoIT) for Blackboard and computer issues. The service desk can be reached at 803-777-1800.

Counseling Services
(https://sc.edu/about/offices_and_divisions/student_health_services/medical-services/counseling-and-psychiatry/index.php): The University offers counseling and crisis services as well as outreach services, self-help, and frequently asked questions.