Lecture 0
Course Information

DSA 8070 Multivariate Analysis
August 9-13, 2021

Whitney Huang
Clemson University

Notes

About the Instructor

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About the Instructor

- Third-year Assistant Professor of Applied Statistics and Data Science
- Born in Laramie, WY, grew up in Taiwan


- Obtained a B.S. in Mechanical Engineering, switched to Statistics in graduate school


- Got a Ph.D. (Statistics) in 2017 at Purdue University.


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How to reach me?

- **Email:** wkhuang@clemson.edu
- **Office**: O-221 Martin Hall
- **Office Hours**: Tue. and Wed. 8:30pm - 9:15pm ET via Zoom and by appointment

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Class Policies

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Logistics

- There will be three projects. The due dates are:
  - **Project I**: Sep. 30, Thursday
  - **Project II**: Nov. 4, Thursday
  - **Project III**: Dec. 9, Thursday
- There will be weekly R Labs:
  - To be uploaded to Canvas by 11:59 pm ET on the due dates
  - Worst grade will be dropped
- No lectures during Thanksgiving week (Nov. 22-26)

Notes

Course Materials at CANVAS

- Course syllabus / Announcements
- Lecture slides/notes/videos
- R Labs/Projects
- Data sets for lectures and labs

Notes

Reference Books

- *Methods of Multivariate Analysis*, 3_{rd} Edition, **Alvin Rencher and William Christensen, 2012** [Link]
- *Applied Multivariate Statistical Methods*, 6_{th} Edition, **Richard Johnson and Dean Wichern, 2008** [Link]
- *Applied Multivariate Statistics with* R, **Daniel Zelterman, 2015** [Link]

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Evaluation

Grades will be weighted as follows:

R Labs	25%
Project I	25%
Project II	25%
Project III	25%

Final course grades will be assigned using the following grading scheme:

>= 90.00	A
88.00 $\sim$ 89.99	A-
85.00 $\sim$ 87.99	B+
80.00 $\sim$ 84.99	B
78.00 $\sim$ 79.99	B-
75.00 $\sim$ 77.99	C+
70.00 $\sim$ 74.99	C
68.00 $\sim$ 69.99	C-
<= 67.99	F

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Computing

We will use software to perform statistical analyses. Specifically, we will be using `R/Rstudio`

- a **free**/**open-source** programming language for statistical analysis
- available at `https://www.r-project.org/` (`R`); `https://rstudio.com/` (`Rstudio`)

Notes

Topics

Week	Dates	Topic
1	8/18-20	Introduction
2	8/23-27	Characterizing and Displaying Multivariate Data
3	8/30-9/3	A Short Review of Matrix Algebra
4	9/6-10	Multivariate Normal Distribution and Copula
5	9/13-17	Inferences about a Mean Vector
6	9/20-24	Comparisons of Several Mean Vectors
7	9/27-10/1	Multivariate Linear Regression
8	10/4-8	Repeated Measures Analysis
9	10/11-15	Principal Components Analysis
10	10/18-22	Factor Analysis
11	10/25-29	Canonical Correlation Analysis
12	11/1-5	Discrimination and Classification
13	11/8-12	Cluster Analysis
14	11/15-19	Multidimensional Scaling
15	11/22-26	No Class–Thanksgiving
16	11/30-12/3	Review

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