

15 STAT 532-001 (#301749)
Applied Regression Analysis
Winter 2012

Mondays/Wednesdays, 3:00 pm – 4:15 pm, Room 120, 60WCHARL

Instructor: *Xia Wang*
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Office Hours: *Mondays 1:00 pm – 2:30 pm Wednesday 9:30 am -11:00 am or by appointment*

Course Description: Simple and multiple linear regression models. Model diagnostic and remedies. Model selection. Generalized linear regression models.

Bok area: QR (Quantitative Reasoning)

Prerequisites: Applied Statistical Inference (15 MATH 531) or Probability and Statistics I and II (15 MATH 361, 362)

Course Webpage: All course related information are posted on UC Blackboard (<http://blackboard.uc.edu>), including course syllabus, reading assignments, lecture notes, handouts, homework assignments, SAS codes, announcements, etc. Visit it frequently!!!

Text: *Applied Linear Statistical Models (with CD), 5th edition, by Kutner, Nachtsheim, Neter and Li*

A copy of this book has been put on reserve for 2-hour loan/overnight in the Langsam Library for this course. Its call number is [MATH QA 278.2.A66 2005](#). The *Student Solutions Manual* and all the data files on the compact disk can be downloaded from the book's website at: www.mhhe.com/kutnerALSM5e.

Lab hours: SAS Software is strongly recommended for this course. Computer Lab 120 at 60 West Charlton (Sander Hall) is scheduled to open at 7 am and close at 10 pm, M – F. Schedule for the labs on campus can also be checked on <http://labs.uc.edu/labHours.php>.

Exam dates
Monday **February 6**, 3:00 pm- 4:15 pm.

Wednesday **March 14**, 10:30 am – 12:30 pm.

Homework due dates

HW#1 due on January 11	HW#5 due on February 15
HW#2 due on January 18	HW#6 due on February 22
HW#3 due on January 25	HW#7 due on February 29
HW#4 due on February 1	HW#8 due on March 7

Course group project milestones

Milestone 1	Project proposal	February 8
Milestone 2	Initial project draft	February 29
Milestone 3	Presentation	March 7
Milestone 4:	Final project report	March 14

Tentative Schedule (as of January 1, 2012):

Week Beginning:	Topic	Reading Assignment
Jan. 2	Association and Regression	Chapter 1: 1.1-1.7 Chapter 5 5.1-5.7 (Review), 5.9-5.11 Chapter 6: 6.1-6.4
Jan. 9	Association and Regression (Continued)	
Jan. 16	Inferences in Simple Linear Regression	Chapter 2: 2.1, 2.2, 2.4, 2.5, 2.7, 2.9
Jan. 23	Inferences in Multiple Linear Regression	Chapter 6: 6.5-6.7
Jan. 30	Diagnostic and Remedies in Regression	Chapter 3: 3.1-3.4, 3.7 Chapter 6: 6.8 Chapter 10: 10.1-10.4
Feb. 6	Weighted Least Squares and Transformation Testing and Extra Sums of Squares	Chapter 3: 3.9 Chapter 7: 7.1-7.4
Feb. 13	Polynomial Regression and Qualitative Variables	Chapter 8: 8.1-8.5
Feb. 20	Model Selection	Chapter 9: 9.1-9.5
Feb. 27	Generalized Linear Models	Chapter 14: 14.1-14.7, 14.10, 14.13, 14.14
Mar. 5	Generalized Linear Models (Continued) Project Presentation	

Homework:

- Homework assignments will be due as specified in the syllabus or as announced if there is any change (updates will be posted on UC Blackboard accordingly); problems will be assigned one week before its due date.
- Prepare your homework with problems in order in **Microsoft Word**. Organize your answers and label them clearly. Only include the software outputs that are necessary to solve the problems and justify your answers.
- All homework assignments must be submitted **electronically through UC Blackboard**. The website for homework submission will be closed at 3:00 pm on the due date. **DO NOT** send your homework through email to the instructor/grader. **THEY WILL NOT BE ACCEPTED.**
- No late hand-in. If extenuating circumstances exist, you must speak directly to the instructor.

