Name of Test	Person Responsible, Lecture Notes #	Situation to use in	Assumptions and limitations/ Important Notes	Formula to do by hand	R code	SAS code	Examples (ones we've seen before in class, or if you find a relevant one)

Transformation - Lecture #13	Paridhi	Violations of homogeneity, linearity,
		and Gaussian distribution of errors
		(often these three assumptions stand or fall as a gr
			Regression assumption diagnostics shou
			Some transformations may not work w
			Avoid back transformation because it n
			additional Comments on Pg. #24
				General formula on Pg. #5
				Box-Cox Transformationson Pg. #6
					boxcoxTransform	proc transreg data=x details;
						title2 Defaults;
						model boxcox(y) = identity(x);
						run;
							Ozone Example on Pg. #16

Model Selection - Lecture #14	Paridhi	Strategy for Model Selection: 1. Specify the maximum model under consideratior 2. Specify a criterion for model selection. 3. Specify a strategy for applying the criterion. 4. Conduct the analysis.	Backward Elimination on Pg. #14, Forward Selectin on Pg. #15, Stepwise Selectio on Pg. #16, Fixed Tests Model Selection Strategy or Additional Comments on Pg. 38 Coding Scheme for ANOVA from Pg. #4	F Test Formula on Pg. #9		Sample code on Pg.#18	
One-Way ANOVA: Cell Mean Coding	Jean, Lecture 15	overall test of equality of group means	HILE Guass	pg11, 25, 26	pg41-47	pg21	
One-Way ANOVA: Reference Cell Coding	Jean, Lecture 15	overall test of equality of group means	HILE Guass		pg48-50		
One-Way ANOVA: Multiple Comparisons	Jean, Lecture 15	Tukey's HSD (pairwise) Scheffe's (large #, unplanned) Bonferroni (small #) Dunnett's (the control group with each one of other groups)			pg47	pg33	
One-Way ANOVA: Assessing homogeneity of variance between cells	Jean, Lecture 15	Hartley's Bartlett's(sensitive to departures from normaility) the Brown and Forsythe(more robust to underlying distrib) O' Brien(more robust)			pg40	pg41 (LeveneTest)	
One-Way ANOVA: Trend Tests	Jean, Lecture 15			p36			
Two-Way ANOVA: Cell Mean Coding	Jean, Lecture 16	Model: E(Yijk)=Rij (a cell mean for a given combination) i=1,2 j=1,2,3 k=1,2,...,N					
Two-Way ANOVA: Reference Cell Coding	Jean, Lecture 16	Model: E(Yijk)=u+Ai+Bj+Rij (Rij: difference among difference) i=1 j=1,2 k=1,2,...,N reference group:i=2,j=3		pg15,16 pg18-20 (Mean estimation) pg21-23 (Testing contrast)		pg34,35 (overall) pg42,44,46 (step-down)	pg31-34
Logistic Regression	Jean, Lecture 17	Model: logit(p)=log(p/(1-p))=β0+β1X β1: log odds ratio, β_hat: if outcome is bad, then positive(negative) means the factor is harmful(protective) H0: βk=0		Wald statistic pg16		p18, 25	
Interaction in Logistic Regression	Jean, Lecture 17					pg39,40 pg51	pg36
Model Comparisons	Jean, Lecture 17	H0: smaller model is better	Nested, the # of obs are same	2[log(L(larger))-log(L(smaller))] = -2log(L(smaller)) - (-2log(L(larger))) follow chi-squred distribution with df equal to the difference of the # of para between two models		pg40	pg40, 50
Poisson Regression - Lecture #18	Paridhi	Used for counts of events occur randomly over time or space, when outcomes in disjoint periods or regions are independent. Examples number of traffic accidents, the incidence of rare events or diseases, etc.		Pg. #4&5		Skin Cancer Example on Pg. #12	Example on Elephant Data on Pg. #6
Random Effect - Lecture #19	Paridhi	Mixed effects models are an extension of the GLM for correlated data.	unstructured covariance matrix Pg. # autoregressive covariance matrix or compound symmetry Matrix on Pg.	Log Likelihood test for compound Symmetry Pg. #50			Randomized Block Design Example on Pg. #17 "Screamer" Study Pg. #24
Power & Sample Size Calculation - Lecture #20	Paridhi	Number of patients to include in the study	Factors in Choosing a Design Pg. #1 Using Parameter Estimates in Powe Dichotomous Responses on Pg. #1	Computing Power Pg. #10	NA	NA	Example kidney Disease and Medical Cost on Pg. #14