

## 课程详述

### COURSE SPECIFICATION

以下课程信息可能根据实际授课需要或在课程检讨之后产生变动。如对课程有任何疑问，请联系授课教师。

The course information as follows may be subject to change, either during the session because of unforeseen circumstances, or following review of the course at the end of the session. Queries about the course should be directed to the course instructor.

1.	课程名称 <b>Course Title</b>	计量经济学 Econometrics
2.	授课院系 <b>Originating Department</b>	金融系 Department of Finance
3.	课程编号 <b>Course Code</b>	FIN303
4.	课程学分 <b>Credit Value</b>	3
5.	课程类别 <b>Course Type</b>	专业核心课 Major Core Courses
6.	授课学期 <b>Semester</b>	秋季 Fall
7.	授课语言 <b>Teaching Language</b>	中英双语 English & Chinese
8.	授课教师、所属学系、联系方式 (如属团队授课, 请列明其他授课教师) <b>Instructor(s), Affiliation &amp; Contact</b> (For team teaching, please list all instructors)	孙便霞, 教学讲师, 金融系 SUN Bianxia, Lecturer, Department of Finance Email: sunbx@sustech.edu.cn Phone: 0755-88018601 办公室: 慧园 3 栋 317 Office: Wisdom Valley, 3#317 伍继松, 金融系, 13760303662 Jisong WU, Department of Finance, 13760303662
9.	实验员/助教、所属学系、联系方式 <b>Tutor/TA(s), Contact</b>	张璐瑶 ZHANG Luyao Email: 11849138@mail.sustech.edu.cn
10.	选课人数限额(可不填) <b>Maximum Enrolment (Optional)</b>	

11. 授课方式 Delivery Method	讲授	习题/辅导/讨论	实验/实习	其它(请具体注明)	总学时
	Lectures	Tutorials	Lab/Practical	Other (Please specify)	Total
学时数 Credit Hours	48				48
12. 先修课程、其它学习要求 Pre-requisites or Other Academic Requirements	概率论与数理统计 Probability and Statistics MA212 微观经济学 Microeconomics FIN201 宏观经济学 Macroeconomics FIN204				
13. 后续课程、其它学习规划 Courses for which this course is a pre-requisite	金融实证分析方法 Empirical Methods in Finance FIN302 量化投资分析 Quantitative Investment Analysis FIN413				
14. 其它要求修读本课程的学系 Cross-listing Dept.	无 None				

### 教学大纲及教学日历 SYLLABUS

#### 15. 教学目标 Course Objectives

此课程旨在讲授计量经济学的分析方法及其在经济领域中的应用，使学生在掌握计量经济学领域里基础理论内容的同时，学会对真实经济社会中的现象进行计量建模分析。同时，该课程也会对计量经济学领域里相对高等级的一些内容和方法做简要介绍。

This course aims to teach students the methodologies of econometrics and their applications in the realm of economy. Besides mastering the basic theories and methods of econometrics, students are also expected to be capable of making econometric model and analyzing a certain economic problem in the real world. In addition, this course also introduces some high-level contents and analytical tools in the field of econometrics.

#### 16. 预达学习成果 Learning Outcomes

在课程结束时，学生应该能够

- (1) 了解计量经济学的基本分析方法；
- (2) 掌握回归分析的理论知识；
- (3) 对真实经济金融问题进行计量分析并解释分析结果。

By finishing this course, students should be able to

- (1) Learn about the basic methodologies of econometrics;
- (2) Master theoretical knowledge of regression analysis;
- (3) Econometrically model the real economic problems and interpret empirical findings.

#### 17. 课程内容及教学日历（如授课语言以英文为主，则课程内容介绍可以用英文；如团队教学或模块教学，教学日历须注明主讲人）

**Course Contents (in Parts/Chapters/Sections/Weeks. Please notify name of instructor for course section(s), if this is a team teaching or module course.)**

## 第1章 计量经济学的性质与经济数据 (2 hours)

在本章节中, 学习者将了解到计量经济学的研究领域, 及在应用计量经济方法过程中所遇到的一般问题。

### 第一部分 横截面数据的回归分析 (22 hours)

在第一部分, 学习者将了解到横截面数据的回归分析。

#### 第2章 简单回归模型 (2 hours)

在本章节中, 学习者将学习解释简单回归模型, 了解简单回归模型作为经验分析的一般性工具的局限性。

#### 第3章 多元回归分析: 估计 (3 hours)

在本章节中, 学习者将学习多元回归模型, 并进一步讨论多元回归与简单回归相比的优势。学习者还将了解在多元回归模型中如何使用普通最小二乘法来估计模型参数, 学习 OLS 估计量的各种统计性质。

