

**STAT 360**  
Linear Models  
*Summer 2017*

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**Office Hours:** Tuesdays, 11:00-12:30.

**Text:** *Applied Linear Regression Models*, 4th Edition, by Kutner, Nachtsheim and Neter, McGraw Hill-Irwin, 2004.

**Final Grade:**

- Assignments (12%)
- Mid-term test (40%)
- Final examination (48%)

**IMPORTANT:** **PLEASE NOTE THAT THERE IS NO "100% FINAL EXAM" OPTION IN THIS COURSE.**

**Note:**

- Assignments are compulsory. Late assignments will not be accepted.
- A mid-term exam will be held on **May 29, 2017**. This exam, as well as the final, will be closed book exams.
- Please note that there are **no supplemental privileges** in this course.

Lectures	Sections	Topics to be covered
1	1.3, 1.6, 1.7, 1.8	Simple linear regression models; estimation of regression function; estimation of error term variance; normal error regression model.
2	2.1, 2.2, 2.4	Inferences concerning $\beta_1$ and $\beta_0$ ; interval estimation of $E(Y_h)$ .
3	2.5, 2.6, 2.7	Introduction to MINITAB, prediction of new observation; confidence band for regression line; ANOVA approach to regression analysis.
4	2.8, 2.9, 3.1, 3.2	General linear test approach; descriptive measures of linear association between X and Y; diagnostics for predictor variable; residuals.
5	3.3, 3.4, 3.7	Diagnostic for residuals; overview of tests involving residuals; F-test for lack of fit.
6	4.1, 4.2, 4.3, 4.4	Joint estimation of $\beta_0$ and $\beta$ ; simultaneous estimation of mean responses; simultaneous prediction intervals for new observations; regression through origin.
7	<b>Midterm</b>	<b>Mid Term exam will cover material up to section 4.4.</b>
8	5.6, 5.8, 5.9, 5.10	Inverse of a matrix; random vectors and matrices; simple linear regression model in matrix terms; least square estimation of regression parameters
9	5.11, 5.12, 5.13	Fitted values and residuals; ANOVA results; inferences in regression analysis.
10	6.1, 6.2, 6.3	Multiple regression models; general linear regression model in matrix terms; estimation of regression coefficients.
11	6.4, 6.5, 6.6	Fitted values and residuals; ANOVA results; inferences about regression parameters.
12	6.7, 6.9, 7.1, 7.2	Estimation of mean response and prediction of new observation; multiple regression with two predictor variables. Extra sum of squares & its application.
13	7.3, 7.4, 7.5 & Review	Tests concerning regression coefficients; coefficient of partial determination; standardized multiple regression models.