

## In this 12 lecture course, we cover the first half of the Stock and Watson book. Detailed Course Outline ECMC11 Introduction to Regression Analysis:

SESSION	TOPIC
1	Probability Theory:
	Pdf, cdf, marginal distributions, conditional distributions, expected value, variance, covariance, correlation, conditional expectation, law of iterated expectations
2,3	Statistics Theory:
	Distributions: Normal, multivariate normal, F, t, chi2, random sampling, sampling distribution of the sample average, law of large numbers, central limit theorem, population mean: estimation, standard error, hypothesis testing, p-value, confidence intervals
4,5	Univariate regression:
	Assumptions, estimation, unbiasedness, goodness of fit (R squared), interpretation of coefficients, log-log, log-linear models, sampling distribution under homoskedasticity, under heteroskedasticity, two sided-hypothesis testing, one-sided hypothesis testing, confidence intervals
6	Stata Session:
	A lecture on basic Stata use for use in homeworks: summary statistics, regression, hypothesis testing, graphs
7,8	Multivariate regression:
	Interpretation, estimation, multicollinearity, omitted variable bias, coefficient variance estimation, asymptotic sampling distribution, single parameter hypothesis testing, two- sided test, one sided test, confidence interval, joint hypothesis tests (F-test), adjusted R squared
9	Nonlinear Regression Functions:
	Interactions (binary, continuous), Internal and external validity
10	Internal and External Validity:
	Classical measurement error, omitted variable bias, simultaneous causality
11,12	Experiments, Regression Discontinuity, Difference in Difference estimation