

ECO 231W Class Plan

01/18 First class

Material: Introduction, scientific questions, causality and experiments.

Reading: Notes 1. You can also check Freedman Chapter 1.

01/23 Class

Material: Real world experiments. Observational studies, confounding.

Reading: Notes 2. You can also check Freedman chapter 2

01/25 Class

Material: Confounders.

Reading: Notes 3.

01/30 Class

Material: Review about notation. Beginning regression.

Reading: Notes 4. This class covers chapter 10 and a bit of chapter 12 on Freedman's book.

Prepare for this class: We will begin to work with a few mathematical formulas. If you need to brush-up on the pre-requisite material, you could read chapters 4, 8 and 9 on Freedman or check a few of the videos linked [here](#). Overall you do well to revise concepts such as variance, covariance and correlation before this class.

02/01 Class

Material: Continuing regression. Regression residuals

Reading: Notes 5. You can also read Freedman chapters 11 and 12.

02/06 No class

02/08 Class

Material: Multivariate regression method.

Reading: Notes 6.

02/10 Homework 1

Stata homework 1 due. Details will be published in the [announcements page](#).

02/13 Class

Material: Goodness of fit. Linear model.

Reading before class: It is strongly suggested that you review expectations and conditional expectations before this class. Use the book of your pre-requisite courses, or at the very least watch the expectation videos [here](#).

Reading: Notes 7

02/15 Class

Material: Continue with the linear model. Linearity and interpretation.

Reading before class: You can benefit from reviewing the material about linear equations in the videos [here](#).

Reading: Notes 8.

02/20 Class

Material: Qualitative variables.

Comments: Notes 9. You can also check Freedman's book p. 42-44.

02/22 Class

Material: Incorporating non-linear relations into the model. Interactions.

Reading: Notes 10.

02/24 Homework 2

Stata homework 2 due. Details will be published in the [announcements page](#).

02/27 No class

I will be out of town.

03/01 No class

I will be out of town.

03/06 Review for Midterm 1

This session will be hosted by a TA. See details in the [announcements page](#).

03/08 Midterm 1

Details will be published in the [announcements page](#).

03/13 Spring Break

03/15 Spring Break

03/20 Class

Material: Relating the OLS regression method to the linear model: theorems of unbiasedness, and variance of the OLS estimator.

Reading: Notes 11.

03/22 Class

Material: Continuation of the variance of the OLS estimator. Gauss Markov theorem. Confidence intervals.

Reading before class: The material that begins in the end of this class, and continues until the end of hypothesis testing in the following two classes is often considered the hardest in this course by many students. It is a good idea to do some reading before class, which will makes things easier. For example, pages 381-383 in Freedman's book are a good start, and you can also search online for "confidence interval." Additionally, you can review the material about the normal curve in your Statistics book, or read chapter 5 in Freedman's book, especially part 5 in page 92. Finally, you can gain a much deeper understanding of the material, especially where does the randomness come from, if you read chapter 19 in Freedman's book, which discusses surveys (remember that the intense majority of data we use comes from surveys). You can also watch the videos about the normal curve and confidence intervals [here](#).

Reading: Notes 12. You can also read Freedman's book p. 381-386.

03/27 Class

Material: Hypothesis Testing. The t-test. Significance.

Reading before class: It is strongly suggested that you review hypothesis testing before this class. Use the book of your pre-requisite courses. Alternatively, you can read chapter 26 in Freedman's book, or watch the hypothesis testing videos [here](#).

Reading: Notes 13. You can also read Freedman's book chapter 26

03/29 Class

Material: p-values, and the F-test

Reading: Notes 14. You can also read Freedman's book chapter 29.

03/31 Replication

Replication due. Details will be published in the [announcements page](#).

04/03 Class

Material: Model failures. Failure of assumption 3: heteroskedasticity. Failure of assumption 1: endogeneity.

Reading: Notes 15

04/05 Class

Material: Model failures. Failure of assumption 1: endogeneity due to omitted variables, continuation. Failure of assumption 1: superfluous variables. Proxy variables.

Reading: Notes 16

04/10 Review for Midterm 2

This session will be hosted by a TA. See details in the [announcements](#) page.

04/12 Midterm 2

Details will be published in the [announcements page](#).

04/17 Class

Material: Model failures. Failure of assumption 1: scaled variables. Failure of assumption 1: misspecification.

Reading: Notes 17.

04/19 Class

Material: Data failures. Failure of assumption 2: measurement error.

Reading: Notes 18. You can also read Freedman's book chapters 6 and 24

04/24 Class

Material: Data failures. Failure of assumption 2: sample selection and missing data. Failure of assumption 2: multicollinearity and near multicollinearity.

Reading: Notes 19

04/26 Project Special Session 1

This session will be hosted by a TA. See details in the [announcements](#) page.

05/01 Final Class

Material: Research

Reading: Notes 20.

05/03 Project Special Session 2

This session will be hosted by a TA. See details in the [announcements](#) page.

05/05 Project

Project due. Details will be published in the [announcements page](#).

05/08 Final MW 3:25-4:40 group

At 8:30 a.m. Details will be published in the [announcements page](#).

05/09 Final MW 12:30-1:45 group

At 8:30 a.m. Details will be published in the [announcements page](#).
