

数学与应用数学专业培养方案

Undergraduate Program of the Major of Mathematics and Applied Mathematics

I. 专业介绍 Introduction

数学是研究现实世界中的数量关系和空间形式的科学,包括数学与应用数学以及这两者与其他学科的交叉部分。数学是一切自然科学的基础,为其他科学提供语言、观念和方法;数学还是一切重大技术发展的基础。数学也是一种文化,数学教育在人才的培养上有着不可替代的作用。

Mathematics is the science that studies quantitative relations and space forms of the real world. It is a large scientific enterprise comprising both pure and applied mathematics together with the interplay of these two branches of mathematics with other disciplines. Mathematics is essential to all sciences and technologies, the ideas of science and technology are described in terms of mathematic, most of theories are based on mathematical concepts and the methods of mathematics led to enormous success in science and technology. On the education side, mathematics plays an indispensable role in training in logical thinking and problem solving.

专业代码: 070101

Program Code: 070101

专业名称: 数学与应用数学

Program Name: Mathematics and Applied Mathematics

II. 培养目标 Objectives

贯彻党的教育方针,适应新时代中国特色社会主义事业建设对高等教育的要求,培养为国家富强和民族振兴而奋斗、德智体美全面发展的建设者和接班人。

融入学校“价值塑造、人格养成、能力培养、知识探究”四维一体培养体系,为教育、科技和经济行业培养从事教学、研究和管理工作的拔尖创新人才。

依托西南交通大学创办交通特色鲜明的综合性研究型一流大学的目标,培养学生掌握纯数学、应用数学以及这两者与其他学科的交叉部分的基础理论与基本方法,为数学学科、交通运输工程等学科以及国内外其它知名大学、科研机构提供优质的硕士和博士研究生生源。

Implementing the CCP's educational policy, adapting to the requirements of higher education for the construction of socialism with Chinese characteristics in the new era, and cultivating builders and successors for the country's prosperity and national rejuvenation, and for the comprehensive development of morality, intelligence, and beauty.

Integrate into the four-dimensional training system of “value shaping, personality development, ability cultivation, and knowledge exploration” to train top-notch innovative talents engaged in teaching, research and management for the education, science and technology and economic industries.

Relying on the goal of Southwest Jiaotong University to establish a comprehensive research-

oriented university with distinctive transportation characteristics, cultivate students' basic theories and basic methods of mastering pure mathematics, applied mathematics, and the intersection of the two and other disciplines, for mathematics, transportation engineering and other disciplines as well as other well-known universities and research institutions at home and abroad provide high-quality master's and doctoral students.

III.专业毕业要求 Graduation Requirements

1. 要求具有扎实的基础数学知识

纯数学（基础数学）包括数论与代数、几何与拓扑以及分析三大部分，是整个数学科学的理论基础。

1.1 分析学基础

包括数学分析、复变函数、实变函数和泛函分析等课程。掌握分析的基本知识和基本方法，学会处理不同数域上函数性质的方法。

1.2 数论与代数基础

包括高等代数、初等数论和近世代数等课程。掌握代数结构的基本知识和方法，学会处理抽象的内容。

1.3 几何与拓扑基础

包括解析几何、拓扑学基础和微分几何等课程。掌握解析几何知识，学习曲线论和曲面论，研究空间或流形的整体性质。通过学习点集拓扑，掌握拓扑结构的基本定义和空间的拓扑性质。

