Statistical Computing in R

Instructor: Dr. Leo Duan 220 Griffin Floyd Hall email: li.duan@ufl.edu

Office Hour: Monday 12:40pm-1:40pm

TA: Dipshi Roychowdhury

Lecture Format: The course will be delivered **in person** in the classroom.

Required Textbook:

1. Statistical Computing With R by Rizzo, Maria 2nd Edition
2. Convex Optimization by Boyd and Vandenberghe

Open access version (free):

https://web.stanford.edu/~boyd/cvxbook/bv_cvxbook.pdf

Objective: The goal of the course is to introduce various important topics related to the modern statistical computating, as an essential requirement for data science. We will focus on both learning the mathematical foundation underpinning the computing methods and the program implementation using R.

Prereq: STA 3100 and STA 4210 and STA 4322 and MAS 4115.

Course Schedule: The course covers the following topics.

A tentative plan is

	Topic
1	Introduction
2	Generating Random Variables
3	Monte Carlo Integration
4	Optimization
5	Monte Carlo Methods in Inference
6	Markov Chain Monte Carlo
7	Bootstrap and Jackknife

Grading and exams: The total score grade consists of:

Percentage	Source	Date
25%	Homework	
25%	First Exam	February 6
25%	Second Exam	March 6

Percentage	Source	Date
25%	Third Exam	April 22

Note: if there's any disagreement on the score you get for homework / exam, you have *one week of time to appeal* to the instructor after getting your homework / exam back.

The letter grade is tentatively planned as the 10-point scale (90% for an A, 80% for a B, . . .), subject to change depending on the final score distribution.

Information on current University of Florida grading policies for assigning grade points is given at: https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx

Homework: *No late homework will be accepted*, except for medical reason with the doctor's note.

University Policies and Resources

Attendance policy Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at: https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx.

Students requiring accommodation Students who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center by visiting https://disability.ufl.edu/students/get-started/. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

UF course evaluation process Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at http://gatorevals.aa.ufl.edu/students. Students will be notified when the evaluation period opens and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via http://ufl.bluera.com/ufl/. Summaries of course evaluation results are available to students at http://gatorevals.aa.ufl.edu/public-results/.

University Honesty Policy University of Florida students are bound by the Honor Pledge. On all work submitted for credit by a student, the following pledge is required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Student Honor Code and Conduct Code (Regulation 4.040) specifies a number of behaviors that are in violation of this code, as well as the process for reported allegations and sanctions that may be implemented. All potential violations of the code will be reported

to Student Conduct and Conflict Resolution. If a student is found responsible for an Honor Code violation in this course, the instructor will enter a Grade Adjustment sanction which may be up to or including failure of the course. For additional information, see https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/.

In-class recording Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal educational use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and delivered by any instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentations such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party-note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Procedure for conflict resolution Any classroom issues, disagreements or grade disputes should be discussed first between the instructor and the student. If the problem cannot be resolved, please contact Christine Miron (brown.christine@ufl.edu, 352-392-1941). Be prepared to provide documentation of the problem, as well as all graded materials for the semester. Issues that cannot be resolved departmentally will be referred to the University Ombuds Office (http://www.ombuds.ufl.edu; 352-392-1308) or the Dean of Students Office (http://www.dso.ufl.edu; 352-392-1261).

Resources available to students Health and Wellness - U Matter, We Care: umatter@ufl.edu; 352-392-1575. - Counseling and Wellness Center: http://www.counseling.ufl.edu; 352-392-1575. - Sexual Assault Recovery Services (SARS): Student Health Care Center; 352-392-1161. - University Police Department: http://www.police.ufl.edu/; 352-392-1111 (911 for emergencies). Academic Resources - E-learning technical support: learning-support@ufl.edu; https://elearning.ufl.edu; 352-392-4357. - Career Connections Center: Reitz Union; http://www.career.ufl.edu/; 352-392-1601. - Library Support: http://cms.uflib.ufl.edu/ask. - Academic Resources: 1317 Turlington Hall; 352-392-2010; https://academicresources.clas.ufl.edu. - Writing Studio: 2215 Turlington Hall; http://writing.ufl.edu/writing-studio/.