

Instructor: Ming-Yuan Chen

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### **DESCRIPTION:**

The course will introduce the linear regression model and discuss statistical inference under standard assumptions, as well as when these assumptions are relaxed. Students will be assumed to have some background in probability theory, statistics, and linear algebra. The topics will cover:

- Linear Least Squares
- Linear Squares Algebra – Partial Regression
- Regression Algebra and Fit Measure; Restricted Least Squares
- Finite Sample Properties of the Least Squares Estimator and Restricted Least Squares
- Hypothesis Testing in the Linear Regression Model
- Asymptotic Distribution Theory
- Asymptotic Results for the Classical Regression Model
- The Generalized Regression Model: Heteroskedasticity
- The Generalized Regression Model: Serial Correlation
- Instrumental Variables Estimation

Other topics such as linear models for panel data, seemingly unrelated regressions model, simultaneous-equations model, maximum likelihood estimation and its applications, GMM estimation, models for discrete choice, limited dependent variable models, sample selection model, and introductory time series data... will be discussed in the second semester..

### **READINGS:**

The text for the course is “**Econometric Analysis**” (2003) by **William H. Greene** and “**A Course in Econometrics**” (1991) by **Arthur S. Goldberger** and. Lectures will start at Chapter 2 of Greene’s book and Chapter 14 of Goldberger’s book. The chapters included in my lectures are as follows.

\* Greene: Chapter 2 – 12.

\* Goldberger: Chapter 14, 15, 16, 17, 9, 19, 20, 21, 22, 25, 27, 28.

Another useful reference is “**Econometric Methods**” (1997) by **Jack Johnston and John DiNardo**.

### **EVALUATION:**

**Final grades will be based on a midterm (40%), a final exam (40%), and problem sets (20%). Problem sets will require the use of GAUSS software.**