ECON 3334
Introduction to Econometrics
Spring, 2016

Instructor:	WANG, Peng
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Office Hours:	by appointment.

Time and Location:

(L1) Mon and Wed 10:30 - 11:50 at room LSK-1011.
(L2) Mon and Wed 09:00 - 10:20 at room LSK-1011.

Tutorial sessions:

(T1) Mon. 17:00 - 17:50 at room LSK-1007. TA: WAN, Wilson. (`ecwilsonwan@ust.hk`)
(T2) Tue. 11:00 - 11:50 at room LSK-G007. TA: TSUI, Peter. (`ecpeter@ust.hk`)
Please note the tutorial is not weekly. The TA will make an announcement through Canvas when there is a tutorial session.

Textbook: Stock, James and Mark Watson (2008) "*Introduction to Econometrics.*" Brief Edition, Addison Wesley, ISBN 978-0-321-44296-3.

    Remark: You may also use any other edition of the same title.

    We also use the materials in the Companion Website (`http://www.aw-bc.com/stock_watson`).

Course Web Site: `http://canvas.ust.hk`

    Students should be able to access the course website for ECON 3334 in the Canvas using their ITSC accounts. I will post the teaching material before each class. You shall also check the course website for instructions on assignments and other information.

Course Description: This course will introduce students to econometric techniques and their applications in economic analysis. It begins with a review of basic statistical tools, followed by linear regression models with one regressor, linear regression models with multiple regressors. Emphasis will be put on practical issues in econometric analysis of cross-sectional data. Microsoft Excel and Gretl will be used for computer-based calculation.

Learning Outcomes: By the end of the course, students will be able to:

1. Weight the significance of key assumptions used in regression models, and explain the relationship between those assumptions and properties of estimators.

2. Construct an appropriate regression model and use Gretl to analyze a given economic data set, and then conduct statistical inference and interpret the results.

3. Collect their own data set to conduct empirical analysis, and provide answers to economic questions.

4. Present their understanding of certain economic problems, and use empirical results to justify their explanation.

Prerequisites: Basic statistics or consent of instructor.

Course Requirements (please read carefully):

Homework (15%): There will be about 5 problem sets, assigned during the semester. These problem sets focus on computational and analytical exercises. Each student must work independently and submit his/her own solution. **Students submit their solutions through the Canvas**. Main solution files must be read by Microsoft Word® or Acrobat Reader®. Data files must be read by Microsoft Excel®. The due dates will be specified in each assignment. **Do double-check that you have clicked the "submit" button after you upload your solutions**. Note that **email submissions will not be accepted.** The due time is usually the beginning of one lecture. Late submission will be not be accepted unless you have a verifiable medical reason.

Midterm (25%): Date: Mar 23 (Wed). **Time and Location:** same as classroom. Closed books and notes. Cell phones must be turned off. No self-made formula sheet or cheat sheet will be allowed. I will attach one formula sheet to the exam paper. Non-programmable calculators may be used. No smart phones, tablets, laptop computers are allowed. The midterm material will be announced in class.

Final (60%): Time and Location: TBA. Same rule as the midterm. The final will be cumulative and cover all course materials.

Important exam policy: There will be no make-up exams for the midterm. If you miss the midterm, you will receive zero for that exam. The only exception is a verifiable medical reason, in which case the weight of the midterm will be moved to the final exam. If you miss the final exam, you will receive an "F"(fail) for the course. The only exception is that you successfully apply a make-up exam formally through the school. In such a case, I will allow you to do a make-up exam. There is absolute zero tolerance of cheating in the exam. The case of cheating will be reported to both the department and the school level. We will also check your school ID cards during all exams.

Course Schedule We plan to cover chapter 1-9 of the main textbook. There will be no classes on **Feb 8, 10, Mar 28, Apr 4, May 2** due to Public Holidays.

Feedback: Please feel free to let me know if you find any typo in this syllabus, or if there is anything unclear to you. Any suggestion is welcome.

Course-specific learning objectives

Economic question :

- Identify the underlying economic question: cost-benefit analysis.
- Use economic theory and intuition to conduct preliminary qualitative analysis of the economic relationship.

Economic data :

- Collect and format economic data set in a spread sheet (Excel).
- Calculate main summary statistics: mean,variance,correlation, etc.
- Interpret the implications of summary statistics.

Econometric model :

- Design a model to describe an economic relation: randomized controlled experiment, comparing means, linear regression with one or multiple regressors, nonlinear regression function.
- Identify the testable assumptions: establish the null hypothesis.
- Analyze the validity of assumptions behind your model: random sampling, omitted variables, exogeneity, multi-collinearity.
- Estimate the model and conduct hypothesis testing: OLS, t-statistic, p-value, level of significance, power of a test, robust standard error, F-test, Wald test.

Econometric analysis :

- Build a table to summarize the regression results.
- Interpret the empirical results based on key estimates and test statistics.
- Compare and choose among different models: use R-squared, p-value, t-statistic, F-test, Wald test, economic significance.
- Argue the limitations of the current model and analyze the source of the limitations.

Connecting the objectives :

- Economic question motivates the econometric model.
- Economic data imposes constraint on what the econometric model can and cannot do. (For example, you do not have data on a lot of omitted variables.)
- Econometric model is a quantitative description of the economic question.
- Econometric model make feasible the econometric analysis.
- Econometric analysis justifies/answers the economic question.