

**THE UNIVERSITY OF HONG KONG**  
**FACULTY OF BUSINESS AND ECONOMICS**  
**School of Economics and Finance**

**ECON6005 Econometric Theory I**

<b>GENERAL INFORMATION</b>	
Instructor: Ping Yu Email: pingyu@hku.edu.hk Office:KKL1108 Phone:2857-8358 Consultation times: Friday, 2:00-3:00pm  Teaching time: Time: 9:30-10:45am and 11:00-12:15pm on Saturday Teaching location: KKLG103	
<b>COURSE DESCRIPTION</b>	
This course is designed for first-year Economics Ph.D. students, and can be used, as one of the core courses, to satisfy the graduation requirements of the MEcon Programme. Students are expected to be proficient in calculus, matrix algebra, and econometrics at the undergraduate level (i.e., ECON0701/ECON2280). The basic methods of modern econometrics, e.g., least squares estimation, maximum likelihood method and generalized method of moments, are covered. Linear models, e.g., linear regression and linear endogenous models are emphasized, but nonlinear models, e.g., nonlinear regression and nonlinear endogenous models, will also be discussed.	
<b>COURSE OBJECTIVES</b>	
<ol style="list-style-type: none"> <li>1. To help applied economic researchers to understand the most popular econometric techniques used in applied journals such as AER, JPE and QJE.</li> <li>2. To help theoretical econometricians to lay a technical foundation for future studies.</li> </ol>	
<b>COURSE LEARNING OUTCOMES</b>	
<b>Course Learning Outcomes</b>	<b>Aligned Programme Learning Outcomes</b>
By the end of this course, students should be able to:	
CLO1: Interpret the least squares estimator and associated estimators as projections. CLO2: State and prove the basic finite-sample properties of estimators (e.g. unbiasedness and Gauss-Markov theorem) and the conditions under which they apply. CLO3: Derive the basic large-sample properties of the least squares estimator (e.g., consistency, asymptotic normality, and consistency of the covariance matrix estimators) using a set of appropriate conditions CLO4: Perform t-test, Wald test and construct confidence intervals. CLO5: Understand p-value, test consistency and the asymptotic local power. CLO6: Know specification testing, model selection, estimation and testing with heterogeneity, and forecast intervals. CLO7: Understand the parallel results in the GMM framework when there is endogeneity.	<ul style="list-style-type: none"> <li>- Understanding of fundamental theories and new development in economics (CLO 1-7)</li> <li>- Mastering of skills in analyzing economic data (CLO 4-7)</li> <li>- Demonstration of ability to apply economic knowledge and analytical skills to address policy and business problems (CLO 6-7)</li> <li>- Awareness of ethical concerns in economic issues (CLO 6-7)</li> <li>- Mastering of communication skills (CLO 1-7)</li> </ul>

<b>COURSE TEACHING AND LEARNING ACTIVITIES</b>				
<b>Course Teaching and Learning Activities</b>		<b>Expected contact hour</b>	<b>Study Load (% of study)</b>	
Teaching and learning takes place through weekly lectures.				
T&L1. Lecture. Instructor will give lectures on major concepts and issues. (CLO 1-7)		2.5	80%	
T&L2. Consultation. Instructor holds weekly consultation hours to answer students' questions. (CLO 1-7)		1	20%	
T&L3.				
T&L4.				
...				
Total			100%	
<b>Assessment Methods</b>		<b>Brief Description (Optional)</b>	<b>Weight</b>	<b>Aligned Course Learning Outcomes</b>
A1. Midterm Test			40%	CLO1-7
A2. Final Exam			60%	CLO1-7
A3.				
A4.				
...				
Total			100%	
<b>COURSE CONTENT AND TENTATIVE TEACHING SCHEDULE</b>				
<p><b>5 September, Introduction (LN1)</b></p> <p><b>12 September, Projection (LN2)</b></p> <p><b>19 September, Projection (continued)</b></p> <p><b>26 September, Least Squares Estimation-Finite Sample Properties (LN3)</b></p> <p><b>3 October, An Introduction to Asymptotic Theory (LN4)</b></p> <p><b>10 October, Least Squares Estimation-Large Sample Properties (LN5)</b></p> <p><b>17 October, Reading week (no class)</b></p> <p><b>24 October, MIDTERM EXAMINATION</b></p> <p><b>31 October Least Squares Estimation-Large Sample Properties (continued)</b></p> <p><b>7 November, Additional Topics on Linear Regression (LN6)</b></p> <p><b>14 November, Endogeneity and Instrumental Variables (LN7)</b></p> <p><b>21 November, Endogeneity and Instrumental Variables (continued)</b></p> <p><b>28 November, Single-Equation GMM (LN8)</b></p>				