2. 要求具有扎实的应用数学基础知识

应用数学是指通过建立数学模型来理解、分析和解决自然科学、社会科学及工程技术中的实际问题所形成的数学方法和理论。

2.1 微分方程与动力系统

包括常微分方程、偏微分方程、动力系统初步等课程。熟悉处理各类微分方程的基本理论和方法。

2.2 概率论

包括概率论等课程。了解各种概型并能够运用各种方法处理随机现象。

2.3 运筹学

运筹学课程让学生具备传统算法的选择、设计、分析和优化基础。

3. 要求具有扎实的与数学相关的其他学科的基础知识

3.1 统计学基础

包括数理统计等课程。了解现代统计学的前沿知识特别是金融统计和生物统计。具备处理随机现象的基本思想和方法，能够运用概率统计方法分析和解决实际问题。

3.2 计算机基础与应用知识

程序设计与算法语言课程，使学生具备必要的计算机编程技术水平和应用能力。

3.3 现代物理学知识

主要是与数学密切相关的现代物理学知识。包括大学物理 BI 和 BII 课程及大学物理实验。

3.4 其它现代科学知识

包括交通运输概论、经济学原理、生命科学导论、哲学概论、知识经济与创新等通识课

程。

4. 要求具有灵活运用基础知识的能力

具备较强的数学思维能力、逻辑推理能力和论证能力，具有较强的创新意识。

4.1 基础知识的归纳能力和创新意识的培养

数学建模课程和参加全国大学生数学竞赛、全国大学生数学建模竞赛等。

4.2 与研究生课程接轨

包括抽象代数等与研究生基础课相接轨课程的学习，参加各种前沿学术报告。

5. 要求具有有效的沟通与交流能力

5.1 沟通和交流

①人际交往能力

通过大学生心理学、思想道德与修养、交流与沟通技巧、大学生科研训练计划 SRTTP 等，培养学生人际交往能力。

②团队合作能力

通过数学建模以及大学生科研训练计划 SRTTP 等培养团队合作能力和领导能力。

③外语交流

通过大学英语、英语视听说等培养学生的外语能力，特别强调用外语与人沟通的能力，要求熟练掌握英语，能熟练阅读专业英语资料。

5.2 科研论文的阅读和写作

①文献的查找检索

包括信息检索课程，学习收集需要的文献资料。

②熟练阅读专业英语资料

通过文献阅读对现有知识进行补充，并培养学生的专业外语能力。

③实用写作

通过毕业论文写作、数学建模报告，使学生了解数学科研论文的写作方式，训练实用写作能力，要求熟悉论文的写作格式与规范，具有良好的论文写作能力。

6. 要求具有良好的人文素质

6.1 思想道德素质

①政治素质

通过马克思主义基本原理、毛泽东思想和中国特色社会主义理论等课程培养正确的政治素质，拥有正确的立场、观点和信仰。

②思想素质、道德品质和法制意识

包含思想道德修养与法律基础课程，树立积极向上的世界观、人生观和价值观。培养具有社会主义的道德品质和文明的行为习惯，具有敬业精神和职业道德、富有责任心和社会责任感。做合法的社会公民，具有很强的法制意识和观念。以法律为准绳，按法律办事。

6.2 文化素质

①文化素养

包含中国近代史纲要等课程，传承和弘扬中华民族的民族精神；具有一定的人文科学（文、史、哲等）知识，了解中国传统文化，对中外历史和文化有一定的了解。

②文学艺术修养

包含大学语文等课程，参加校园艺术节等活动，具有一定的音乐、美术、艺术的鉴赏力和高雅的品味。

6.3 身心素质

①身体素质

包含军事训练和体育课程，完成解放军条令条例教育与训练、轻武器射击、战术、军事地形学及综合训练，锻炼健康的身体,良好的体魄。

②心理素质

包含大学生心理健康课程，具有健康的心理素质，正确的自我认识，良好的人际关系，健全的人格，良好的环境适应能力；培养优良的气质与性格，坚强的意志，坚韧不拔的毅力。

1. Requires solid knowledge of mathematics

Pure mathematics, which includes number theory and algebra, geometry and topology, and analysis, is the theoretical basis of the whole mathematical science.

1.1 Fundamentals of analysis

It includes courses such as mathematical analysis, complex analysis, real analysis and functional analysis. Master the basic knowledge and methods of analysis, and learn how to deal with the properties of functions on different number fields.

1.2 Fundamentals of number theory and algebra.

It includes courses such as advanced algebra, basic number theory and modern algebra. Master the basic knowledge and methods of algebraic structure and learn to deal with abstract content.

1.3 Fundamentals of topology and geometry.

Includes analytic geometry, general topology, and differential geometry courses. Master the knowledge of analytic geometry, learn curve theory and surface theory, and study the global properties of spaces or manifolds. Through the study of general topology, the basic definition of topology and the topological properties of spaces are mastered.

2. Requires solid knowledge of applied mathematics

Applied mathematics refers to the mathematical methods and theories formed by establishing mathematical models to understand, analyze and solve practical problems in natural science, social science and engineering technology.

