

统计学专业辅修学士学位培养方案

Training Program for Minor Bachelor's Degree in Statistics

一、培养目标 Objectives

统计学是研究如何测度、收集、整理和分析反映客观现象有关信息的数据，以帮助人们正确认识客观世界数量规律的方法论科学。统计学横跨社会科学领域和自然科学领域，其作用与功能从描述事物现状、反映内在数量规律，向进行统计推断、预测事物未来变化的方向拓展。

现代统计学渗透到理、工、农、医、经济管理与人文社会科学等领域，并由此产生了许多新的交叉学科。统计学对其他学科的发展起到了重要的推动作用。反过来，其他学科的发展也促进了统计学的方法创新与理论发展。

Statistics is a methodological science that studies how to measure, collect, organize, and analyze data that reflects information related to objective phenomena, in order to help people correctly understand the quantitative laws of the objective world. Statistics spans the fields of social and natural sciences, and its role and function extend from describing the current situation of things, reflecting internal quantitative laws, to conducting statistical inference and predicting future changes in things

Modern statistics has penetrated into fields such as science, engineering, agriculture, medicine, economic management, and humanities and social sciences, resulting in many new interdisciplinary fields. Statistics has played an important role in promoting the development of other disciplines. On the contrary, the development of other disciplines has also promoted the innovation of statistical methods and theoretical development.

二、毕业要求 Graduation Requirements

- 1、具有扎实的数学基础，受到比较严格的科学思维训练；
- 2、掌握统计学的基本理论、基本知识、基本方法和计算机操作技能；具有采集数据、设计调查问卷和处理调查数据的基本能力；
- 3、了解统计学应用的相关领域科学背景，具有应用统计学理论分析、解决该领域实际问题的初步能力；

4、了解统计学理论与方法的主要发展动态及其应用前景；

5、能熟练使用各种统计软件包，有较强的统计计算能力；具有扎实的经济学基础，熟悉国家经济发展的方针、政策和统计法律、法规，具有利用信息资料进行综合分析和管理的的能力；

6、掌握资料查询、文献检索及运用现代化信息技术获取相关信息的基本方法，具有一定科学研究和实际工作能力。

1. Having a solid mathematical foundation and receiving rigorous scientific thinking training;

2. Master the basic theories, knowledge, methods, and computer skills of statistics; Having the ability to collect data, design survey questionnaires, and process survey data, as well as basic skills;

3. Understand the scientific background of the relevant field of statistical application, and have the preliminary ability to apply statistical theory to analyze and solve practical problems in the field;

4. Understand the main development trends and application prospects of statistical theory and methods;

5. Proficient in using various statistical software packages and possessing strong statistical and computational abilities; Having a solid foundation in economics, familiar with national economic development guidelines, policies, statistical laws and regulations, and the ability to use information and data for comprehensive analysis and management;

6. Master the basic methods of data search, literature retrieval, and using modern information technology to obtain relevant information, and have certain scientific research and practical work abilities.

三、学分要求 Credits Requirements

选择统计学专业为辅修学士学位的学生需预修数学分析（I、II、III、IV、V）（或用工科数学分析或 10 学分以上高等数学课程代替），高等代数（I、II）（或 3 学分以上线性代数（A 或 B 或 M）等代替），在此基础上修学本专业的 35 学分核心必修课和专业限选课 12 学分，完成并通过 2 学分现场统计实践环节，答辩通过 7 学分毕业论文环节，

符合《西南交通大学学士学位授予工作细则》和《西南交通大学本科生辅修与双学位管理办法》规定者，方可授予本专业双学位证书。

Students who choose to pursue a dual degree in Statistics are required to take prerequisite courses in Mathematical Analysis (I, II, III, IV, V) (or engineering mathematical analysis or higher mathematics courses with more than 10 credits), Advanced Algebra (I, II) (or linear algebra with more than 3 credits (A, B, or M), etc.), and on this basis, take 35 credits of core compulsory courses and 12 credits of professional limited courses in this major. They must complete and pass 2 credits of on-site statistical practice, Only those who pass the 7-credit graduation thesis stage of the defense and comply with the provisions of the "Detailed Rules for the Granting of Bachelor's Degrees at Southwest Jiaotong University" and the "Management Measures for Undergraduate Minor and Dual Degrees at Southwest Jiaotong University" can be awarded a dual degree certificate in their major.

