

STAT 697R: ST-Regression Modeling (Fall 2015)

Instructor: DAEYOUNG KIM Office Hours: Tuesday 2:30 p.m. – 3:30 p.m.,
LGRT 1434 Thursday 2:30 p.m. – 3:30 p.m.,
email: daeyoung@math.umass.edu or by appointment

Lecture: Tuesday and Thursday 11:30AM - 12:45AM, LGRT 219

Web Page: Announcements regarding office hours, homework assignments, exams
and solutions will be posted on <http://www.math.umass.edu/~daeyoung/Stat697R>

Required Text: *Applied Linear Regression Models* by Kutner, Nachsteim and Neter (4th edition) or,
Applied Linear Statistical Models by Kutner, Nachtsteim, Neter and Li (5th edition).
Both published by McGraw-Hill/Irwin.

NOTE on the book(s). The first 14 chapters of Applied Linear Statistical Models (ALSM) are EXACTLY equivalent to the 14 chapters that make up Applied Linear Regression Models, 4th ed., with the same pagination. The second half of ALSM covers experimental design and the analysis of variance, and is used in our Stat 506. If you are going to take Stat 506, you should buy the Applied Linear Statistical Models (but it is a large book).

Prerequisites: Stat 516 or equivalent (previous coursework in Probability and Statistics, including knowledge of estimation, confidence intervals, and hypothesis testing and its use in at least one and two sample problems. You must be familiar with these statistical concepts beforehand.)
Stat 515 by itself is NOT a sufficient background for this course!
Familiarity with basic matrix notation and operations is helpful.

Course Description: This course provides an introduction to linear regression. Topics include

- Simple linear regression and statistical inferences
- Correlation analysis
- Diagnostics and remedial measures
- Matrix approach to simple linear regression analysis
- Multiple linear regression and statistical inferences
- Regression models for quantitative and qualitative predictors
- Model building (and variable selection) and validation
- Model diagnostics
- Logistic regression and Poisson regression
- Nonparametric regression
- Autocorrelation time series data

A matrix formulation of the linear regression model is given partway through the course. This is for ease in presenting models and results and understanding some of the computational documentation, not for proving regression results using matrix theory.

While models and methods are written out carefully with some basic derivations, the primary focus of the course is on the understanding and presentation of regression models and associated methods, data analysis, interpretation of results, statistical computation and model building.

Computing: Students are required to use the SAS programming language for the homework sets. Exams may also include SAS questions. I will provide SAS codes used in the class examples. Please also see the course website for links that provide help with learning SAS. SAS is available on many public computers on campus; please see links on class website for a list.

Grading The final course grades will be based upon:
Homework 40 %
Midterm 30 % 10/27/2015 (Tuesday) In class
Final (comprehensive) 30 % Please check SPIRE
The lower cut-off points for the grades are:

F	D	D+	C-	C	C+	B-	B	B+	A-	A
0	51	55	60	65	70	75	80	83	88	93

Homework:

1. Homework is due at the beginning of class on the due date.
No late hw will be accepted, as the solutions of the assignments will be posted on the course website after each due date.
Unreadable work, scratching out, etc. will not be graded.
2. Homework must be written neatly on 8.5x11 inch sheets of paper. Unreadable words or figures are considered to be incorrect answers. Please attach all SAS output, including figures, to your homework. You can also cut and paste answers of SAS output into proper places of solution sheets when applicable. In writing up homework, it is not sufficient to give only the answer to a problem; you must show how it was calculated. As the numeric answers to some hw questions may be found from the student CD-ROM, you will not receive credit unless you show your work.
3. The homework can be discussed with your classmates but you have to turn in your own hw.

Exam: All Exams are closed book.
For both the midterm and final exam, you are allowed to bring one, 8.5x11(letter size) double-sided formula sheet.
You are responsible for taking the final exam at the time it is scheduled by the University. Do not make travel plans that may conflict with the final date before knowing when the exam is scheduled for. This is not a reason for which a make up exams will be offered.

Course/Classroom Policies:

1. If you have a University-approved conflict with any of the exams, you must let me know **at least one week** before the exam. A conflict exam will be scheduled to take place just before or just after the regularly scheduled exam.

2. Make up exams or change in day/time are given only for:
 - i) documented illness or other critical personal matter **where I have been contacted and approved before the exam!**
 - ii) A conflict between two exams. The University policy is that if a student is scheduled to take two examinations at the same time, the faculty member teaching the course with the higher final digit (or digits) in its class number (the unique 5-digit number which represents a particular section in the Schedule of Classes) is required to offer a make-up examination. Note: University policy states that on Wed., Thur. or Friday a scheduled evening exam for a class that meets during the day takes priority over an evening class. On Mon. or Tues. this priority still holds except in the case of an evening class that meets just once a week, in which case that class has priority (but this is not true on Wed., Thur. or Friday).

3. Attendance to each class meeting is required and beneficial. Students are responsible for all announcements and supplements given within each lecture and/or via course email.

4. Any objections to the homework grading, the midterm or final grading should be directed to the instructor. All requests will be considered by the instructor and the student will be notified if a grade change occurs.

5. **Please be on time.** Class starts promptly at 11:30. It is disruptive to come in late. **No cell phones. No laptop out and open.**

Add & Drop: Last day to add/drop a course with no record is scheduled 09/21/2015.

Late Drop: Last day to Drop with “DR” (Graduate) is scheduled 10/19/2015.