Course Group Project

You will be required to write a five-page group project report (**No more than 5 pages, 1 1/2 spacing, 11pt font**) and a presentation (**5 minutes**) that does the following:

- 1) Form your group with minimum of 2 and maximum of 3 students
- 2) Choose a dataset that is interesting to your group; The dataset should contain at least 3 variables.
- 3) Describe your data using plots (scatter plots, histogram, boxplots, etc.) and other statistical tools you find related and appropriate.
- 4) Analyze the dataset using linear regression models. Carry out model diagnostic analysis. If there is any violation of the model assumptions, propose and carry out possible remedies. Select the “best” model for the dataset.
- 5) Summarize your findings in the final project report and present your findings in class as a group.
- 6) Please note that there are 4 milestones that your group needs to meet through the quarter as specified above. The project proposal, initial draft and final report must be **submitted in class (or before the exam on March 14)** to the instructor on the due date. The contributions by each group member must be explicitly described on the first page of the project proposal, initial draft and final report. Every group member must **sign** on the first page of the project proposal, initial draft and final report. The group project will not be graded if the contribution descriptions or the signature of any group members is not included.

Examinations:

- There will be one examination during the quarter (Midterm) and the final examination (Final Exam).
- The exam dates for each exam are as specified in the syllabus or as announced if there is any change (updates will be posted on UC Blackboard accordingly). **Exams will cover materials from textbook, lectures and handouts.**
- Both examinations are close-book. You are allowed one sheet of notes (8.5 x 11 inches) with formulas only for each exam. There should be no worked out examples on the formula sheet.
- A calculator (no cell phone calculators or PDAs) may be brought to exams.
- There will be NO SCHEDULED MAKE-UP EXAMS. When there are unavoidable circumstances, the student must contact the instructor before the exam date. DOCUMENTATION IS REQUIRED. For medical circumstances, the student must contact the instructor with a written medical excuse document signed by a qualified professional.

Final Course Grade:

The upper limits for contributions to the final grade are HW (25%), Group project (15%, distributed as 2% to proposal, 3% to initial draft, 5% to presentation, 5% to final report), Midterm (25%) and Final Exam (35%).

The traditional letter grades will be used: 90% and up=A(+/-), 80-89%=B(+/-), 70-79%=C(+/-), 60-69%=D(+/-), and Below 60%=F.

Students should keep all returned homework and exams until they have received their final grade. It is the student's responsibility to get the homework and the exams from the instructor.

Electronic Communication

Course announcements and materials are posted on Blackboard through the quarter. Beyond class and office hours, the best way to contact the instructor is by email (xia.wang@uc.edu).

The course email correspondence must be done via UC email accounts. The instructor cannot send email to any other account (i.e. gmail, hotmail, yahoo, etc.)

Classroom Etiquette:

Our goal is to have a classroom atmosphere that allows the class to learn the material without distractions. The following behaviors will help us achieve this:

- Please turn off your cell phones or set it to vibration before coming to class.
- Please arrive in class on time.
- Please do not disrupt others during class.
- Please do not leave class early unless you have to. If you plan to leave early, sit near the door so as to disturb as few people as possible.

Academic Integrity Policy:

The University Rules, including the Student Code of Conduct, and other documented policies of the department, college, and university related to academic integrity will be enforced. Any violation of these regulations, including acts of plagiarism or cheating, will be dealt with on an individual basis according to the severity of the misconduct.

Special Needs Policy:

If you have any special needs related to your participation in this course, including identified visual impairment, hearing impairment, physical impairment, communication disorder, and/or specific learning disability that may influence your performance in this course, you should meet with the instructor to arrange for reasonable provisions to ensure an equitable opportunity to meet all the requirements of this course. At the discretion of the instructor, some accommodations may require prior approval by Disability Services.

(This syllabus is subject to changes.)