(070100)数学 2020 级全日制普博生培养方案

2020 Full-time PhD Program for Mathematics

一、基本信息 Basic Information

院系名称 School	数学科学学院			**适用年级** Grade	2020 级 Class
适用专业 Major	数学 Mathematics			**标准学制** Duration	4 年 Years
学习形式 Study Mode	全日制 Full time				
项目类型 Program Type	学术型 Academic				
培养层次 Program Level	普博生 Regular Doctoral Students				
最低学分 Min Credit	13	**最低 GPA 学分** Min GPA Credit	0	**最低 GPA** Min GPA	0

二、学科简介 Introduction

本学科在过去十几年得到重点建设，现已拥有包括中国科学院院士、国家杰青等在内的 80 多名专职教师。数学一级学科设有基础数学、应用数学、计算数学、概率论与数理统计、运筹学与控制论五个二级学科。按研究方向设置“代数学”、“几何与分析”、“图论、组合与数论”、“常微与动力系统”、“数学物理”、“生物数学”、“偏微分方程理论及其应用”、“科学计算”、“金融数学和数理统计”等研究团队。

This discipline has been well constructed over the past few years by more than eighty faculties, including the academician of Chinese Academy of Science, the Changjiang scholars and scholars from “1000 Talent Plan”. The first-level discipline consists of five second-level disciplines, which are Pure Mathematics, Applied Mathematics, Computational Mathematics, Probability Theory & Mathematical Statistics, Operation Research and Cybernetics. The research area includes Algebra, Analysis & Geometry, Graph Theory, Combinatorics & Number Theory, Ordinary Differential Equations & Dynamical Systems, Mathematical Physics, Biomathematics, Partial Differential Equations, Scientific Computing, Financial Mathematics & Mathematical Statistics

三、培养目标 Program Objective

培养思想先进、品德优秀并具有坚实宽广的数学基础理论和系统深刻的数学专门知识与所从事研究方向的专业技能，具有独立从事科学研究和数学教学研究工作的能力，在科学技术上做出创造性成果的高级专门人才。

This program aims at cultivating specialized talents with professional skills and scientific research abilities.

四、培养方式及学习年限 Training Mode and Study Duration

全日制普通博士生的基本学习年限为 4 年， 最短学习年限一般不少于 3 年。非定向的普

通博士生最长学习年限（含休学）不超过 6 年；定向的普通博士生最长学习年限（含休学）不超过 7 年。具体以《上海交通大学研究生培养管理规定》为准。

The basic study period of regular doctoral students is 4 years, and the minimum study period is generally not less than 3 years. The maximum length of study (including suspension of study) for non-oriented regular doctoral students shall not exceed 6 years; the maximum length of study (including suspension of study) for oriented regular doctoral students shall not exceed 7 years. For details, please refer to *SJTU Regulations on Graduate Education and Management*.

五、课程学习要求 Course Requirement

在培养期间应完成培养方案规定的课程学习、教学实践、社会实践、科学研究和论文撰写等工作，修读总学分不低于 13 分。资格考试根据《数学科学学院资格考试实施细则》进行。

Students have to finish prescribed courses study, teaching practice, social practice, scientific research and dissertation during the study period. The total credits must be no less than 13.The Qualifying Examination will be hold in accordance with the *Implementation Rules for the Qualification Examination of the School of Mathematical Sciences.*

各类课程具体要求如下：

课程类别 Course Type	学分要求 Min Credits	门数要求 Min Courses	GPA 学分要求 Min GPA Credit	备注 Note
公共基础课 General Courses	5	3		
专业基础课 Program Core Courses				
专业前沿课 Program Frontier Courses	6	2		
专业选修课 Program Elective Courses	2	1		
任意选修课 Elective Courses				非必需

六、培养过程要求 Training Requirement

普博生（含留学生）最晚一般在第四学期结束前应通过资格考试，具体要求详见《数学科学学院资格考试实施细则》。学位论文开题前需通过资格考试。资格考试通过，且满足学校及学院对于课程、学分等相关要求后可申请开题，一般每学期由导师或学科指导小组组织一次。博士生在完成学位论文开题报告后按自然年进行年度考核，具体要求详见《上海交通大学关于

攻读博士学位研究生培养工作的规定》。博士生分流淘汰相关规则见《数学科学学院博士生分流淘汰实施细则》。

Regular doctoral students (including international students) should pass the qualification test before the end of the fourth semester. Please refer to the *Implementation Rules for the Qualification Examination of the School of Mathematical Sciences* for specific requirements. Qualification examination is required before the dissertation proposal. Regular doctoral students can apply for the dissertation proposal , which is organized by the supervisor or the discipline guidance group once a semester generally, after passing the qualification exam and meeting the requirements of schools and colleges for courses, credits, etc. After completing PhD dissertation proposal, doctoral students will be assessed annually. One can refer to the *SJTU Regulations on the Training of Doctoral Degree Students for specific requirements*. For the rules for PhD diversion and exists, one can refer to *The rules for PhD diversion and exists of School of Mathematical Sciences*.