#### 第4章 多元回归分析: 推断 (3 hours)

在本章节中, 学习者将继续学习多元回归模型, 并转向对总体回归模型中的参数进行假设检验的问题。包括对单个参数的假设检验、对设计不止一个参数的假设检验、以及对多重限制进行假设检验。

#### 第5章 多元回归分析: OLS 的渐近性 (2 hours)

在本章节中, 学习者将了解估计量和检验统计量的渐进性质或大样本性质, 以及即使没有正态性假定,  $t$  统计量和  $F$  统计量也近似服从  $t$  分布和  $F$  分布, 至少在大样本容量的情况下如此。

#### 第6章 多元回归分析: 其他问题 (4 hours)

在本章节中, 学习者将学习把多元回归分析中的几个问题集中到一起, 本章的内容在将多元回归应用于广泛的实证问题时具有重要地位。

#### 第7章 含有定性信息的多元回归分析: 二值 (或虚拟) 变量 (3 hours)

在本章节中, 学习者将了解探讨定性自变量, 并学习如何在多元回归中容易地包含定性的解释变量, 此外, 学习者还将学习二值因变量。

#### 第8章 异方差性 (3 hours)

在本章节中, 学习者将了解异方差性对最小二乘估计所造成的后果, 并学习在出现异方差性时的一些补救措施, 及如何检验异方差性的出现。

#### 第9章 模型设定和数据问题的深入探讨 (2 hours)

在本章节中, 学习者将重点了解函数形式设误所造成的后果, 以及如何对它进行检验。了解代理变量的使用如何能解决或减轻遗漏变量的偏误。

### 第二部分 时间序列数据的回归分析 (9 hours)

在第二部分中, 学习者在如何应用多元回归模型处理横截面数据问题有了清楚的了解之后, 在本部分将学习时间序列数据计量经济学。

#### 第10章 时间序列数据的基本回归分析 (3 hours)

在本章节中, 学习者将开始接触使用时间序列数据的线性回归模型, 并研究用于估计这种模型的 OLS 的性质。

#### 第11章 用时间序列数据计算 OLS 的其他问题 (3 hours)

在本章节中, 学习者将掌握在用时间序列数据做回归分析时, 使用通常的大样本近似所需要的一些重要概念。学习者应认识到时间序列问题的大样本分析比之于横截面问题的大样本分析遇到的困难要多得多。

#### 第12章 时间序列回归中的序列相关和异方差 (3 hours)

在本章节中, 学习者将了解多元回归模型中误差项的序列相关这一重要问题。了解在误差包含了序列相关时 OLS 的性质, 学习如何检验序列相关, 及如何对序列相关进行补救。了解使用差分过的数据是怎样常能消除误差的序列相关的。

### 第三部分 高深专题讨论 (15 hours)

在本部分中，学习者将学习一些专门的问题。

#### 第13章 跨时横截面的混合：简单面板数据方法 (3 hours)

在本章节中，学习者将学习两种数据集，一种是独立横截面，一种是纵列数据集。

#### 第14章 高等面板数据分析方法 (3 hours)

在本章中，学习者将了解非观测效应纵列数据模型的两个方法，这些方法的使用至少和一阶差分法一样地普遍。虽然它们颇难以描述和实施，却得到了几个计量经济学软件包的支持。

#### 第15章 工具变量估计与两阶段最小二乘法 (3 hours)

在本章节中，学习者将进一步学习多元回归模型中的内生解释变量问题，了解如何用工具变量法来解决一个或多个解释变量的内生性问题。

#### 第19章 一个经验项目的实施 (6 hours)

在本章节中，学习者将以完成一篇课程报告为重点，讨论一项成功的经验实证分析的构成要素。

### CH1 The Nature of Econometrics and Economic Data (2 hours)

In this chapter, students will discuss the scope of econometrics and raises general issues that arise in the application of econometric methods.

### PART 1 Regression Analysis with Cross-Sectional Data (22 hours)

Part 1 of the text covers regression analysis with cross-sectional data.

#### CH2 The Simple Regression Model (2 hours)

In this chapter, students will learn how to interpret the simple regression model, and know about that the simple regression model has limitations as a general tool for empirical analysis.

#### CH3 Multiple Regression Analysis: Estimation (3 hours)

In this chapter, students will learn the multiple regression models and further discuss the advantages of multiple regressions over simple regressions. Students will also know about how to estimate the parameters in the multiple regression models using the method of ordinary least squares, and describe various statistical properties of the OLS estimators.

