STAT 415/615 (REGRESSION) SPRING 2022 COURSE SCHEDULE Miller

Adjustments and additions will be made to this schedule as the course progresses and will be clearly announced in class and/or on Canvas. Please check this schedule regularly.

WEEK	TOPICS	WORK DUE
WEEK 1 Jan 10-16	**Introduction, Motivation, and Examples** (1.1-1.2) *Why Regression? What is Regression?* **Review of Basic Statistics and Elementary Statistical Inference:** *Summarizing data; Parameters and Statistics; Sampling Distributions; Normal, t and F distributions; Estimators (Unbiased & Consistent)* (Handouts and Supplementary Materials) **Introduction to *R*** (Handouts and Supplementary Materials)	• **Read Course Syllabus** and bring questions to first class • **Download R** following the instructions on Canvas • **Lab 1** (in class on Wednesday January 12)
WEEK 2 Jan 17-23	**Review of Basic Statistics and Elementary Statistical Inference:** *Review of Estimators (Unbiased & Consistent); Confidence Intervals; Hypothesis Testing; P-values.* (Handouts and Supplementary Materials) **Introduction to Simple Linear Regression**: *Model, Estimation* (1.1-1.7)	• **Assignment 1** due by Wednesday January 19 at 5:00 PM ET • **Lab 2** (in class on Wednesday January 19)
WEEK 3 Jan 24-30	**Simple Linear Regression (continued)**: *Model, Estimation* (1.1-1.7) *Derivation of Least-Squares Estimators* (1.6)	• **Assignment 2** due by Wednesday January 26 at 5:00 PM ET • **Lab 3** (in class on Wednesday January 26)
WEEK 4 Jan 31- Feb 6	**Simple Linear Regression (continued)**: *Normal Error Regression Model* (1.8) *Inference* (2.1-2.4)	• **Assignment 3** due by Wednesday February 2 at 5:00 PM ET • **Lab 4** (in class on Wednesday February 2)
WEEK 5 Feb 7-13	**Simple Linear Regression (continued)**: *Inference, Prediction* (2.5-2.6) **ANOVA Approach to Regression** (2.7) **Regression and Correlation. R^2** (2.9) **Introduction to Regression Diagnostics** (3.1-3.2)	• **Assignment 4** due by Wednesday February 9 at 5:00 PM ET • **Lab 5** (in class on Wednesday February 9)

STAT 415/615 (REGRESSION) SPRING 2022 COURSE SCHEDULE Miller

WEEK	TOPICS	WORK DUE
WEEK 6 Feb 14-20	**Regression Diagnostics:** *Non-Normality, Nonlinearity, Heteroscedasticity* (3.1-3.7)	• **Assignment 5** due by Wednesday February 16 at 5:00 PM ET • **Lab 6** (in class on Wednesday February 16)
WEEK 7 Feb 21-27	**Remediation** (3.8-3.9) **Simultaneous Estimation** (4.1-4.2) **Introduction to Matrices and Matrix Operations** (5.1-5.3) **Discuss Midterm Exam**	• **Assignment 6** due by Wednesday February 23 at 5:00 PM ET • **Lab 7** (in class on Wednesday February 23)
WEEK 8 Feb 28-Mar 6	**Wednesday March 2:** **Midterm Exam (Topics Related to Chapters 1-4)**	
WEEK 9 Mar 7-13	**Spring Break-No classes**	
WEEK 10 Mar 14-20	**Matrix Approach to Simple Linear Regression** (5.1-5.11) **Introduction to Multiple Regression** (6.1)	• **Assignment 7** due by Wednesday March 16 at 5:00 PM ET • **Lab 8** (in class on Wednesday March 16)
WEEK 11 Mar 21-27	**Multiple Regression: Part 1** *Model, Estimation, Matrix Approach, ANOVA, Inference* (6.1-6.6, 6.9)	• **Assignment 8** due by Wednesday March 23 at 5:00 PM ET • **Lab 9** (in class on Wednesday March 23)
WEEK 12 Mar 28-Apr 3	**Multiple Regression: Part 2** *Inference, Prediction, Diagnostics & Remediation* (6.7-6.9) **Extra Sums of Squares** (7.1-7.3) **Introduction to Interaction Models** (8.2)	• **Assignment 9** due by Wednesday March 30 at 5:00 PM ET • **Lab 10** (in class on Wednesday March 30)
WEEK 13 Apr 4-10	**Dummy Variables & More with Interaction Models** (8.2-8.5) **Introduction to Model Building** (Chapter 9)	• **Assignment 10** due by Wednesday April 6 at 5:00 PM ET • **Lab 11** (in class on Wednesday April 6)

STAT 415/615 (REGRESSION) SPRING 2022 COURSE SCHEDULE Miller

WEEK	TOPICS	WORK DUE
WEEK 14 Apr 11-17	**Model Building:** *Model Selection & Validation* (Chapter 9) **Multicollinearity** *Effects of multicollinearity* (7.5-7.6)	• **Assignment 11** due by Wednesday April 13 at 5:00 PM ET • **Lab 12** (in class on Wednesday April 13)
WEEK 15 Apr 18-24	**Multicollinearity: *Diagnostics*** *(Variance Inflation Factor)* **& Remediation** *(Ridge regression)* (10.5, 11.2) **Other Topics** *(as time permits)* **Discuss Final Exam** **Wednesday April 20: Last day of class**	• **Assignment 12** due by Wednesday April 20 at 5:00 PM ET • **Lab 13** (in class on Wednesday April 20)
WEEK 16 Apr 25-May 1 **WEEK 17** May 2-4	**Wednesday April 27:** **Study Day-No Class** **Final Exams-Thursday April 28-Wednesday May 4** **Wednesday May 4 5:30-8 PM:** **Final Exam (Cumulative with Focus on Chapters 5-11)**	• **Assignment 13?** due by Wednesday April 27 at 5:00 PM ET