COURSE CONTENT

Course Coordinator	Wang Wenjie
Course Code	HE2003
Course Title	Econometrics I
Pre-requisites	HE1005 Introduction to Probability and Statistical Inference or HE1004 Introduction to Statistical Theory and Methods (min grade A-) or MH1820 Introduction to Probability & Statistical Methods (coreq for ECDS) or MH2814 Probability and Statistics For MAEO students Co-requisite with MH2500 Probability & Introduction to Statistics or Co-requisite with MH3500 Statistics
No of AUs	3 AU
Contact Hours	39 hours (2 hours lecture and 1 hour tutorial per week)

Course Aims

This course aims to equip students with a basic understanding of econometric methods and models. It emphasizes the use of linear and nonlinear regression techniques in formulating and testing micro, macro, and financial economic hypotheses. Students will learn methods for estimating causal effects using real economic data, develop the ability to discern which econometric method is most appropriate in a given situation, and get some hands-on experience with data analysis using statistical software.

Intended Learning Outcomes (ILO)

By the end of this course, the students would be able to:

1. Determine the functions, appropriateness and theoretical assumptions of econometric methods and models
2. Use linear and nonlinear regression techniques in formulating and testing micro, macro and financial economic hypotheses.
3. Identify and apply methods for estimating causal effects using real economics data and use statistical packages to analyse real-world data
4. Discern which econometric method is most appropriate in a given situation

Course Content

1. Simple Linear Regression Model, Ordinary Least Squares (OLS) Estimator, Least Square Assumptions
2. Properties of the OLS Estimator, Hypothesis Tests and Confidence Intervals
3. Regression with Binary Variables, Heteroskedasticity
4. Omitted Variable Bias, Linear Regression with Multiple Regressors
5. Multicollinearity, Hypothesis Tests and Confidence Intervals in Multiple Regression
6. Test of Joint Hypothesis, Chi-Squared Distribution, F-Statistic
7. Nonlinear Regression Functions: Polynomial and Logarithmic Models
8. Nonlinear Regression Functions: Interaction Models
9. Model Specification and Empirical/Data Issues

Assessment (includes both continuous and summative assessment)

1. Continuous Assessments	:	50%
2. Final Examination	:	50%
Total	**:**	**100%**

Reading and References

Main Reference (MR)	Supplementary Reference (SR)
Lecture Notes	James H. Stock and Mark W. Watson, ***Introduction to Econometrics*** (Third or Fourth Edition)

Statistical Software

STATA

Course Instructors

Instructor	Office Location	Email
Wang Wenjie	SHHK 04-65	wang.wj@ntu.edu.sg

Planned Weekly Schedule

Week	Topic	Course LO	Readings/Activities
1	Introduction	1	MR: Lecture Notes SR: Stock and Watson - Ch 1.1, 1.2, 2.1, 2.2, 2.3
2	Simple linear regression model 1	1,2	MR: Lecture Notes SR: Stock and Watson - Ch 4.1, 4.2
3	Simple linear regression model 2	1,2,3	MR: Lecture Notes SR: Stock and Watson -Ch 2.1, 2.2, 2.3, 4.3, 4.4
4	Simple linear regression model 3	1,2,3	MR: Lecture Notes SR: Stock and Watson - Ch 2.5, 3.1, 4.4
5	Simple linear regression model 4	1,2,3	MR: Lecture Notes SR: Stock and Watson - Ch 3.2, 3.3, 4.5, 5.1, 5.2
6	Simple linear regression model 5	1,2,3	MR: Lecture Notes SR: Stock and Watson - Ch 3.3, 5.2, 5.3, 5.4
7	Multiple linear regression model 1	1,2,3,4	MR: Lecture Notes SR: Stock and Watson - Ch 6.1, 6.2, 6.3
Recess Week			
8	Quiz		
9	Multiple linear regression model 2	1,2,3,4	MR: Lecture Notes SR: Stock and Watson - Ch 6.5, 6.7, 7.1
10	Multiple linear regression model 3	1,2,3,4	MR: Lecture Notes SR: Stock and Watson - Chapters 7.1, 7.2
11	Multiple linear regression model 4	1,2,3,4	MR: Lecture Notes SR: Stock and Watson - Ch 7.2, 7.3
12	Nonlinear regression model 1	1,2,3,4	MR: Lecture Notes SR: Stock and Watson - Ch 8.1, 8.2
13	Nonlinear regression model 2 and Revision	1,2,3,4	MR: Lecture Notes SR: Stock and Watson - Ch 8.3, Tutorial questions and supplemental materials