EST–46114
Estadstica Multivariada y Datos Categóricos
Maestra en Ciencia de Datos

Jan 2020

Instructor:	Nasser Sadeghkhani	**Time:**	Tu & Th11:30–13:00
Email:	nasser@itam.mx	**Place:**	MA-JU SA-1

Course Description: The course will cover multivariate data analysis (continuous and discrete) with emphasis on both theoretical and practical concepts. Backgrounds in the mathematical statistics, probability theory, and linear algebra are needed.

Office Hours: Tu & W 10:00– 11:30 or by an appointment.

Main References:

- Methods of multivariate analysis 3rd edition by Rencher and Christensen.

- Applied Multivariate Statistical Analysis, 6th edition by Johnson Richard A. and Wichern.

- An introduction to categorical data analysis 3rd edition By Alan Agresti.

Objectives: This course is designed for graduate students with emphasizing on Bayesian techniques.

Prerequisites: Linear algebra (matrix theory), multivariate calculus, statistical inference including probability distributions, linear models and hypothesis testing.
　　The course includes Practical Multivariate Data Analysis with statistical software.

Tentative Course Outline:

> Matrix algebra, random vector, random matrix
> Multivariate normal distribution
> Test on mean vectors
> Multivariate analysis of variance
> Canonical correlation
> Principal component analysis
> Exploratory factor analysis
> Probability distributions for categorical data
> Statistical inference for discrete data
> Analyzing contingency tables
> Loglinear models for contingency tables*

Grading Policy: The grade for the course will be determined based on two midterm exams, project such as reading papers and a final exam.
Midterm I 20%, Midterm II 20%, Project or presentation 20%, Final exam 40%.

Important Dates:

Midterm I . . . . Th- February 20
Midterm II . . . . Tu- March 31
Project Deadline . . . . Will be announced
Final Exam . . . . ?

Course Policy:

- You are always welcome to drop by and see me ask any questions and discussion during the office hours or anytime by making an appointment by email.

Class Policy:

- Be courteous when using mobile devices. Make sure your cell phone is turned fully off, or silent. No texting, reading emails, playing games, or whatever else it is that people do with those wretched gizmos.

- If you must use a laptop in class, then turn off the sound and do not type on laptop keyboards which is really distracting.

- Missing one class could easily lead to a disastrous domino effect. If you have to miss a lecture, then I strongly recommend you study the material you missed before you return to class. Do not hesitate to come by and ask me. I require that you know all material covered in class. You are responsible for making up anything that was covered in lectures you missed.