Lecture 0
Course Information

DSA 8070 Multivariate Analysis

Whitney Huang
Clemson University

Notes

About the Instructor

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About the Instructor

- Fourth-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**: TBD. Please fill in your availability at
  https://www.when2meet.com/?20891483-jQKTx

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Class Policies

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Logistics

- There will be two projects. The due dates are:

  - **Project I**: Oct. 19, Thursday

  - **Project II**: Dec. 14, 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. 20-24)

Notes

Course Materials at CANVAS

- Course syllabus / Announcements

- Lecture slides/notes/videos

- R Labs/Projects

- Data sets for lectures and labs

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Reference Books

- *Modern Multivariate Statistical Techniques: Regression, Classification, and Manifold Learning*, **Alan Izenman, 2008**, [Link]

- *Applied Multivariate Statistics with R,* **Daniel Zelterman, 2015** [Link]

- *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]

Notes

Evaluation

Grades will be weighted as follows:

R Labs	20%
Project I	40%
Project II	40%

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)

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Topics

Week	Dates	Topic
1	8/23 - 8/25	Introduction
2	8/28 - 9/1	Characterizing and Displaying Multivariate Data
3	9/4 - 9/8	A Short Review of Matrix Algebra
4	9/11 - 9/15	Multivariate Normal Distribution and Copula
5	9/18 - 9/22	Inferences about a Mean Vector
6	9/25 - 9/29	Comparisons of Several Mean Vectors
7	10/2 - 10/6	Multivariate Linear Regression
8	10/9 - 10/13	Repeated Measures Analysis
9	10/16 - 10/20	Principal Components Analysis
10	10/23 - 10/27	Factor Analysis
11	10/30 - 11/3	Canonical Correlation Analysis
12	11/6 - 11/10	Discrimination and Classification
13	11/13 - 11/17	Cluster Analysis
14	11/20 - 11/24	**No Class–Thanksgiving**
15	11/27 - 12/1	Multidimensional Scaling
16	12/4 - 12/8	Review

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