

STA 6329, Fall 2017

## **Matrix Algebra and Statistical Computing**

### *Course Instructor*

Z. Su, 207 Griffin-Floyd Hall

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Office Hours: M, W: 4:00 - 5:00 pm, 207 Griffin-Floyd Hall, or by appointment.

### *Teaching Assistant*

Yuna Kim

email: [ynkim732@ufl.edu](mailto:ynkim732@ufl.edu)

Office Hours: T: 10:40 am - 12:40 pm, 218 Griffin-Floyd Hall.

### *Lectures*

M, W, F: 3:00 - 3:50 pm.

### *Text*

“Matrix Algebra From A Statistician’s Perspective” by D. A. Harville.

“A First Course in Statistical Programming with R, 2nd Edition” by W. J. Braun and D. J. Murdoch.

“Advanced R” by H. Wickham, <http://adv-r.had.co.nz/>

### *Course Website*

Canvas

Please check this site regularly. Most course documents and important information, including suggested homework exercises and readings, course schedule, practice session schedules, and special announcements, will be posted there.

### *Course Description*

This course covers matrix algebra and R, the most popular computational language in statistics. It serves as a foundation for other statistics classes. Topics in matrix algebra include but not limited to basic operation in matrices, linear independence and rank, inverse and general inverse, idempotent matrix and projections, determinant, eigenvalue and eigenvectors, quadratic forms, matrix differentiation, Kronecker products. Topics in R include but not limited to basic operations, R graphics, computational linear algebra, simulation, parallel computing and development of R package.

### *Homework*

There will be approximately twelve homeworks. Late homework without legitimate documented reason will not be accepted. If you cannot hand in your homework during the lecture, please talk to the Teaching Assistant. All homework must be readable. R codes should be included in computing problems. Working together in groups on homework is permitted, but each student must do his/her own write-up of the solutions in his/her own words. Directly copying is not acceptable. Answers to selected exercises can be found on the course website.

### *Reading Assignments*

Due to the limited schedule and the broadness of the topics we need to cover, some of the topics appear in the reading assignments. You are fully responsible for all the reading assignments. Materials in reading assignments, including proofs, can appear in exams.

### *Grading*

The homework scores will count for a total of **50%**. Two in-class exams are tentatively scheduled on **October 13** and **December 6**, and they will count **25%** each.

The usual 10 point scale (90% and above for an A, 87% - 90% for an A-, 83% - 87% for a B+, 80% for a B, ... ) is used.

### *Attendance*

The course is challenging and requires steady effort throughout the semester. I expect you to attend all lectures and hand in your assignments on time. You are responsible for making up for any missed lectures.

### *Incomplètes*

Grades of "I" will be given only in extraordinary circumstances, and then only by written agreement between the instructor and the student.

### *Academic Integrity*

Please familiarize yourself with the Student Honor Code and Academic Honesty Guidelines outlined in your University of Florida Student Guide and at <http://www.dso.ufl.edu/studentguide/studentrights.php>.

### *Disability access statement*

This material is available in alternative formats upon request.