AFRE 991: Advanced Data Analytics and Frontier Methods for Applied Economists

Tuesdays and Thursdays | **1:00 - 2:20pm** | **Baker Hall 121**

Week #	Tuesday	Thursday	Topics	Final Project	Assessments
1	**January 14** **Class 1** Lecture	**January 16** **Class 2** Lecture	**Course Introduction** **R Basics**		
2	**January 21** **Class 3** Lecture	**January 23** **Class 4** **Lecture**	**Version Control with GitHub** **R Markdown**		
3	**January 28** **Class 5** Lecture	**January 30** **Class 6** Lecture	**Data Wrangling** **Joining Data**		Assignment 1 Due Friday, January 31
4	**February 4** **Class 7** Lecture	**February 6** **Class 8** Lecture	**Data Tidying with *tidyr*** **Data Cleaning**		
5	**February 11** **Class 9** Lecture	**February 13** **No Class**	**Data Cleaning, Continued**		Assignment 2 Due Friday, February 16
6	**February 18** **Class 10** Lecture	**February 20** **Class 11** Lecture	**Data Visualization**		
7	**February 25** **Class 12** Lecture: Review	**February 27** **Class 13** Lecture	**Data Acquisition** **Scraping Static Websites** **Scraping Dynamic Websites**	Prospectus Due Friday, February 28	Assignment 3 Due Friday, February 28
8	**March 4** **No Class - Spring Break**	**March 6** **No Class - Spring Break**			
9	**March 11** **Class 14** Lecture	**March 13** **Class 15** **Lecture**	**Data Acquisition through APIs** **Intro to Programming** **Iteration**		
10	**March 18** **Class 16** Lecture	**March 20** **Class 17** Lecture	**Function Writing** **Vectorization and Paralellization** **Intro to Regression**		Assignment 4 Due Friday, March 21
11	**March 25** **Class 18** Lecture	**March 27** **Class 19** Lecture	**Fast Fixed Effects and IV Regression** **Tables and Figures from Regression Output** **Causal Inference Methods in R**		
12	**April 1** **Class 20** Lecture	**April 3** **Class 21** **Lecture**	**Synthetic Control Methods in R** **Introduction to Spatial Data** **Vector Data in R**		Assignment 5 Due Friday, April 4
13	**April 8** **Class 22** Lecture	**April 10** **Class 23** Lecture	**Raster Data in R** **Joining Raster and Vector Data** **Spatial Regression Methods**		
14	**April 15** **Class 24** Lecture	**April 17** **Class 25** Lecture	**Intro to Machine Learning and Classification** **Model Selection and Regularization** **Regression Trees and Forest-Based Methods**	Replication Package Due Sunday, April 20	
15	**April 22** **Class 26** Lecture	**April 24** **Class 27** Lecture	**Machine Learning for** **Causal Treatment Effects**		Assignment 6 Due Friday, April 27
16	**Final Presentations - Timing TBD**				