2.1 Differential equations and dynamical systems

Including ordinary differential equations and partial differential equations. Familiar with the basic theories and methods of dealing with various differential equations.

2.2 Probability theory

Includes a course on probability theory. Learn about the various profiles and use a variety of methods to deal with random phenomena.

2.3 Optimization and control

The course on optimization and control provides students the basis for the selection, design, analysis and optimization of traditional algorithms.

3. Requires basic knowledge of subjects related to mathematics

3.1 Statistics

Includes a course on statistics. Learn about knowledge of modern statistics, especially financial statistics and biostatistics. With basic ideas and methods for dealing with random phenomena, probabilistic methods can be used to analyze and solve practical problems.

3.2 Computer programming

Programmatic and algorithmic language courses enable students to have the necessary level of computer programming skills and application skills.

3.3 Modern physics knowledge

Mainly related to modern physics which is close to mathematics. Includes college physics BI

and BII courses and college physics experiments.

3.4 Other modern scientific knowledge

It includes general courses in transportation, economics, introduction to life sciences, introduction to philosophy, knowledge economy and innovation.

4. Requires the ability to apply basic knowledge flexibly

Strong mathematical thinking ability, logical reasoning ability and argumentation ability, with strong sense of innovation.

4.1 Inductive ability of basic knowledge and cultivation of innovative consciousness

Includes a course on Mathematical modeling and participation in the National College Students Mathematics Competition and National College Students Mathematical Modeling Competition.

4.2 Alignment with graduate programs

Including modern analysis, abstract algebra and other courses in line with graduate basic courses, participate in a variety of academic reports.

5. Requires effective communication and communication skills

5.1 Communication

① Interpersonal skills

Through the college students' psychology, ideology and morality, communication and communication skills, and the university student scientific research training program SRTP, the students' interpersonal skills can be cultivated.

② Teamwork ability

Develop teamwork and leadership skills through National College Students Mathematical Modeling Competition and SRTP.

③ Communication in foreign language

Through the college English and English audio-visual to cultivate students' foreign language ability, especially emphasize the ability to communicate with others in foreign languages, require proficiency in English, and be proficient in reading professional English materials.

5.2 Reading and writing of research papers

① Search and retrieval of documents

Including information retrieval courses, learning to collect the required literature.

② Proficiency in reading professional English materials

Complement existing knowledge through literature reading and develop students' professional foreign language ability.

③ Practical writing

Through graduation thesis writing and mathematical modeling report, students can understand the writing style of mathematical research papers, train practical writing ability, and be familiar with the writing format and norms of the papers, and have good writing ability.

6. Requires a good humanistic quality

6.1 Ideological and moral qualities

① Political quality

Cultivate correct political qualities through the basic principles of Marxism, Mao Zedong thought and the theory of socialism with Chinese characteristics, and have correct positions, viewpoints and beliefs.

② Ideological quality, moral quality and legal awareness

It includes a course on ideological and moral cultivation and legal foundation, and establishes a positive world outlook, outlook on life and values. Cultivate socialist moral quality and civilized

behavior habits, with professionalism and professional ethics, responsible and social responsibility. To be a legitimate social citizen has a strong sense of legal system and concept. Take the law as the criterion and act in accordance with the law.

6.2 Cultural quality

①Cultural literacy

It includes courses such as the Outline of Modern Chinese History, inherits and promotes the national spirit of the Chinese nation; has a certain knowledge of the humanities (literature, history, philosophy, etc.), understands Chinese traditional culture, and has a certain understanding of Chinese and foreign history and culture.

②Literary and artistic accomplishment

It includes courses such as college Chinese, participates in campus art festivals and other activities, and has certain music, art, art appreciation and elegant taste.

6.3 Physical and mental quality

①Physical fitness

It includes military training and physical education courses, completes the education and training of the People's Liberation Army regulations, light weapons shooting, tactics, military topography and comprehensive training, and exercises a healthy body and good physical fitness.

②Mental quality

Including college students' mental health curriculum, with healthy psychological quality, correct self-awareness, good interpersonal relationship, sound personality, good environmental adaptability; cultivate excellent temperament and character, strong will, perseverance and perseverance.

