课程大纲

大样本理论

课程编号：02806110　　　　　　　　　　授课对象：研究生
学　　分：2　　　　　　　　　　　　　　任课教师：涂云东
课程类型：选修　　　　　　　　　　　　开课学期：2015 年春
先修课程：概率论和数理统计

任课教师简历（500 字左右）：

涂云东，北京大学光华管理学院商务统计与经济计量系和北京大学统计科学中心联席助理教授。2004 年获武汉大学数学与统计学院信息与计算科学专业学士学位，2006 年获武汉大学经济与管理学院数量经济学专业硕士学位，2012 年获美国加州大学河滨分校经济学博士学位，同年 6 月加入北大光华。曾获世界计量经济学会（Econometric Society），加州计量经济学会议等学术组织提供的青年学者研究资助以及 Phi Beta Kappa International Scholarship Award。学术论文发表在 Journal of Econometrics，Econometric Reviews, Journal of Business Economics and Statistics 等国际一流专业杂志。同时担任以下学术期刊匿名评审：Econometric Reviews, Empirical Economics, Journal of Business and Economic Statistics, Journal of Econometrics, Journal of Quantitative Economics, Studies in Nonlinear Dynamics and Econometrics。理论研究领域涵盖非参数/半参数计量经济模型，模型选择和模型平均，网络数据建模，金融计量，信息计量经济学等；应用研究包含宏观经济预测，价格指数建模，网络数据分析，股票市场预测，生产率建模等。
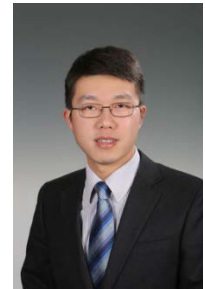
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辅导、答疑时间：预约

一、项目培养目标

1 **Learning Goal 1** Graduates will be thoroughly familiar with the specialized knowledge and theories required for the completion of academic research.

　　1.1　Objective 1 Graduates will have a deep understanding of basic knowledge and theories in their specialized area.

　　1.2　Objective 2 Graduates will be familiar with the latest academic findings in their specialized area and will be knowledgeable about related areas.

　　1.3　Objective 3 Graduates will be familiar with research methodologies in their specialized area, and will be able to apply them effectively.

2 **Learning Goal 2** Graduates will be creative scholars, who are able to write and publish high-quality graduation dissertation and research papers.

　　2.1　Objective 1 Graduates will write and publish high-quality graduation dissertation and research papers

　　2.2　Objective 2 Graduates will be critical thinkers and innovative problems solvers.

3 **Learning Goal 3** Graduates will have a broad vision of globalization and will be able to communicate and cooperate with international scholars

    3.1   Objective 1 Graduates will have excellent oral and written communication skills

    3.2   Objective 2 Graduates will be able to conduct efficient academic communication in at least one foreign language

4 **Learning Goal 4** Graduates will be aware of academic ethics and will have a sense of social responsibility.

    4.1   Objective 1 Graduates will have a sense of social responsibility.

    4.2   Objective 2 Graduates will be aware of potential ethical issues in their academic career.

    4.3   Objective 3 Graduates will demonstrate concern for social issues.

二、课程概述

Weak Convergence, Central Limit Theorem, Delta Method, Moment Estimator;

M-Estimator and its consistency and asymptotic normality, MLE and GMM estimation;

Projections;　U-Statistics. Markov; Markov Chain and MCM;

Limit Theorem for dependent processes;　The bootstrap method.

三、课程目标

Able to apply the asymptotic method in research.

四、内容提要及学时分配

Weak Convergence (3 lectures)　Central Limit Theorem (2 lectures), Delta Method (3 lectures) Moment Estimator; (2)　M-Estimator and its consistency and asymptotic normality (4)　MLE and GMM estimation; (3)　Projections (3);　U-Statistics (3);　Markov Chain and MCMC (4); Limit Theorem for dependent processes (4);　The boostrap (4)

五、教学方式

Classes in English/Chinese; Student presentation

六、教学过程中 IT 工具等技术手段的应用

Slides etc.

七、教材

van der Vaart, A.W., (2000). Asymptotic Statistics, Cambridge University Press.

Jiang J. (2010). Asymptotic Techniques for Statistics, Springer

八、参考书目

Sen, P.K. and Singer, J.M. (1993). Large Sample Methods in Statistics, Chapman & Hall

Ferguson, T.S. (1996). A Course in Large Sample Theory, Chapman &Hall

Lehmann, E.L. (1999). Elements of Large Sample Theory, Springer

Serfling, R. (2000). Approximation Theorems in Mathematical Statistics, John Wiley & Sons

White, H. (2001). Asymptotic Theory for Econometricains, Academic Press

Bierens, H.J. (2005). Introduction to the Mathematical and Statistical Foundations of Econometrics, Cambridge University Press

Sen, P.K., Singer, J.M. and De Lima, A.C.P. (2010). From Finite Sample to Asymptotic Methods in Statistics, Cambridge University Press.

九、教学辅助材料，如 CD、录影等

十、课程学习要求及课堂纪律规范

十一、 学生成绩评定办法（需详细说明评估学生学习效果的方法）

Homework 30%;

Midterm 35%；

Term paper 35%.