

**Stat 152**  
**Tu/Th 11:12:30**  
**241 Cory Hall**  
**Elizabeth Purdom & Winston Lin**

Week	Topics	Reading
Jan 17	Course Logistics <u>Thinking about Exp. Design:</u> Lady Tasting Tea Experiment Fisher's Exact Test Components of an Experiment	Cobb Chapter 4
Jan 24	<u>Hypothesis Testing:</u> Basics T-tests for 2-level factors Rank-Sum Test	
Jan 31	<u>Factors</u> Factor Diagram Dot charts, boxplots, and transformations <u>Randomized, Balanced Designs (CR[1]):</u> CR[1] estimates for effects, Sums of Squares Degrees of freedom	Cobb Chapter 5
Feb 7	CR[1] and CR[2] Estimates for effects, Sums of Squares, Degrees of freedom, One and two –way ANOVA, Algebraic notation and 5 assumptions (constant effect, additive, errors: 0-mean, constant var, indep, normal dist), Interaction plots	Cobb Chapter 6
Feb 14	Factorial Crossing $2^3$ factorial – three two-level factors Cube plot Estimate effects by difference in means $t$ tests rather than an ANOVA permutation tests	$2^3$ Handout
Feb 21	Blocking designs: Complete block; Latin Square; Split plot/Repeated Measures; ANOVA and Algebraic notation; residual plots	Cobb Chapter 7
Feb 28	Review and Midterm	
Mar 7	Probability model vs. sample; Response surface design	

Mar 14	Elements of a sampling survey Simple Random sampling Estimators for population mean, sum, percentage Sampling distribution, expected value, and variance of estimators for simple random samples	
Mar 21	SPRING BREAK	
Mar 28	Central Limit Theorem Confidence Intervals Sample Size calculations Stratified Sampling, proportional and optimal allocation, post-stratification	Lohr, Chapter 4
Apr 4	Bootstrap One-stage cluster sampling, Two-stage cluster sampling Ratio estimators – expectation and variance (Taylor series approximation)	Lohr, Chapters 3 & 5
Apr 11	Sampling proportional to size, Sampling with unequal probabilities	Lohr, Chapter 6
Apr 18	Complex Surveys; Multi-stage sampling	Lohr, Chapter 7
Apr 25	Review and Midterm	
May 2 (RR)	May 5: Student Poster Presentations	Handouts from Student Presentations