

15 STAT 6031-001 (#603986)

Applied Statistics I

Fall 2012

Mondays/Wednesdays/Fridays, 3:35 pm – 4:30 pm, Room 140, 60WCHARL

Instructor: *Xia Wang*
<http://homepages.uc.edu/~wang2x7>
Department of Mathematical Sciences, French Hall West 4428E
(513) 556-3295 (6-3295 from on campus phones)
xia.wang@uc.edu

Office Hours: M/W/F 2:20 pm-3:20 pm

Course Description: The course objective is to understand statistical inference and data analysis in simple linear regression model and multiple linear regression models including model selections. Specific topics include: sampling distribution, hypothesis testing, correlation coefficient, statistical inference of parameters, checking model assumptions, variable selection, transformations of variables and diagnostics.

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!!!

Textbook: Milton and Arnold (MA), *Introduction to Probability and Statistics*, 4e
Kutner, Nachtsheim, and Neter (KNN), *Applied Linear Regression Models* (Revised Edition with Student CD), 4e

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

Final Exam Wednesday **December 12**, 4:00 pm – 6:00 pm.

Quiz dates

Quiz #1 September 7	Quiz #3 October 12	Quiz #5 November 9
Quiz #2 September 28	Quiz #4 October 26	

Homework due dates

HW#1 September 7	HW#4 October 5	HW#8 November 2	HW#12 December 7
HW#2 September 14	HW#5 October 12	HW#9 November 9	
HW#3 September 28	HW#6 October 19	HW#10 November 16	
	HW#7 October 26	HW#11 November 30	

Course group project milestones

Milestone 1	Project proposal	October 29
Milestone 2	Initial project draft	November 26
Milestone 3	Presentation	December 5 and December 7
Milestone 4:	Final project report	December 12

The instructor will be out of town for a conference on September 10 and 12. Arrangement will be announced at the beginning of the semester for these two classes.

Tentative Schedule (as of July 6, 2012):

Week Beginning:	Topic	Reading Assignment
August 27	Descriptive Statistics	MA: 6.1-6.4
September 3	Estimation	MA: 7.1-7.4
September 10	Inference on the Mean and Variance I	MA: 8.1-8.6, 10.1-10.5
September 17	Inference on the Mean and Variance II	
September 24	Inference on the Proportions Nonparametric Statistics	MA: 9.1-9.4, 8.7, 10.6
October 1	Association and Regression	KNN: 1.1-1.7, 5.1-5.7 (Review), 5.9-5.11, 6.1-6.4
October 8	Inferences in Linear Regression Models	KNN: 2.1, 2.2, 2.4, 2.5, 2.7, 2.8, 2.9, 6.5-6.7
October 15		
October 22	Diagnostic and Remedies in Regression	KNN: 3.1-3.4, 3.5-3.6, 3.9, 6.8, 10.1-10.5, 11.1-2
October 29		
November 5	Testing and Extra Sums of Squares	KNN: 7.1-7.4
November 12	Polynomial Regression and Qualitative Variables	KNN: 8.1-8.5
November 19	Model Selection	KNN: 9.1-9.5
November 26		
December 3	Final Review Group Project Presentation on December 5 and 7	

Homework:

- Homework will be assigned one week before its due date;
- Prepare your homework with problems in order, on **one side** of standard 8½×11 sheets, stapled in the upper left-hand corner;
- Electronically handed-in homework is **not** accepted.
- Homework assignments will be due as specified in the above tentative schedule or as announced if there is any change (updates will be posted on UC Blackboard accordingly);
- Homework assignments must be handed in **at the beginning of the class** on the due date. Do not slide them under the instructor/grader’s office door or drop them off in the instructor/grader’s mailbox. **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 descriptive statistical tools you find related and appropriate (summary statistics, scatter plots, histogram, boxplots, etc.)
- 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 semester as specified above. The project proposal, initial draft and final report must be **submitted in class (or before the exam on December 12)** 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 5 quizzes during the semester (Quiz) and the final examination (Final Exam).
- The Quiz and Final Exam dates 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.**
- The Quiz is open-book and is scheduled at the beginning of the class on each quiz date. The coverage and length of each quiz will be announced before the quiz date (updates will be posted on UC Blackboard accordingly).
- The Final Exam is **close-book**.
- A calculator (no cell phone calculators or PDAs) may be brought to exams.
- There will be NO SCHEDULED MAKE-UP examinations (including Quiz and the Final Exam). When there are unavoidable circumstances, the student must contact the instructor before the quiz/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), Quiz (25%) and Final Exam (35%). The final grade will be converted to the traditional letter grade based on the following chart:

96-100:	A	87-89:	B+	77-79:	C+	67-69:	D+	<60:	F
90-95:	A-	83-86:	B	73-76:	C	63-66:	D		
		80-82:	B-	70-72:	C-	60-62:	D-		

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

Electronic Communication

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