School of mathematics and statistics

The Undergraduate program

1. Historical Background

The school of mathematics and statistics is one of the oldest subjects in Wuhan University. When the "Ziqiang School" (Wuhan University's predecessor) was founded in 1893, the "Suanshu Men" was established simutanuously. In 1914, the school of mathematics and physics was established in Wuhan University. In 1922, when the four schools was changed into eight departments in Wuhan University, the department of mathematics was named. In April 1999, it was renamed as the school of mathematics and computer science. In 2001, the new Wuhan University founded, the school of mathematics and statistics was formally established.

The school has four departments: namely, the department of pure mathematics, the department of the applied mathematics, the department of information and computing science, the department of probability and statistics. There are also the institute of mathematics, and the center for mathematical cooperation and innovation. There are 3 undergraduate specialties: mathematics and applied mathematics (including financial mathematics), information and computing science, statistics. Our undergraduate program has been selected by the state as the Natural Science Basic Research and Teaching Personnel Training Base - Mathematical Base Class and the National Basic Science Top Student Training Program - Mathematics Hong Yi Class. The school unifies enrollment according to "mathematics class". The undergraduate students begin to study in different majors and directions from sophomore.

The mathematics and statistics in the school are two first class doctoral degree disciplines. The school can grant Ph.D and master's degrees in the specialties of pure mathematics, probability and statistics, applied mathematics, computational mathematics, operational research and control theory, and a master's degree for applied statistics. There are more than 130 teachers, of whom 39 are professors and 57 are associate professors.

In the school's more than 100 years history, many well-known mathematicians, such as Chen Jiangong, Xiao Junjiang, Li Huazong, Tang Zaozhen and Wu Daren, have ever been engaged in teaching and research here. Ceng Zhaoan, Li Guoping, Zhang Yuanda, Yu Jiarong, Lu Jianke, Qi Minyou and many other famous mathematicians have worked here over a long period of time and made important contributions to the school.Through the unremitting efforts of several generations,our school has produced a large number of well-known mathematicians, including Ding Xiaqi, Wang Zikun, Chen Xiru, Shen Xubang, Zhang Ming. At the beginning of 2016, the mathematics in Wuhan University entered the top 1% of ESI global discipline ranking.

Faculty members in the school have a wide range of research fields including partial differential equations, several complex variables and complex geometry, functional analysis and non-commutative analysis, differential geometry and geometric analysis, algebraic geometry, number theory and code, dynamic system, harmonic analysis and wavelet theory, control and optimization theory, numerical solution of partial differential equation, numerical analysis, bioinformatics, complex network, stochastic analysis, large deviation theory, biological statistics and financial mathematics. We have carried out a lot of teaching and scientific research work, and have achieved fruitful results in these fields.

2. Main contents of the program

I. The Subject

(1). The subject's name

The mathematics class (including mathematics and statistics)

(2).The training objective

Students are expected to master basic theories and basic methods of Mathematics and statistics, to be trained systematically in scientific research, and to have the ability to use mathematics and statistics to solve practical problems by the aid of computers, can engage in research and teaching in the science, technology and education departments, or do practical work in the production of business, economy and management departments as the senior specialists.

(3). The subject's courses

Algebra and analytic geometry (1) (2), Mathematical analysis (1) (2) (3), C language and practice, Ordinary differential equations, Mathematical thinking and methods (freshman seminar).

(4). Length of schooling and credit requirements

Four years and 140 credits.

(5). Degree Award

Bachelor of Science.

(6). Main experimental and practical teaching requirements

Calculation practice, scientific research training, production labor and graduation thesis or design, generally arranged for 10-20 weeks.

(7). The requirements for graduates and other necessary instructions

Need to meet the requirements of graduates prescribed by Wuhan University. National defense graduates also need to meet the requirements of the military and political quality training program for national defense students (undergraduates).

II. The specialities

(1). Mathematics and Applied Mathematics

Code: 070101

Name: Mathematics and Applied Mathematics

Set up a Mathematics Base Class, a Mathematics Hongyi Class, a Mathematics and Applied Mathematics Class, a Financial Mathematics Class.

