Syllabus for MAT 327 Statistical Inference/782 Mathematical Statistics
Fall 2018

Instructor: Prof. Megan Owen
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Office hours: Tuesdays 12:00-12:50pm (Gillet 137E) and 3-4pm (Gillet 231) and Thursdays 3-4pm (Gillet 231)
Course time: Tuesday and Thursday, 1:00-2:40pm, Gillet 231
Course website: http://comet.lehman.cuny.edu/owen/teaching/mat327/2018fa.html

Course Description MAT 327: *4 hours, 4 credit*s. Introduction to the ideas and methods of probability and statistical inference for students in mathematics and the sciences. Topics include confidence intervals, tests of significance, chi-square tests of goodness-of-fit and independence, regression analysis, and analysis of variance. Students will be introduced to a standard computer statistical package. Prereq: MAT 176.

Course Description MAT 782: *4 hours, 4 credit*s. Fundamental concepts of statistics. Point estimation, maximum likelihood estimators, hypothesis testing, confidence regions, t-test, analysis of variance, non-parametric tests, chi-square goodness-of-fit tests, correlation, regression analysis, and selected additional topics. Prereq: A course in probability.

Undergraduate vs. graduate course: The lectures will be the same, but the graduate coursework and exams will be at a higher level, and graduate students must learn and make a presentation on non-parametric tests. Masters students must be enrolled in MAT 782 to receive graduate credit.

Textbooks:
- Introduction to Probability and Statistics Using R by G. Jay Kerns
  http://www.lulu.com/items/volume_68/8123000/8123594/3/print/IPSUR.pdf
- Introduction to Statistical Thought by Michael Lavine
  http://people.math.umass.edu/~lavine/Book/book.pdf

Using R for Introductory Statistics: https://cran.r-project.org/doc/contrib/Verzani-SimpleR.pdf

Grading: The grading for the course will be based on:

Assignments*	15%
Project	15%
Midterm 1	17.5%
Midterm 2	17.5%
Final exam	35%

You must take and pass the final exam to pass the course.

* For students in MAT 782, the assignment grade will be made up of the weekly homework assignments (10%) and a presentation on non-parametric tests (5%).

Homework: All code and plots must be submitted on Blackboard. Written homework can be submitted on paper during class or a (legible) photo of it can be uploaded to Blackboard. **No late homework is accepted.** Solutions to the homework problems should be written clearly, so that they could be understood by a fellow student.

Midterms: There will be two midterms on Thursday October 11 and Tuesday November 13 in class.

Final exam: The final exam is required and will be on Tuesday December 18 from 3:45-5:45pm. You must pass the final exam to pass the course.

Use of Technology & Blackboard: Homework solutions and grades will be posted on Blackboard. The Blackboard system is provided by CUNY to all enrolled students. If you have not accessed Blackboard or are having difficulties, contact Blackboard Support in the Information Technology Division. You can also visit the Help Desk in the Computer Center (first floor, Carman Hall) in person. They can reset passwords and help with simple Blackboard issues.

Honor Code: You are encouraged to work together on solving the homework problems. However, you should write up the solutions on your own. You are responsible for knowing and following Lehman's academic integrity code (available from the Undergraduate Bulletin, Graduate Bulletin, or the Office of Academic Standards and Evaluations). All incidents of cheating will be reported to the Vice President of Student Affairs.

Accommodating Disabilities: Lehman College is committed to providing access to all programs and curricula to all students. Students with disabilities who may need classroom accommodations are encouraged to register with the Office of Student Disability Services. For more info, please contact the Office of Student Disability Services, Shuster Hall, Room 238, phone number, 718-960-8441.

Learning Objectives:
At the end of the course, students should be able to:
1) Understand the basic ideas and methods of probability and statistical inference.
2) Understand and compute confidence intervals.
3) Understand and apply tests of significance.
4) Understand and apply chi-square tests of goodness-of-fit and independence.
5) Understand and apply regression analysis.
6) Understand and apply analysis of variance.
7) Use a R to perform standard statistical analysis.