

**Course ID Number: DCC5230**  
**Course Title: Research Methodology**

No. of Credits: 2

Graduate School of International Relations  
International University of Japan

Term: Spring 2012

Instructor: Shinigo Takahashi  
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**Course Introduction**

Knowledge of regression model and its extension is essential for doing empirical work in economics and other social sciences. The purpose of this course is to teach student econometric and computational skills which are necessary for data analysis. The emphasis will be placed on application of the theory from a practical point. Topics include Simple and Multiple Linear Regressions and Instrumental Variable Estimations and the Simultaneous Equation Models.

# **Research Methodology**

2012 Spring

International Development Program

International University of Japan

Instructor: Shingo Takahashi

Office: Main Building 314

Office hours: Thursday 2:40~3:40.

Email: [staka@iuj.ac.jp](mailto:staka@iuj.ac.jp)

Course Description: Knowledge of regression model and its extension is essential for doing empirical work in economics and other social sciences. The purpose of this course is to teach student econometric and computational skills which are necessary for data analysis. The emphasis will be placed on application of the theory from a practical point. Topics include Simple and Multiple Linear Regressions and Instrumental Variable Estimations and the Simultaneous Equation Models.

**Required Text:** *Introductory Econometrics: A Modern Approach*, by Jeffery M. Wooldridge, 4th Edition, South-Western CENGAGE Learning.

Supplementary Books:

*Econometrics Analysis*, William Greene, Fifth Edition, Prentice Hall.

*Elementary Survey Sampling*, 5th ed., Scheaffer, R.L., W. Mendenhall and L. Ott, PWS-KENT Publishing Company, 1996.

Computer Software: Stata

Prerequisites: Statistics for Business and Economics  
Mathematics and Computing for Economics  
Applied Econometrics

Grading Scheme: Homework (20%), Midterm exam (40%), and Final exam (40%)

Teaching assistants

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Outline of Lecture:

1. Review of Basic Econometrics (Week 1 & 2), Wooldridge Ch1 Ch2 Ch3
  - a) Simple & Multiple linear regressions
  - b) Properties of OLS estimators: Unbiasedness
2. Inferences (Week 2), Wooldridge Ch 4 Ch5
  - a) Inferences based on the Classic Linear Regression assumptions:

- b) OLS Asymptotics
3. Multiple Regression Analysis: Further Issues (Week 3), Wooldridge Ch 6.
    - a) Effects of data scaling
    - b) Functional form
    - c) Models with interaction terms
    - d) Prediction and residual analysis
  4. Multiple Regression Analysis: Analysis with qualitative variables (Week 4).  
Wooldridge Ch 7.
    - a) Dummy variables: Interpretations
    - b) Dummy variable for multiple categories
    - c) Interactions involving dummy variables
  5. Heteroskedasticity (Week 5): Wooldridge Ch 8

### **Week 6 Midterm exam**

6. More on Specification and Data Issues (Week5): Wooldridge Ch 9
  - (a) Using proxy variables for unobserved explanatory variables
  - (b) Measurement error bias
7. Instrumental Variable Estimation and Two Stage Least Squares (Week 8) Wooldridge  
Ch 15
  - a) IV estimation
  - b) Two stage least squares
9. Simultaneous equation models (Week 9) Wooldridge Ch 16
  - a) Nature of Simultaneous Equations Models
  - b) Simultaneity Bias in OLS
  - c) Identifying and Estimating a Structural Equation
  - d) System with more than two equations

- **Makeup class**

**May 3<sup>rd</sup> is a national holiday. Thus, we cancel this class. Instead, we will have a makeup on the following day.**

**Makeup class May 15<sup>th</sup>, 7:40PM ~10:40PM**

**Please mark this date on your calendar.**

- **Important date**

**Midterm exam: May 10, 10:30~12:00**

**Final exam: June 14, 10:30~12:00**