

课程大纲

课程编号：02814900 授课对象：I-PhD 2013
课程名称：统计运算与处理 英文名称：Data Computing and Analysis
周学时/总学时：3/30 学 分：2
任课教师：Dr. Li Ma 开课学期：Fall 2013
先修课程：Probability, Linear algebra Time: Wednesday 13:00-16:00, Sept. 9-Dec. 4
Location: Computer lab (on the 3rd FL) at Guanghai Building

任课教师联系方式：lima@gsm.pku.edu.cn
6275-3185, Room 353 (Guanghai No. 2 Building)

辅导、答疑时间：Every Wednesday 9:00 – 11:00

一、项目培养目标

学习目标 1 系统掌握从事学术研究所需要的专业知识及理论。

具体目标 1、系统掌握本学科基础知识及基本理论

具体目标 2、掌握本学科前沿知识和理论、具有足够的相关领域的知识

具体目标 3、熟练掌握本学科的研究方法

学习目标 2 具有从事创新性研究的能力；能够撰写并发表高质量的毕业论文和学术论文

具体目标 1、撰写高质量的毕业论文和学术论文

具体目标 2、具有高水平的分析能力和批判思维能力，能够创造性地解决问题

学习目标 3 具有宽阔的国际视野，能够与国际学者进行交流、合作的能力。

具体目标 1、具有优秀的口头交流和文字交流能力

具体目标 2、能够熟练地运用至少一门外语进行学术交流与沟通

学习目标 4 了解学术伦理，具有强烈的社会责任感、关注社会问题

具体目标 1、了解社会责任感的重要性

具体目标 2、了解学术生涯中的学术道德问题

具体目标 3、关注现实社会问题

二、课程概述

This course provides a doctoral-level overview of processing data for research, especially in the field of management. The course will include lectures, exercises, exams, lab-practices, etc. This course is not a typical “statistics” one that intends to cover the distribution of random variables or statistical computations behind, but emphasizes the application of statistical techniques in management research. In other words, this course is one intending to offer you an overarching understanding of the interaction between data and research. You will learn detailed structural nuances of relevant statistical procedures in different courses.

In addition, this course is not of a “software” one: although I will use Excel, SPSS, AMOS, HLM,

and other software to illustrate how you can “get things done,” the focus will be how to make sense of the statistic outcomes obtained from the software and how to conduct next steps in your research.

三、课程目标（包括学生所提高的技能要求），本课程目标如何服务于项目的培养目标

After successfully completion of this course, students shall be able to run fundamental data analyses in research and test hypotheses with analysis results. Students shall be familiar with the whole data processing techniques (including data collection processes), and more detailed, advanced techniques can be learned through later courses or by self-learning activities.

Because this course is intended to help research-oriented students to grasp the essence of research question-data interactions, students are encouraged to explore discipline-related datasets and use methods learned in class to analyze them. You can find many datasets provided by me, in disciplines related to marketing, strategic management, organizational behavior, and human resource management. In addition, you can also find other datasets in conducting your own analyses. One approach is to talk to your mentor (I assume you have one) and analyze some used or unused datasets. Possibly after analyzing the data effectively you may find some interesting results that are publishable.

四、内容提要及学时分配 (subject to change)

| Week | Date | Topic | Note |
|------|-------|---|---|
| 1 | 09/11 | The Logic of Research and Data; Level of measurement; Types of variables | Anderson et al. Ch1 |
| 2 | 09/18 | Data Cleaning and Handling; Describing data using graphs and numbers | Anderson et al. Ch2-3 |
| 3 | 09/25 | Data Reduction (Principal component analysis; EFA; CFA) | Lattin et al. Ch4-6 |
| 4 | 10/02 | Break: National's Day Holidays | |
| 5 | 10/09 | Correlation; Measurement and scale creation; reliability and validity | Pedhazur & Schmelkin (1991) Ch 4-5 |
| 6 | 10/16 | Comparing two groups; Comparing multiple groups: ANOVA and MANOVA | Anderson 10.2, 10.3; 12.1, 12.2; Anderson Ch13 Iversen & Norpoth (1987) |
| 7 | 10/23 | The logic of hypothesis testing (Type I and Type II errors) | Anderson Ch14, 15; |
| 8 | 10/30 | Multiple regression; Multilevel modeling: A primer of HLM | Pedhazur & Schmelkin (1991) Ch17, 18 |
| 9 | 11/06 | Calculating mediation and moderation | Aiken and West (1991), Ch 2, 3 |
| 10 | 11/13 | Reporting analyses results | Bem (2002) |
| 11 | 11/20 | Reading week: No class | |
| 12 | 11/27 | Final exam | |

五、教学方式

Lectures will be given in our in-class sessions. Most sessions will include software demonstration to aid your first-hand experiences. We will also have in-class exercises and a few homework assignments. Midterm and final exams are to consolidate your understanding of working with data.

六、教学过程中 IT 工具等技术手段的应用

Presentations may be facilitated with PPT. SPSS and some additional software will be used. The statistical software SPSS will be used for illustration and students shall be familiar in using it (but using any other software is encouraged).

七、教材

Lattin, J. M., Carroll, J. D., & Green, P. E. 2003. *Analyzing multivariate data*. Pacific Grove, CA: Brooks/Cole-Thompson Learning. Reprinted in China by China Machine Press.

八、参考书目

Anderson, D. R., Sweeney, D. J., & Willams, T. A. 2005. *Statistics for Business and Economics* (9th ed.). Cincinnati, CT: SouthWestern College. Published in China by China Machine Press.

Sharma, S. (1996). *Applied multivariate techniques*. New York: John Wiley & Sons, Inc.

Shook, C. L., Ketchen, D. J., Jr., Cychota, C. S., & Crockett, D. 2003. Data analytic trends and training in strategic management. *Strategic Management Journal*, 24(12): 1231-1237.

九、教学辅助材料，如 CD、录影等

Not applicable.

十、课程学习要求及课堂纪律规范

All students are expected to be actively engaged in the learning process. Key to success in taking this course requires that you know how to handle data in your research.

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）

The grades are composed of four parts as below:

| | |
|------------|-----|
| Homework | 30% |
| Final exam | 70% |