四、学位 Degree

学位：理学学士

Degree: Bachelor of Science

五、课程设置 Course Programs

课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	学分 Credits	开课学期 Semester	开课学院 School	备注 Notes
学科基础课程 必修 18 学分 限修 0 学分	程序设计基础 Fundamentals of Program Design	必修 Compulsory	3	第 1 学期 Semester 1	数学学院 School of Mathematics	
	概率论 Probability Theory	必修 Compulsory	4	第 3 学期 Semester 3	数学学院 School of Mathematics	
	数理统计 Mathematical Statistics	必修 Compulsory	4	第 4 学期 Semester 4	数学学院 School of Mathematics	
	随机过程 Stochastic Processes	必修 Compulsory	4	第 4 学期 Semester 4	数学学院 School of Mathematics	
	数学建模方法及应用 Mathematical Modeling Method and Application	必修 Compulsory	3	第 4 学期 Semester 4	数学学院 School of Mathematics	
专业基础课 必修 17 学分 限修 0 学分	多元统计 Multivariable Statistics	必修 Compulsory	3	第 5 学期 Semester 5	数学学院 School of Mathematics	
	时间序列分析 Time Series Analysis	必修 Compulsory	3	第 5 学期 Semester 5	数学学院 School of Mathematics	

专业基础课 必修 17 学分 限修 0 学分	大数据挖掘与统计学习 Big Data Technology and Statistical learning	必修 Compulsory	3	第 7 学期 Semester 7	数学学院 School of Mathematics	
	统计软件与应用 Software and Applied Statistics	必修 Compulsory	2	秋季学期 Fall Semester	数学学院 School of Mathematics	
	实用回归分析 Applied Regression Analysis	必修 Compulsory	3	第 5 学期 Semester 5	数学学院 School of Mathematics	
	非参数统计 Nonparametric Statistics	必修 Compulsory	3	第 6 学期 Semester 6	数学学院 School of Mathematics	
专业课 必修 0 学分 限修 12 学分	保险精算数学 Actuarial Mathematics	限修 Distributional Elective	3	第 5 学期 Semester 5	数学学院 School of Mathematics	限修 12 学分 Distributional Elective 12 Credits
	随机优化模型与算法 Stochastic Optimization Models and Algorithms	限修 Distributional Elective	3	第 6 学期 Semester 6	数学学院 School of Mathematics	
	计量经济学 Econometrics	限修 Distributional Elective	3	第 6 学期 Semester 6	数学学院 School of Mathematics	
	可靠性统计 Reliability Statistics	限修 Distributional Elective	3	第 6 学期 Semester 6	数学学院 School of Mathematics	
	大数据机器学习基础 Machine Learning for Big Data	限修 Distributional Elective	3	第 7 学期 Semester 7	数学学院 School of Mathematics	
	测度与概率基础 Elements of Measure and Probability	限修 Distributional Elective	3	第 6 学期 Semester 6	数学学院 School of Mathematics	
	统计计算 Computational Statistics	限修 Distributional Elective	3	第 7 学期 Semester 7	数学学院 School of Mathematics	
	市场调查与分析 Market Research and Analysis	限修 Distributional Elective	3	第 3 学期 Semester 3	数学学院 School of Mathematics	
	抽样调查与试验设计 Sampling and Experimental Design	限修 Distributional Elective	3	第 5 学期 Semester 5	数学学院 School of Mathematics	
实践环节 必修 2 学分	现场统计实践 Engineering Statistical Practice	必修 Compulsory	2	短 3 学期 Short Semester 3	数学学院 School of Mathematics	
毕业论文 必修 8 学分	毕业论文 Graduation Thesis	必修 Compulsory	7	第 8 学期 Semester 8	数学学院 School of Mathematics	
总学分 Total Credits			56			