University of Houston
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Material for midterm

1. Theoretical derivation of the regression coefficient (vector) and its variance.

2. Working with numerical examples—the linear model with 2 regressors will often be used in midterm/exam questions, I may give you some numbers and you should be able to find, say the coefficient and the standard errors.

3. The Frisch-Waugh theorem and applications. I may ask you to prove the FW theorem, so make sure you are comfortable working with the projection matrix $P_X = X\left(X'X\right)^{-1}X'$ and the residual maker $M_X = I - P_X = I - X\left(X'X\right)^{-1}X'$

4. R^2, adjusted R^2, and partial R^2

5. the t- and F-test and the Chow-test (and similar simple applications of the F-test that I may think of). Confidence intervals.

6. Functional Form (as I covered it in class: dummy variables, interactions, elasticities, semi-log, etc.)

7. Data Problems (as I covered it in class: omitted variable bias, classical measurement error, multi-collinearity, Winsorizing, truncating (of called trimming) data)

8. Asymptotics (as far as we get Thursday, any questions Friday in the Thursday material will be simple). You will need to use the Law of Large Numbers (LLN) and the Central Limit Theorem (CLT), but I did not mention the explicit version of the LLN or the CLT, so you can talk about "the" LLN, and "the" CLT.