IV.学制与学位 Duration and Degree

学制：四年

Duration: Four years

学位：理学学士

Degree: Bachelor of Science

V.主干学科与主干课程 Main Subject and Main Course

主干学科：数学

Main Subject: Mathematics

主干课程: 数学分析、高等代数、解析几何、初等数论、常微分方程、近世代数、概率论、拓扑学基础、复变函数、数理统计、实变函数、抽象代数、泛函分析、微分几何、偏微分方程、动力系统初步

Main Course: Mathematical Analysis, Advanced Algebra, Analytic Geometry, Basic Number Theory, Ordinary Differential Equations, Modern Algebra, Probability, General Topology, Complex Analysis, Statistics, Real Analysis, Abstract Algebra, Functional Analysis, Differential Geometry, Partial Differential Equations, Introduction to Dynamical Systems

VI. 毕业学分基本要求 Basic Requirements of Credits for Graduation

课程体系 Curriculum System		学分要求 Credits Requirements						
		必修 Compulsory		限修 Distributional Electives		选修 Free Electives		小计 Subtotal
		理论 Theory	实践 Practice	理论 Theory	实践 Practice	理论 Theory	实践 Practice	
公共基础课程 Public Basic Courses	思想政治类 Ideological Politics Courses	15	2					17
	军事类 Military Courses	2	2					4
	外语类 Foreign Language Courses	6		2				8
	体育类 Physical Education Courses		4					4
通识教育课程 General Education Courses	核心通识课 Core General Education Courses			4				4
	新生研讨课 Freshman Seminar	2						2
学科与专业基础课程 (含实验) Discipline and Specialty Foundational Courses (Including Experiments)	数学与自然科学基础课 Foundational Courses on Natural Science	6	2					8
	专业基础课 Professional Foundational Courses	29	4					33
专业课程 (含实验) Specialized Courses (Including Experiments)	专业核心课程 Specialized Core Course	51	3					54
	专业限修课程 Specialized Restricted Courses			10				10
实习实践教学 Practice Courses	毕业实习与毕业设计 Graduation Internship and Graduation Design		8					8
多元化课程 Diversified Courses	跨学科课程、美育专业类课程、学科竞赛类课程、其它个性化选修课程等 Interdisciplinary Courses, Aesthetic Education Courses, Subject Competition Courses, other Personalized Elective Courses, etc			4		2		6

创新创业实践 Innovation and Entrepreneurship Practice	课外创新实践 Extracurricular Innovation Practice		2					2
必修环节 A Compulsory Part	大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness							0
总 计 Total								160

VII.课程设置细化表 Course Programs Table

公共基础课程 Public Basic Courses 共 33 学分，其中必修 31 学分，限修 2 学分，选修 0 学分 A total credits of 33, including 31 for compulsory courses, 2 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
思想政治类 Ideological Politics Courses	思想道德与法治 Ideological and Moral Education and the Rule of Law	必修 Compulsory	3	0.4	第 2 学期 2Nd Semester	马克思主义学院 School of Marxism	6.1	
	中国近现代史纲要 Conspectus of Chinese Modern History	必修 Compulsory	3	0.4	第 1 学期 1St Semester	马克思主义学院 School of Marxism	6.1	
	马克思主义基本原理 The Basic Principles of Marxism	必修 Compulsory	3	0.4	第 4 学期 4Th Semester	马克思主义学院 School of Marxism	6.1	
	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Theoretical System of Socialism with Chinese Characteristics	必修 Compulsory	3	0.4	第 5 学期 5Th Semester	马克思主义学院 School of Marxism	6.1	
	习近平新时代中国特色社会主义思想概论 Outline of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	必修 Compulsory	3	0.4	第 6 学期 6Th Semester	马克思主义学院 School of Marxism	6.1	
	形势与政策 I Situation and Policy I	必修 Compulsory	0	0	第 1 学期 1St Semester	马克思主义学院 School of Marxism	6.1	
	形势与政策 II Situation and Policy II	必修 Compulsory	0	0	第 2 学期 2Nd Semester	马克思主义学院 School of Marxism	6.1	