Mathematics Base Class and Mathematics Hongyi Class required course: Abstract algebra, complex analysis, real analysis, topology, differential geometry, probability theory, functional analysis, distribution and partial differential equation, graduation thesis.

Mathematics and Applied Mathematics Class required course: Probability and mathematical statistics, numerical analysis (1), complex analysis, mathematical model, real analysis, optimization theory and methods, mathematical experiment, functional analysis, graduation thesis.

Financial mathematics Class required course: Probability theory and mathematical statistics, macroeconomics, accounting, monetary banking, numerical analysis (1), microeconomics, econometrics, real analysis, graduation thesis.

(2). Information and Computing Science

Code: 070102

Name: information and Computing Science

Required courses: Probability theory and mathematical statistics, numerical analysis (1), optimization theory and methods, real analysis, mathematical and physical equations, numerical analysis (2), functional analysis, numerical solutions of differential equations, graduation thesis.

(3). Statistics

Code: 071201

Name: statistics

Required courses: Probability theory, statistical calculation and software, mathematical statistics, sampling survey, multivariate statistical analysis, real analysis, practical regression analysis, time series analysis, stochastic process, graduation thesis.

3. The subject training programs

I. public and basic courses（公共基础课程）

Course code	Course name	Course Type	Credits	Semester
1100890011003	Basic Principle of Marxism 马克思主义基本原理概论	Required	3	2
1100890011004	Introduction to Mao Zedong thought and the theoretical system of socialism with Chinese characteristics 毛泽东思想和中国特色社会主义理论体系概论	Required	4+2	3
1100890011002	Outline of modern Chinese history 中国近现代史纲要	Required	2	3
1100890011001	Ideological and moral cultivation and legal basis 思想道德修养与法律基础	Required	3	1
	Situation and policy 形势与政策	Required	2	1
	Sports 体育	Required	4	1-4
1100730011001	Military theory and training 军事理论与训练	Required	2	
	University English 大学英语	Required	6	1-2
1300840011007	Computer Base and Application 计算机基础与应用	Optional	2	1-8
1300860011003 1300860011004	College Physics B (I and II) 大学物理 B（上、下）	Optional	6	3-4
1300880011001	College Chinese 大学语文	Optional	2	1-8

II. General education courses（通识教育课 程）

Course code	Course name	Course	Credits	Semester

		Type		
2110720011001	Classics guide of Humanities and Social Sciences 人文社科经典导引	Required	2	1 or 2
2110720011002	Classic guide to Natural Science 自然科学经典导引	Required	2	1 or 2
	All students are required to take modules of "Chinese Culture and World Civilization" and "Art Experience and Aesthetic Appreciation"; students in our school must also take modules of "Social Science and Modern Society". 所有学生必须选修"中华文化与世界文明"和"艺术体验与审美鉴赏"模块课程；本院学生还必须选修"社会科学与现代社会"模块课程。	Optional	At least 8 credits 至少 8 个选修学分	1-8

III. Professional education courses（专业教育课程）

（1）Major platform courses（大类平台课程）

Course code	Course name	Course Type	Credits	Semester
3140310011008	Algebra and analytic geometry (1) 高等代数与解析几何(1)	Required	5	1
3140310011009	Mathematical analysis (1) 数学分析(1)	Required	5	1
3140310011010	C language and practice C 语言及实习	Required	4	2
3140310011011	Algebra and analytic geometry (2) 高等代数与解析几何(2)	Required	6	2
3140310011012	Mathematical analysis (2) 数学分析(2)	Required	6	2
3140310011013	Mathematical analysis (3) 数学分析(3)	Required	6	3
3140310011014	Ordinary differential equations 常微分方程	Required	4	3 or 4
3340310011015	Mathematical thinking and methods (freshman seminar) 数学思想与方法(新生研讨课)	Optional	1	1 or 2

（2）Professional required courses（专业必修课程）

Required course for Mathematics Base Class and Mathematics Hongyi Class:

