COURSE CONTENT

Course Coordinator	Wang Wei-Siang
Course Code	HE2020
Course Title	Survey Methods and Sampling Technique
Pre-requisites	HE1004 Introduction to Statistical Theory and Methods/ HE1005 Introduction to Probability and Statistical Inference/ HE2004 Introductory Econometrics/ HE2005 Principles of Econometrics/ AB1202 Statistics & Analysis
No of AUs	3
Contact Hours	39 hours (2 hours lecture and 1 hour tutorial per week)

Course Aims

This course is designed to give you basic knowledge and concepts of sampling methods and techniques in the social sciences. In this course, we will mostly discuss the basics of probability, statistical and sampling theory. The mathematics is both elementary and rigorous, and it requires as a pre-requisite the satisfactory experience of one or two years of university mathematics courses. Topics covered in this course include discrete probability, various linear relationships, conditional expectation, conditional (co)variance, the central limit theorem, simple random sampling, systematic sampling, stratified sampling, cluster sampling, etc. We will also talk about how to deal with nonresponse items and observations.

Intended Learning Outcomes (ILO)

By the end of this course, you (as a student) would be able to:

1. Apply mathematical and probabilistic methods to do statistical inference
2. Explain the basic principles underlying survey design and estimation, and differentiate between various probability (and nonprobability) sampling methods and tell their advantages and disadvantages
3. Design a survey process, identify appropriate sampling procedures and methods in a social science research study

Course Content

1. Probability and Statistics
2. Simple Probability Samples
3. Ratio and Regression Estimation
4. Stratified Sampling
5. Cluster Sampling with Equal Probabilities
6. Cluster Sampling with Unequal Probabilities
7. Complex Surveys
8. Nonresponse

Assessment (includes both continuous and summative assessment)

1. Continuous Assessment	:	15%
2. Final Examination	:	60%
Total	:	**100%**

Reading and References

Textbook:

1. Sampling: Design and Analysis (2009), by Sharon L. Lohr; Duxbury Press.

Supplementary Readings

1. Statistics: Principles and Methods (2019), by Richard J. & Gouri B.; Wiley

2. The Practice of Survey Research: Theory and Applications (2015), by Erin Ruel; SAGE Publications, Inc.

3. Mathematical Methods in Sample Surveys (1998) by Howard Tucker; World Scientific Publishing

Course Instructors

Instructor	Office Location	Email
Wang Wei-Siang	SHHK 04-55	wswang@ntu.edu.sg

Planned Weekly Schedule

Week	Topic	Course LO	Readings/ Activities
1	Introduction to Sampling Techniques and Survey	1-3	Sharon L. Lohr (2009) Chapter 1 Richard J. & Gouri B. (2019) Chapter 1
2-3	Probability, Statistical Tests, Statistical Diagrams	1	Richard J. & Gouri B. (2019) Chapter 2-9
4	SRS sampling Techniques	1-3	Sharon L. Lohr (2009) Chapter 2
5-6	Stratified Sampling	1-3	Sharon L. Lohr (2009) Chapter 4
7-8	Cluster Sampling with Equal Probabilities	1-3	Sharon L. Lohr (2009) Chapter 5
Recess Week			
8	Cluster Sampling with Unequal Probabilities	1-3	Sharon L. Lohr (2009) Chapter 6
9	Ratio and Regression Estimation	1-3	Sharon L. Lohr (2009) Chapter 3
10-11	Complex Surveys	1-3	Sharon L. Lohr (2009) Chapter 7

12	Nonresponse Issues	1-3	Sharon L. Lohr (2009) Chapter 8
13	Revision	1-3	