STA 6196-RX01-Statistics for Environmental Sciences

Fall 2015 (August 24- December1 12, 2015)
Class Time: Sat 9:00-11:45am
Classroom: FIU at I-75, Room # 425
Exam week: December 7-12, 2015

Instructor: Dr. Gauri L. Ghai
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Office: DM-401 (Math & Stat dept., MMC campus)
Office Hours: TuTh 11:30am-12:15pm
or by appointment

Text Book:

Recommended: The Statistical Sleuth – 2nd Edition by Ramsey and Schafer

Reference: Environmental and Ecological Statistics with R by Song S. Qian
Or we may use other software packages like SPSS. Minitab etc

Prerequisite: STA 2122/ or STA 3111/or STA 2023/ or STA 3033

Course Description

This course is an introduction to statistical data analysis relevant to environmental science. The goal is to give experience in the correct use and interpretation of various statistical methods. Topics will be chosen from Descriptive statistics, sampling, estimation, nonparametric statistics, hypothesis testing, analysis of variance, linear regression and multiple regression.

Software

Software packages will be used in the course

Course Learning Objectives

Upon the completion of this course you should be able to

- Graphically present data
- Make statistical inference using t-distribution
- Verify whether the assumptions in the inference are valid
- Make statistical inference using non-parametric methods
- Make statistical inference using several samples
- Use simple linear regression to model the mean
- Use multiple linear regression to model the mean

- Check the validity of the model
- Communicate and defend your results

Tentative Exam Dates

Midterm Exam - Saturday, October 17
Final Exam (cumulative) –Saturday, December 12

Grading

Midterm Exam– 35%
Final – 50%
Class Participation/ Home work/Project - 15 %

Grading Scale

A: >= 90%, A- : 87-89%
B+: 84% - 86%, B: 80% - 83%, B- : 77-79%,
C+: 74% - 76%, C: 70% - 73%, C- : 67-69%
D+: 64% - 66%, D: 60% - 63%, D- : 57-59%
F: 0 - 56%.

Topics to be covered:

Selected sections from the following Chapters will be covered.

Chapter 1 Drawing Statistical Conclusions
Chapter 2 Inference Using t-distributions
Chapter 3 A closer look at Assumptions
Chapter 4 Alternatives to the t-Tools
Chapter 5 Comparisons among Several Samples
Chapter 6 Linear Combinations and Multiple Comparisons of Means
Chapter 7 Simple Linear Regression: A model for the mean
Chapter 8 A closer look at the assumptions for Simple Linear Regression
Chapter 9 Multiple Regression
Chapter 10 Inferential Tools for Multiple Regression
Chapter 11 Model Checking and Refinement
Chapter 12 Strategies for Variable Selection

Communication:

Email communication is preferred (Email to ghaig@fiu.edu). Check the blackboard regularly for any announcements and important information about the course including syllabus, outline and home works. (http://online.fiu.edu/login)

Homework/Project

Homework problems will be regularly assigned in class. It is your responsibility to do all home work to stand good in the class. My examples in class should serve as a basis for any required analysis, but you will be expected to use other sources for help like online help, web searches etc.

Project

Analyze a data set using the methods discussed in class from your own field of study, and write a report on your findings. The report should include a description of the data, the research objective, discussion of methods and a summary of statistical findings. The report should be no longer than four pages.

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