#### CH4 Multiple Regression Analysis: Inference (3 hours)

In this chapter, students will continue learning multiple regression analysis, and turn to the problem of testing hypotheses about the parameters in the population regression model, which includes that testing about individual parameters, how to test a single hypothesis involving more than one parameter, and test multiple restrictions.

#### CH5 Multiple Regression Analysis: OLS Asymptotics (2 hours)

In this chapter, students will learn the asymptotic properties or large sample properties of estimators and test statistics, and know that even without the normality assumption (Assumption MLR.6), t and F statistics have approximately t and F distributions, at least in large sample sizes.

#### CH6 Multiple Regression Analysis: Further Issues (4 hours)

In this chapter, students will learn to bring together several issues in multiple regression analysis that we could not conveniently cover in earlier chapters, and these topics are important for applying multiple regression to a broad range of empirical problems.

#### CH7 Multiple Regression Analysis with Qualitative Information: Binary (or Dummy) Variables (3 hours)

In this chapter, students will learn to discuss qualitative independent variables, and know about how

qualitative explanatory variables can be easily incorporated into multiple regression models. Students will also learn to discuss a binary dependent variable.

#### **CH8 Heteroskedasticity (3 hours)**

In this chapter, students will review the consequences of heteroskedasticity for ordinary least squares estimation, and learn the available remedies when heteroskedasticity occurs, and also know about how to test for its presence.

#### **CH9 More on Specification and Data Issues (2 hours)**

In this chapter, students will know about the consequences of functional form misspecification and how to test for it. Know about how the use of proxy variables can solve, or at least mitigate, omitted variables bias.

### **PART 2 Regression Analysis with Time Series Data (9 hours)**

After having a solid understanding of how to use the multiple regression model for cross-sectional applications, students can turn to the econometric analysis of time series data.

#### **CH10 Basic Regression Analysis with Time Series Data (3 hours)**

In this chapter, students will begin to study the properties of OLS for estimating linear regression models using time series data.

#### **CH11 Further Issues in Using OLS with Time Series Data (3 hours)**

In this chapter, students will learn the key concepts that are needed to apply the usual large sample approximations in regression analysis with time series data. And students should realize that large sample analysis for time series problems is fraught with many more difficulties than it was for cross-sectional analysis.

#### **CH12 Serial Correlation and Heteroskedasticity in Time Series Regressions (3 hours)**

In this chapter, students will discuss the critical problem of serial correlation in the error terms of a multiple regression model. Knowing about the properties of OLS when the errors contain serial correlation, learn how to test for serial correlation, and how to correct for serial correlation under the assumption of strictly exogenous explanatory variables. Learning how using differenced data often eliminates serial correlation in the errors.

### **PART 3 Advanced Topics (15 hours)**

In this part, students will turn to some more specialized topics.

#### **CH13 Pooling Cross Sections across Time: Simple Panel Data Methods (3 hours)**

In this chapter, students will learn two kinds of data sets: independently pooled cross section and panel data set.

#### **CH14 Advanced Panel Data Methods (3 hours)**

In this chapter, students will learn two methods for estimating unobserved effects panel data models that are at least as common as first differencing. Although these methods are somewhat harder to describe and implement, several econometrics packages support them.

#### **CH15 Instrumental Variables Estimation and Two Stage Least Squares (3 hours)**

In this chapter, students will further study the problem of endogenous explanatory variables in multiple regression models, and know about how the method of instrumental variables (IV) can be used to solve the problem of endogeneity of one or more explanatory variables.

#### **CH19 Carrying Out an Empirical Project (3 hours)**

In this chapter, students will learn the ingredients of a successful empirical analysis, with emphasis on completing a term project.

18. 教材及其它参考资料 **Textbook and Supplementary Readings**

Jeffrey M. Wooldridge, Introductory Econometrics: A Modern Approach, 5th edition, 清华大学出版社（影印版）, 2014.

**课程评估 ASSESSMENT**

19. 评估形式 Type of Assessment	评估时间 Time	占考试总成绩百分比 % of final score	违纪处罚 Penalty	备注 Notes
出勤 Attendance				
课堂表现 Class Performance				
小测验 Quiz		10		
课程项目 Projects		15		
平时作业 Assignments		10		
期中考试 Mid-Term Test		30		
期末考试 Final Exam		35		
期末报告 Final Presentation				
其它（可根据需要 改写以上评估方式） Others (The above may be modified as necessary)				

20. 记分方式 **GRADING SYSTEM**

- A. 十三级等级制 **Letter Grading**  
 B. 二级记分制（通过/不通过） **Pass/Fail Grading**

**课程审批 REVIEW AND APPROVAL**

21. 本课程设置已经过以下责任人/委员会审议通过  
**This Course has been approved by the following person or committee of authority**