UNIVERSITY OF INTERNATIONAL BUSINESS AND ECONOMICS (BEIJING)
INTERNATIONAL SUMMER SCHOOL
SUMMER SESSION 2012

Syllabus for Introduction to Econometrics (ECO 21)

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Office hours: MTW 12:30 - 14:00

Course	Day	Class Time	Location
ECO 21	MTWR	10:40 - 12:10	KEYAN 402

COURCE RESOURCES:
Handouts can be accessed at `http://www.stat.ucla.edu/~nchristo/introeconometrics`.

Textbook (optional): James H. Stock and Mark W. Watson, *Introduction to Econometrics*, Second Edition, Addison Wesley, 2006.

Probability and Statistics EBook (freely available at):
`http://wiki.stat.ucla.edu/socr/index.php/EBook`.

Software: `R` (can be downloaded freely from `http://cran.stat.ucla.edu`), and Statistics Online Computational Resource (SOCR), freely available at: `http://www.socr.ucla.edu`.

COURSE PREREQUISITES:
Introduction to Statistics, or concurrent enrollment with Introduction to Statistics, or by instructor's consent.

COURSE DESCRIPTION AND OBJECTIVES:
Introduction to Econometrics will introduce students to the statistical techniques used in the analysis of economic data. The main topic of the course is simple and multiple regression. Regression analysis is a statistical method aiming at discovering how one or more variables (called predictor variables) are related to another variable (called response variable). It is a technique widely used not only in academic research but also in real world applications. We will first briefly review some useful topics from statistics (confidence intervals, hypothesis testing, t, χ^2, and F distributions). The open source statistical package `R` and the Statistics Online Computational Resource (SOCR) will be used extensively throughout the course. Both are freely available at `http://cran.stat.ucla.edu` and `http://www.socr.ucla.edu` respectively. The assumptions of the regression model will be examined carefully to understand why, how, and under what conditions they are useful and what can be done when these assumptions do not hold. We will also discuss regression analysis in matrix form. Model specification is an important topic in regression analysis and we will learn how to determine which predictors should be included in or excluded from the regression model equation. Finally the topics of logistic regression and instrumental variables will be discussed.

COURSE POLICIES:
Please remember to turn off cell phones. The use of laptop computers will not be permitted in class. You are expected to adhere to the honor code and code of conduct. Academic dishonesty of any form will not be tolerated. If you have a disability that will require academic accommodation, please contact the instructor at least one week before the exam.

COURSE OUTLINE (26 class sessions - 39 hours):

Lecture number	Date	Topics
01	Monday 02 July	Introduction: Review of basic concepts of probability and statistics: Random variables, expected value and variance.
02	Tuesday 03 July	Introduction: Review of basic concepts of probability and statistics: Probability distributions, methods of estimation, properties of estimators.
03	Wednesday 04 July	Simple regression model: Method of ordinary least squares (OLS). OLS estimators of the simple regression model as random variables.
04	Thursday 05 July	Coefficient of determination (R^2), correlation coefficient. Application to stock market data (classical Markowitz model).
05	Monday 09 July	Classical assumptions of the regression model. Residual analysis.
06	Tuesday 10 July	Hypothesis testing and confidence intervals for the simple regression model coefficients, prediction intervals (t test).
07	Wednesday 11 July	Introduction to the open source statistical package `R`. Simple regression using `R`.
08	Thursday 12 July	Multiple regression analysis.
09	Monday 16 July	Multiple regression analysis in matrix form.
10	Tuesday 17 July	The classical assumptions of the regression model revisited. Residual and influential analysis.
11	Wednesday 18 July	Hypothesis testing and confidence intervals for the parameters of the multiple regression model (t and F test).
12	Thursday 19 July	Review.
13	Friday 20 July	Midterm exam.
14	Monday 23 July	Transformation of dependent and independent variables.
15	Tuesday 24 July	Regression models with dummy independent variables. Regression models with dummy dependent variables.
16	Wednesday 25 July	Probit and logit regression models, method of maximum likelihood.
17	Thursday 26 July	Model specification. The problem of missing variables.
18	Monday 30 July	Model specification (continued). Instrumental variables.
19	Tuesday 31 July	Random and fixed effect panel to eliminate bias.
20	Wednesday 01 August	Introduction to time series models.
21	Thursday 02 August	Serial correlation and heteroscedasticity.
22	Monday 06 August	Stationarity assumption.
23	Tuesday 07 August	Analyzing time series data with `R`.
24	Wednesday 08 August	Simultaneous equations.
25	Thursday 09 August	Introduction to nonlinear regression.
26	Friday 10 August	Final exam.

COURSE GRADES:
There will be two (2) exams and homework or labs that will be assigned every week. Please staple your homework or labs and write your name and the discussion section on them. Late homework or labs will not be accepted and make-up exams will not be given. Being in class on time and fully participating is important for your understanding of the material and therefore for your success in the course. You are required to attend all the lectures. Attendance will be taken at random times during the course and it will count for 10% of your grade. The tentative dates for the exams are shown below.

The course grade will be based on the calculation
$Final\ score = 0.10 \times Attendance + 0.10 \times Homework + 0.30 \times Midterm + 0.50 \times Final$

Important dates:
First day of classes: 02 July.
Last day of classes: 10 August.
Exams:
Midterm exam: 20 July.
Final exam: 10 August.

Good Luck !!!