

Schedule code: PAC1003

Statistics |

■ ■ Instructor

村上 秀記[MURAKAMI HIDEKI]

■ ■ Faculties eligible to register	Graduate School of International Social Sciences	■ ■ Students eligible to register (first-year students, second-year students, etc.)	1~1	■ ■ No. of course credits	2	■ ■ Language of instruction	English
■ ■ Term in which course is to be held	Fall	■ ■ Day of the week and class period				■ ■ Class group	
■ ■ Special notes							

■ ■ Goals of the course

This course is aimed to introduce the basic working knowledge of both Statistics and Econometrics as a tool for economic analysis

■ ■ Overview of the course

1. What is Statistics? Key Concepts & Terminology in Statistics

Descriptive vs. Inferential Statistics

Sample vs. Population, Parameter vs. Statistic (Estimator)

Birds Eye View of Logic & Purpose of Statistical Inference

2.,3. Descriptive Statistics

Expected Value and Variance: Definition and Property

Measure of Central Tendency - Mean, Median, Mode

Measure of Dispersion - Variance, Standard Deviation, Mean Deviation

Other Measures - Skewness, Kurtosis, Moments

Change of Variable and Standardization, Covariance & Correlation

4. Normal Distribution

Definition and Key Property, Central Limit Theorem, Excel Experiment

5. Interval Estimation

Random Sampling, Central Limit Theorem, Sampling Distribution

Confidence Interval

Interval Estimation of Mean: Known Variance, Unknown Variance -T-Test

6. Hypothesis Testing

Formal Procedure of Hypothesis Testing

Null Hypothesis vs. Alternative Hypothesis

Accepting / Rejecting Hypothesis, Significance Level, p-Value

One-sided or Two Sided Test?, Two Types of Error, Power (of Test)

7. Mid-Term Quiz + Review of Statistical Concept

8. Regression Analysis - Fitting a line & Goodness of the Fit

Explanatory (Independent) Variable, Explained (Dependent) Variable

Fitting a line via OLS, Normal Equations, Coefficient of Determination

9. Statistical Analysis of Regression Outcome

OLS estimators as random variable, Mean & Variance of OLS estimators

Hypothesis Test of OLS estimators via t Test

10. Re-examination of Classical Assumptions on Error Term
Zero Mean, Constant Variance, Independence, No Serial Correlation, Normality, BLUE and BUE

11. Functional Form
Constant Term,
Functional Form (Linear, Log-Log, Lin-Log, Log-Lin, Inverse, Polynomial)
Lagged Independent Variable, Dummy Variable (Intercept & Slope Dummy)

12. Choice of Independent Variables
Omitted Variable & Irrelevant Variables
Specification Criteria (i) - Theory, t-Test, , Bias
Specification Criteria (ii) - Ramsey's Test, AIC, Schwartz Criterion

13. Serial Correlation
Nature &Consequences
Diagnosis - Lagged Residual Graph, Durbin-Watson Statistic
Remedies - Generalized Least Square (AR(1), Cochrane-Orcutt)
Newey-West Standard Errors

14. Heteroskedasticity
Nature &Consequences
Diagnosis - Redefining Variables, White Test, Park Test
Remedies - White HC Standard Error, Redefining Variable

15. Multicollinearity
Nature &Consequences
Diagnosis - Correlation Coefficient, Variance Inflation Factor
Remedies - Do Nothing, Increasing Data, Redefining Variable

16. Final Test

■ ■ Aims/ objectives of the course

This course intends to equip students with (1) basic working knowledge to perform regression analysis (using Eviews) on economic data and (2) the ability to understand and analyze the result to make a sound judgment and/or draw conclusions based on the statistical analysis.

■ ■ Teaching method

One Lecture per week with a quiz at the end of every lecture plus (every!) weekly homework. Students will have a chance to perform actual statistical calculations & analysis using Excel and Eviews during the lecture

■ ■ Grading methodology

Homework & Quiz (30%), Mid-Term (30%), Final Exam (40%)
± Adjustment based on the overall performance (Class Participation, Enthusiasm, etc...)

■ ■ Textbooks

Textbook1	ISBN	9780321316493				
	Title	Using Econometrics: A Practical Guide 5th ed.				
	Author(s)	Studenmund	Publisher	Addison Wesley	Year	2005

■ ■ Additional information on textbooks

The text book is "Required"

■ ■ Reference books

	ISBN	9780071276252				
--	------	---------------	--	--	--	--

ReferenceBook1	Title	Basic Econometrics 5th ed.				
	Author(s)	Damodar N. Gujarati	Publisher	McGraw Hill Higher Education	Year	2009
ReferenceBook2	ISBN	9780324581621				
	Title	Introductory Econometrics				
	Author(s)	Jeffrey Wooldridge	Publisher	South-Western College Pub	Year	2008
ReferenceBook3	ISBN	9780805071344				
	Title	The Lady Tasting Tea: How Statistics Revolutionized Science in the Twentieth Century				
	Author(s)	David Salsburg	Publisher	Owl Books	Year	2002
ReferenceBook4	ISBN	9780393310726				
	Title	How to Lie with Statistics				
	Author(s)	Darrell Huff , Irving Geis	Publisher	W. W. Norton & Company	Year	1993
ReferenceBook5	ISBN	9780205395095				
	Title	Statistics Without Tears: A Primer for Non-Mathematicians				
	Author(s)	Derek Rowntree	Publisher	Allyn & Bacon	Year	2003

Additional information on reference books

The first book is for theoretical reference/ back-up for the lecture while the second is the place to look for various actual examples. The last 3 books are highly recommended supplementary readings.

Pre-requisites and related courses

Assumes only high school Math as requirement. Related subjects are Microeconomics and Macroeconomics

Keywords

Statistics, Econometrics

Remarks 1

The mathematics employed in this course is not that advanced but It only looks complicated. You should not be afraid of the formulas and be aware that all you need is not the mathematical gift but a bit of patience and concentration to tackle with it.

Remarks 2

Related URLs

Questionnaire results of course

Short message from the instructor

Office hours

Contact information (office location)

☐☐ **Contact information (telephone number)**

☐☐ **Contact information (e-mail address)**

☐☐ **Remarks** 3

☐☐ **Homepage**