思想政治类 Ideological Politics Courses	形势与政策 III Situation and Policy III	必修 Compulsory	0	0	第 3 学期 3Rd Semester	马克思主义学院 School of Marxism	6.1	
	形势与政策 IV Situation and Policy IV	必修 Compulsory	0	0	第 4 学期 4Th Semester	马克思主义学院 School of Marxism	6.1	
	形势与政策 V Situation and Policy V	必修 Compulsory	0	0	第 5 学期 5Th Semester	马克思主义学院 School of Marxism	6.1	
	形势与政策 VI Situation and Policy VI	必修 Compulsory	0	0	第 6 学期 6Th Semester	马克思主义学院 School of Marxism	6.1	
	形势与政策 VII Situation and Policy VII	必修 Compulsory	0	0	第 7 学期 7Th Semester	马克思主义学院 School of Marxism	6.1	
	形势与政策 VIII Situation and Policy VIII	必修 Compulsory	2	0	第 8 学期 8Th Semester	马克思主义学院 School of Marxism	6.1	
军事类 Military Courses	军事理论 Military Theories	必修 Compulsory	2	0	第 1 学期 1St Semester	武装部 Security Office	6.1	
	军事技能 Military Skills	必修 Compulsory	2	2	短 1 学期 Short Semester 1	武装部 Security Office	6.1, 6.3	
外语类 Foreign Language Courses	英语 I College English I	必修 Compulsory	2	0	第 1 学期 1St Semester	外国语学院 School of Foreign languages	5.1	
	英语 II College English II	必修 Compulsory	2	0	第 2 学期 2Nd Semester	外国语学院 School of Foreign languages	5.1	
	通用学术英语 English for General Academic Purposes	必修 Compulsory	2	0	第 3 学期 3Rd Semester	外国语学院 School of Foreign languages	5.1, 5.2	
	职场英语 Workplace English	限修 Distributional Elective	2	0	第 4 学期 4Th Semester	外国语学院 School of Foreign languages	5.1, 5.2	限选 1 门, 2 学分 Limited to 1 course, 2 credits
	交际与文化视听说 Viewing, Listening & Speaking in English -- Communication & Culture							
	语言、文化与翻译 Language, Culture and Translation							
	英语公共演讲 Public Speaking in English							
体育类 Physical Education Courses	体育 I Physical Education I	必修 Compulsory	1	1	第 1 学期 1St Semester	体育部 Dept. of Physical Education	6.3	
	体育 II Physical Education II	必修 Compulsory	1	1	第 2 学期 2Nd Semester	体育部 Dept. of Physical Education	6.3	

体育类 Physical Education Courses	体育 III Physical Education III	必修 Compulsory	0.5	0.5	第 3 学期 3Rd Semester	体育部 Dept. of Physical Education	6.3	
	体育 IV Physical Education IV	必修 Compulsory	0.5	0.5	第 4 学期 4Th Semester	体育部 Dept. of Physical Education	6.3	
	体育健康课程 I Diversified Physical Education Courses I	必修 Compulsory	0.5	0.5	第 5 学期 5Th Semester	体育部 Dept. of Physical Education	6.3	
	体育健康课程 II Diversified Physical Education Courses II	必修 Compulsory	0.5	0.5	第 6 学期 6Th Semester	体育部 Dept. of Physical Education	6.3	
通识教育课程 General Education Courses 共 6 学分，其中必修 2 学分，限修 4 学分，选修 0 学分 A total credits of 6, including 2 for compulsory courses, 4 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
核心通识课 Core General Education	“交通天下”通识课程 General Studies on Transportation	限修 Distributional Elective	4		2-8 学期 2-8 Semester	全校 The whole school	3.4, 6.2	
新生研讨课 Freshman Seminar	数学素养训练 Mathematical Literacy Training	必修 Compulsory	2		第 1 学期 1St Semester	数学学院 School of Mathematics	4.1,5.1,5.2	
学科与专业基础课程（含实验） Discipline and Specialty foundational Courses (Including Experiments) 共 41 学分，其中必修 41 学分，限修 0 学分，选修 0 学分 A total credits of 41, including 41 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
数学与自然科学 基础课 Foundational Courses on Mathematics and Natural Science	大学物理 BI College Physics BI	必修 Compulsory	3		第 2 学期 2Nd Semester	物理科学与技术学院 School of Physics	3.3	
	大学物理 BII College Physics BII	必修 Compulsory	3		第 3 学期 3Rd Semester	物理科学与技术学院 School of Physics	3.3	
	大学物理实验 I College Physics Experiment I	必修 Compulsory	1	1	第 2 学期 2Nd Semester	物理科学与技术学院 School of Physics	3.3	
	大学物理实验 II College Physics Experiment II	必修 Compulsory	1	1	第 3 学期 3Rd Semester	物理科学与技术学院 School of Physics	3.3	

