**University of California, Davis**

**Department of Statistics**

**Winter Quarter, 2016**

**Course**: Statistics 207 Statistical Methods for Research

**Lecture:** MW 2:10-4:00 119 Wellman

**Instructor:** Prabir Burman

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**Office hours:** MW 12:30-2:00

## Teaching Assistants: Haoran Li ([hrli@ucdavis.edu](mailto:hrli@ucdavis.edu)) and

## Kenneth Wang (kenwang@ucdavis.edu)

**Office hours:** TBA

**Suggested Textbooks:**

*Applied Linear Statistical Models*, 5th ed., Irwin,

by Kutner, Nachtsheim, Neter and Li.

*Extending the* *Linear Models with R*, by Julian Faraway.

**Grading:** Grades will be based on weekly homework (10%), one midterm (30%), a project (15%) and a final (45%). The dates for the midterm and the final are February 10 and March 19, respectively. The take-home project involves data analysis. The final examination will be comprehensive. No late homework will be accepted.

**Topics:** The course will mainly deal with methodology. The following topics will be

covered (if time permits).

Two factor ANOVA models, randomized block designs: concepts, data, models, inference.

Three or higher factor models, Random and mixed effects ANOVA models: data, models, inference.

Repeated measures, nested and split-plot designs.

Advance regression methods: ridge, Lasso and partial least squares.

Longitudinal data: models, methods, inference.

Nonlinear models – Binomial, Logistic, Negative Binomial and Poisson regression models: concepts, models, mixed models inference.

Analysis of missing data: concepts, methods (including EM algorithm), analysis.

Simultaneous hypothesis testing: concepts of family-wise error rate and false discovery rate control; Holm procedure, Benjamini-Hochberg procedure, empirical Bayes approach.