STAT 521 – 37071 **FALL 2015**

Linear Statistical Inference – Syllabus

- **Instructor:** Dr. Jing Wang

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- **Lecture Hours:** M W F at 10:00 am - 10:50 am, SH 101

- **Office Hours:** M W at 11:00 am - 12:15 pm

- **Textbook:**
  A Primer on Linear Models by John Monahan, Chapman & Hall / CRC.

- **Reference books:**

  – *Linear Statistical Inference and Its Applications* by C. R. Rao, Wiley.

  – *Linear Statistical Models* by J. Stapleton, Wiley.

  – *Matrix Algebra from a Statistician's Perspective* by D. Harville, Springer.

- **Prerequisite**: STAT 411 and STAT 481 or equivalent

- **Grading:** Homework (20%), two midterms (40%), and final exam (40%).
  No make-up exams can be given without valid excuses. No late homework will be graded.

- **Final credit scale:**
  A – 90% and above; B – 75% to 89%; C – 60% to 75% ; D – 60% and below

- **Important Dates:**

August 24	Monday. Instruction begins.
September 7	Monday. Labor Day. *No classes.*
October 30	Friday. Last day to drop courses and receive W on record
November 26–27	Thanksgiving holiday. *No classes.*
December 4	Friday. Instruction ends.
December 11	Friday. *Final exam*, 10:30 am -12:30 pm.

***Tentative Lecture Schedule**

WEEK	BRIEF DESCRIPTION
Week 1	Vector Space; Theory of Matrices
Week 2	Reduction of Matrices; Projection Operator; Generalized Inverse;
Week 3	*Labor Day*; Generalized Inverse; Matrix Differentiation,
Week 4	Extremes of Quadratic Forms; Linear Regression Models
Week 5	*Midterm I Review; Midterm I*; Normal Equations; Multivariate Normal Distribution
Week 6	Cochran's Theorem; Variances of Least Square Estimators; Maximum Likelihood Methods
Week 7	Gauss-Markov Theorem; Best Linear Unbiased Estimator
Week 8	Fundamental Theorem of Least Square Theory
Week 9	Generating Moment Functions
Week 10	Testing Linear Hypotheses; ANOVA in Linear Models
Week 11	*Midterm II Review; Midterm II*; Confidence and Prediction Intervals
Week 12	Sumulataneous Confidence Interval; Two-way ANOVA
Week 13	Experiemental Designs; Reduced Normal Equation
Week 14	Estimation of Variance Components; MINQUE Theory; Linear Mixed Model
Week 15	MLE and REML; *Final Review*
Week 16	*Final Exam Week.*

***The instructor reserves the right to make any changes in the course she determines academically advisable. Changes will be announced in class. It is your responsibility to keep up with any changed policies.**