专业基础课 Professional Foundational Courses	数学分析 I Mathematical Analysis I	必修 Compulsory	5		第 1 学期 1St Semester	数学学院 School of Mathematics	1.1	
	数学分析 II Mathematical Analysis II	必修 Compulsory	5		第 2 学期 2Nd Semester	数学学院 School of Mathematic	1.1	
	数学分析 III Mathematical Analysis III	必修 Compulsory	5		第 3 学期 3Rd Semester	数学学院 School of Mathematics	1.1	
	高等代数 I Advanced Algebra I	必修 Compulsory	5		第 1 学期 1St Semester	数学学院 School of Mathematics	1.2	
	高等代数 II Advanced Algebra II	必修 Compulsory	5		第 2 学期 2Nd Semester	数学学院 School of Mathematic	1.2	
	解析几何 Analytic Geometry	必修 Compulsory	4		第 1 学期 1St Semester	数学学院 School of Mathematics	1.3	
	程序设计与算法语言 Program design and algorithmic language	必修 Compulsory	4	4	第 2 学期 2Nd Semester	数学学院 School of Mathematics	3.2	
专业课程（含实验） Specialized Courses (Including Experiments) 共 64 学分，其中必修 54 学分，限修 10 学分，选修 0 学分 A total credits of 64, including 54 for compulsory courses, 10 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
专业核心课程 Specialized Core Course	初等数论 Basic Number Theory	必修 Compulsory	2		第 3 学期 3Rd Semester	数学学院 School of Mathematic	1.2	
	常微分方程 ODEs	必修 Compulsory	4		第 3 学期 3Rd Semester	数学学院 School of Mathematics	2.1	
	概率论 Probability theory	必修 Compulsory	4		第 3 学期 3Rd Semester	数学学院 School of Mathematics	2.2	
	数理统计 Mathematical Statistics	必修 Compulsory	4	1	第 4 学期 4Th Semester	数学学院 School of Mathematic	3.1	
	近世代数 Modern Algebra	必修 Compulsory	4		第 4 学期 4Th Semester	数学学院 School of Mathematic	1.2	
	复变函数 Complex Analysis	必修 Compulsory	4		第 4 学期 4Th Semester	数学学院 School of Mathematics	1.1	
	拓扑学基础 General Topology	必修 Compulsory	4		第 4 学期 4Th Semester	数学学院 School of Mathematics	1.3	
	数学建模方法及应用 Mathematical Modeling	必修 Compulsory	4	2	第 5 学期 5Th Semester	数学学院 School of Mathematic	4.1	
	实变函数 Real Analysis	必修 Compulsory	4		第 5 学期 5Th Semester	数学学院 School of Mathematic	1.1	
	抽象代数 Abstract Algebra	必修 Compulsory	4		第 5 学期 5Th Semester	数学学院 School of Mathematics	1.2,4.2	

