南方科技大学 SOUTHERN UNIVERSITY OF SCIENCE AND TECHNOLOGY

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 Course Title	统计数据分析(SAS)　Statistical Data Analysis with SAS
2.	授课院系 Originating Department	数学系　Department of Mathematics
3.	课程编号 Course Code	MA409
4.	课程学分 Credit Value	3
5.	课程类别 Course Type	专业选修课 Major Elective Courses
6.	授课学期 Semester	春季 Spring
7.	授课语言 Teaching Language	英文 English
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） Instructor(s), Affiliation& Contact （For team teaching, please list all instructors）	田国梁教授 Professor Guoliang TIAN 数学系 Department of Mathematics
9.	实验员/助教、所属学系、联系方式 Tutor/TA(s), Contact	无 NA / 待公布 To be announced / 已确定的实验员/助教联系方式 Please list all Tutor/TA(s) （请保留相应选项 Please only keep the relevant information）
10.	选课人数限额(可不填) Maximum Enrolment （Optional）	

11. 授课方式 Delivery Method	讲授 Lectures	习题/辅导/讨论 Tutorials	实验/实习 Lab/Practical	其它(请具体注明) Other（Please specify）	总学时 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**	统计线性模型（MA329） Statistical Linear Models(MA329)
13.	后续课程、其它学习规划 **Courses for which this course is a pre-requisite**	
14.	其它要求修读本课程的学系 **Cross-listing Dept.**	

教学大纲及教学日历 SYLLABUS

15. **教学目标 Course Objectives**

在已经学过的统计方法和统计建模的基础上，本课程将会使这些学生更深入的理解数据分析的整个过程 。它旨在发展学生的模型选择技术，使得手中的实际问题能够被合适地转化为假设检验问题。最重要的是当用第一个模型拟合数据发现不合适时，怎样选择出适合的模型。学生将会学习怎样探索数据，如何建立可靠的模型以及如何清楚阐释统计分析的结果。

Building on prior coursework in statistical methods and modeling, students will obtain a deeper understanding of the entire process of data analysis. The course aims to develop skills of model selection so that practical questions at hand can be properly formulated as statistical null and alternative hypotheses. An important step is how to select a reasonable model, when one's first attempt does not adequately fit the data. Students will learn how to explore the data, to build reliable models, and to communicate the results of data analysis to a variety of audiences.

16. **预达学习成果 Learning Outcomes**

On successful completion of the course, students should be able to:

make good sense of the problem and identify what to measure for the question of interest;

summarize and describe the quantitative and qualitative data using some simple appropriate statistical measures;

identify the association among several continuous or discrete variables;

carry out appropriate and comprehensive statistical analyses based on real life data using SAS including model selection, perform model diagnostics, formulate testable hypotheses, make appropriate statistical inferences, make interpretations on the findings and report writing.

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.)

课程内容：描述性统计量，数据陈述与可视化，用参数统计方法进行单样本和双样本情况下的简单统计分析，用非参数统计方法进行单样本和双样本情况下的简单统计分析；回归分析，模型拟合，变量选择和模型诊断；单因子、双因子、多因子方差分析；协方差分析 logistic 回归和 Poisson 回归。用 SAS 软件进行实例数据建模与分析使学生能够获得第一手经验。

This course covers: descriptive statistics, presentation and visualization of data; Simple statistical analyses for the one-sample and two-sample case using parametric and nonparametric methods; Regression analyses: model fitting; variable selection and model diagnostic checking; Analysis of Variance (ANOVA): 1-way, two-way and higher-way ANOVA; Covariance analysis; Categorical and count data: binary logistic regression, Poisson regression. Real data sets will be presented for modelling and analysis using statistical software for gaining hands-on experience.

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

In this course, no single textbook can cover all the topics. Relevant references are as follows:

[1] Ramsey, F. and Schafer, D. (2012). The Statistical Sleuth: A Course in Methods of Data Analysis, 3rd edition. Cengage Learning.

[2] Cody, R. (2011). SAS Statistics by Example. SAS Institute.

[3] Cody, R.P. and Smith, J.K. (2005). Applied Statistics and the SAS Programming Language, 5th edition. Pearson.

[4] Elliott, R.J. (2009). Learning SAS in the Computer Lab, 3rd edition. Cengage Learning.

[5] Kleinbaum, D.G., Kupper, L.L., Nizam, A. and Muller, K.E. (2007). Applied Regression Analysis and Other Multivariable Methods, 4th edition. Cengage Learning.

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				
课程项目 Projects				
平时作业 Assignments				
期中考试 Mid-Term Test				

期末考试 **Final Exam**				
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