七、学术成果要求 Requirement on Academic Achievements

发表学术论文达到数量达到《上海交通大学关于申请授予博士学位的规定》的要求后，可申请参加博士学位论文答辩。论文数量计算依据《数学科学学院关于博士研究生发表论文的认定标准》。如有同学"申请学位所使用学术论文"需要依据《数学科学学院关于博士研究生发表论文的认定标准》中"非数学类期刊、统计学类期刊、交叉学科领域合作发表的论文可申请仍按学校原有办法认定。"条款进行认定，其"申请学位所使用全部学术论文"均应按照该条款对照学校标准进行认定。博士生参加国际会议等规定根据学校和学院相关文件执行。

Students can apply for the doctoral dissertation defence when the number of published academic papers meets the requirements of *SJTU Regulations on Doctoral Degree Application*. The statistics of published academic papers are based on the *Accreditation Criteria for PhD Students' Academic Paper Publication in School of Mathematical Sciences*. If apply for academic papers for degree application that students should refer to the *Standards for the Identification of Papers Published by PhD Students of the School of Mathematical Sciences*. The regulations concerning doctoral students' participation in international conferences should be implemented according to the relevant documents of the school and college.

八、学位论文 Thesis/dissertation work

博士研究生学位论文应能够表明作者具有独立从事科学研究工作的能力，反映作者在本门学科上掌握了坚实宽广的基础理论和系统深入的专业知识。论文的选题需要具有科学性、学术性、创新性、先进性和可行性。学位论文工作环节应包括开题报告、年度考核、答辩申请、评审与答辩。详见《上海交通大学关于攻读博士学位研究生培养工作的规定》和《上海交通大学关于申请授予博士学位的规定》。

The doctoral dissertation should show that the author has the ability to independently engage in scientific research, and should reflect that the author has mastered basic theory and professional knowledge. The topic of the dissertation should be scientific, academic, innovative, advanced and feasible. The dissertation process consists

of thesis proposal, annual assessments, application for dissertation defense, review and defense reports. Please refer to *SJTU Regulations on the Training of Doctoral Degree Students* and *SJTU Regulations on Doctoral Degree Application* for further information.

九、课程设置 Courses

详见下页 Please refer to the next page.

撰稿人签字：　　日 期：

校稿人签字：　　日 期：

审核人签字：　　日 期：

主管院长签字：　　院系公章　　日期：

说明：

1. 培养方案制定完成并经院系学位委员会审核通过后，全日制请将本表格电子版(word)发送至 SherryLi327@sjtu.edu.cn，非全日制请将本表格电子版(word)发送至 jshen@sjtu.edu.cn；
2. 请在新研究生教育管理信息系统完成新培养方案的申请，并在审核通过后将本表格的纸质版（签字盖章）送交研究生院存档。

课程类别 Category	课程代码 Course Code	课程名称 Course Name		学分 Credit	授课语言 Language*	开课学期 Semester	是否必修	可以计算 GPA	必须计算 GPA	备注 Note
		中文 Chinese	English 英文							
公共基础课 General Courses	MARX7001	中国马克思主义与当代	Marxism in China	2	中文 in Chinese	春秋季 Spring and Fall	是	否 No	否 No	至少修读 5 学分 至少修读 3 门课程
	FL6001	学术英语	English for Academic Purposes	2	英文 in English	春秋季 Spring and Fall	是	否 No	否 No	
	GE6001	学术写作、规范与伦理	Scientific writing, integrity and ethics	1	中英文并行开班 in both Chinese & English	春秋季 Spring and Fall	是	否 No	否 No	
专业前沿课 Program Frontier Courses	MATH9102	表示论	Representation Theory	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	至少修读 6 学分 至少修读 2 门课程
	MATH9122	现代图论	Modern Graph Theory	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9210	科学问题的可计算建模	Computable Modeling in Scientific Computing	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9216	数值代数、优化和反问题	Numerical Algebra, Optimization and Inverse Problems	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9204	非线性发展方程	Nonlinear Evolutionary Partial Differential Equations	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9217	双曲型方程组理论与应用	Theory and Applications of Hyperbolic Partial Differential Equations	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9119	微局部分析	Micro-Local Analysis	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9112	李理论基础	Basic Lie Theory	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9116	数论中的加法组合	Additive Combinatorics in Number Theory	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9203	动力系统的理论和方法	Theory and Methods of Dynamical Systems	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9205	分支理论和保守系统理论	Bifurcation Theory and The Theory of Conservative System	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9211	可积系统与孤立子理论	Integrable System and Soliton Theory	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9101	变分法和几何 PDE	Variational Method and Geometric PDEs	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	

	MATH9106	多复变函数论与复几何	Several Complex Variables and Complex Geometry	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9113	流形的几何与拓扑	Differential Topology and Differential Geometry on Manifolds	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9123	现代组合学	Modern Combinatorics	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9218	微分方程的高性能计算	High-Performance Computation for Differential Equations	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9111	基础几何力学	Basic Geometric Mechanics	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
	MATH9105	对称几何力学	Mechanics with Symmetry	3	中文 in Chinese	春秋季 Spring and Fall		否 No	否 No	
专业选修课 Program Elective Courses	GE6012	学术报告与研讨会	Academic Reports	2	中文 in Chinese	春秋季 Spring and Fall	是	否 No	否 No	至少修读 2 学分 至少修读 1 门课程