专业核心课程 Specialized Core Course	泛函分析 A Functional Analysis A	必修 Compulsory	4		第 6 学期 6Th Semester	数学学院 School of Mathematics	1.1	
	微分几何 Differential Geometry	必修 Compulsory	4		第 6 学期 6Th Semester	数学学院 School of Mathematic	1.3	
	偏微分方程 PDEs	必修 Compulsory	4		第 6 学期 6Th Semester	数学学院 School of Mathematics	2.1	
	动力系统初步 Introduction to dynamical systems	必修 Compulsory	4		第 7 学期 7Th Semester	数学学院 School of Mathematics	2.1	
专业限修课程 Specialized Restricted Courses 限修 1 个课程组, 10 学分 Distributinal Elective, limited to 10 credits	交换代数初步 Introduction to commutative algebra	限修 Distributinal Elective	4		第 5 学期 5Th Semester	数学学院 School of Mathematic	1.2,4.2	限修课程组 1 Distributinal Elective
	有限群表示论初步 Introduction to representation theory of finite groups		3		第 6 学期 6Th Semester	数学学院 School of Mathematics	1.2,4.2	
	李代数 Lie algebras		3		第 7 学期 7Th Semester	数学学院 School of Mathematics	1.2,4.2	
	微分流形 Differentiable Manifolds	限修 Distributinal Elective	4		第 6 学期 6Th Semester	数学学院 School of Mathematic	1.3, 4.2	限修课程组 2 Distributinal Elective
	整体微分几何 Global differential geometry		3		第 7 学期 7Th Semester	数学学院 School of Mathematics	1.3, 4.2	
	黎曼几何 Riemannian Geometry		3		第 7 学期 7Th Semester	数学学院 School of Mathematics	1.3, 4.2	
	数值分析 Numerical Analysis	限修 Distributinal Elective	4		第 5 学期 5Th Semester	数学学院 School of Mathematic	2.3, 4.2	限修课程组 3 Distributinal Elective
	运筹学基础 Foundation of Operations Research		3		第 6 学期 6Th Semester	数学学院 School of Mathematics	2.3, 4.2	
	数据挖掘 Data Mining		3		第 7 学期 7Th Semester	数学学院 School of Mathematics	2.3, 4.2	
	随机过程 A Stochastic Processes A	限修 Distributinal Elective	4		第 6 学期 6Th Semester	数学学院 School of Mathematic	3.1, 4.2	限修课程组 4 Distributinal Elective
	多元统计 Multivariable Statistics		3		第 6 学期 6Th Semester	数学学院 School of Mathematics	3.1, 4.2	
	实用回归分析 Applied Regression Analysis		3		第 7 学期 7Th Semester	数学学院 School of Mathematics	3.1, 4.2	
实习实践教学 Practice Course 共 8 学分, 其中必修 8 学分, 限修 0 学分, 选修 0 学分 A total credits of 8, including 8for compulsory courses, 0 for distributinal electives and 0 for free electives								

课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
基本技能训练、实习实训、综合课程设计、社会与文化素质实践、毕业实习与毕业设计 Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design	本科毕业论文 Bachelor's Degree Thesis	必修 Compulsory	8	8	第 8 学期 8Th Semester	数学学院 School of Mathematics	4.1, 5.2	
多元化课程 Diversified course 共 6 学分，其中必修 0 学分，限修 4 学分，选修 2 学分 A total credits of 6, including 0 for compulsory courses, 4 for distributional electives and 2 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
跨学科课程 Interdisciplinary Course	数据库原理与设计 B Database principle and design B	限修 Distributional Elective	4	1	第 4 学期 4Th Semester	数学学院 School of Mathematics	6.2	按照《西南交通大学多元化课程修读指导手册》执行。 Follow the《Instruction manual of diversified courses of southwest Jiaotong University》
美育专业类课程 Aesthetic Education Specialty Courses	全校美育专业类课程 Aesthetic Education Specialty Courses of University	选修 Free Elective	2		第 2-8 学期 2-8 Semester	全校 The whole school		
创新创业实践 Innovation and Entrepreneurship Practice 共 2 学分，其中必修 2 学分，限修 0 学分，选修 0 学分 A total credits of 2, including 2 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes

创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc	课外创新实践 Extracurricular Innovation Practice	必修 Compulsory	2	2	第 3-7 学期 3-7 Semester	数学学院 School of Mathematics	4.1,4.2, 5.1, 5.2	参加全国大学生数学竞赛、全国大学生数学建模竞赛 National College Student Mathematics Competition, National College Student Mathematics Modeling Competition
必修环节 A compulsory part 共 0 学分，其中必修 0 学分，限修 0 学分，选修 0 学分 A total credits of 0, including 0 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求指标点 Indicators which Support Graduation Requirements	备注 Notes
大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness	大学生综合素质提升（第二、第三课堂） Comprehensive Quality Improvement Courses for College Students (The Second and Third Classroom)	必修 Compulsory	0	0	第 1-8 学期 1-8 Semester	校团委 Communist Youth League Committee	6.2, 6.3	
	学生体质达标测评 Assessment of Students' Physical Fitness	必修 Compulsory	0	0	秋季学期 fall Semester	体育部 Dept. of Physical Education	6.3	
学分总计 Total Credits			160					