Course code	Course name	Course Type	Credits	Semester
3150310011016	Abstract algebra 抽象代数	Required	4	3
3150310011017	Complex analysis 复变函数	Required	4	4
3150310011018	Real analysis 实变函数	Required	4	4
3150310011019	Topology 拓扑学	Required	4	5
3150310011020	Differential geometry 微分几何	Required	4	5
3150310011021	Probability theory 概率论	Required	4	5
3150310011022	Functional analysis 泛函分析	Required	4	6
3150310011023	Distribution and partial differential equation 广义函数与偏微分方程	Required	4	6
3150310011024	Graduation thesis. 毕业论文	Required	4	8

Required course for Mathematics and Applied Mathematics Class:

Course code	Course name	Course Type	Credits	Semester
3150310011025	Probability and mathematical statistics 概率论与数理统计	Required	4	3
3150310011026	Numerical analysis (1) 数值分析（1）	Required	4	3
3150310011017	Complex analysis 复变函数	Required	4	4
4150310011028	Mathematical model 创 数学模型 创	Required	3	4
3150310011018	Real analysis 实变函数	Required	4	5
3150310011030	Optimization theory and methods 优化理论与方法	Required	4	5
3150310011031	Mathematical experiment 数学实验	Required	3	6
3150310011022	Functional analysis 泛函分析	Required	4	6

Course code	Course name	Course Type	Credits	Semester
3150310011024	Graduation thesis 毕业论文	Required	4	8

Required course for Financial mathematics Class:

Course code	Course name	Course Type	Credits	Semester
3150310011025	Probability theory and mathematical statistics 概率论与数理统计	Required	4	3
3150310011035	Macroeconomics 宏观经济学	Required	3	3
3150310011036	Accounting 会计学	Required	3	3
3150310011037	Monetary banking 货币银行学	Required	4	3
3150310011026	Numerical analysis (1) 数值分析（1）	Required	4	3
3150310011039	Microeconomics 微观经济学	Required	3	4
3150310011040	Econometrics 计量经济学	Required	3	5
3150310011018	Real analysis 实变函数	Required	4	5
3150310011024	Graduation thesis 毕业论文	Required	4	8

Required course for Information and Computing Science:

Course code	Course name	Course Type	Credits	Semester
3150310011025	Probability theory and mathematical statistics 概率论与数理统计	Required	4	3
3150310011026	Numerical analysis (1) 数值分析（1）	Required	4	3
3150310011030	Optimization theory and methods 优化理论与方法	Required	4	5
3150310011018	Real analysis, 实变函数	Required	4	5
3150310011047	Mathematical and physical equations 数学物理方程	Required	4	5
3150310011048	Numerical analysis (2) 数值分析(2)	Required	3	5
3150310011022	Functional analysis 泛函分析	Required	4	6

Course code	Course name	Course Type	Credits	Semester
3150310011050	Numerical solutions of differential equations 微分方程数值解	Required	4	6
3150310011024	Graduation thesis 毕业论文	Required	4	8

Required course for Statistics:

Course code	Course name	Course Type	Credits	Semester
3150310011021	Probability theory 概率论	Required	4	3
3150310011053	Statistical calculation and software 统计计算与软件	Required	3	4
3150310011054	Mathematical statistics 数理统计	Required	4	4
3150310011055	Sampling survey 抽样调查	Required	3	5
3150310011056	Multivariate statistical analysis 多元统计分析	Required	4	5
3150310011018	Real analysis 实变函数	Required	4	5
3150310011058	Practical regression analysis 实用回归分析	Required	4	5
3150310011059	Time series analysis 时间序列分析	Required	4	6
3150310011060	Stochastic process 随机过程	Required	4	7
3150310011024	Graduation thesis 毕业论文	Required	4	8

(3) Professional elective courses　（专业选修课程）

Course code	Course name	Course Type	Credits	Semester
4150310011028	Mathematical model ㉕ 数学模型 ㉕	Optional	3	4
3350310011063	Expansion training in algebra ㊂ 高等代数能力拓展训练 ㊂	Optional	1	㊂
3350310011064	Expansion training in mathematical	Optional	1	㊂

	analysis ③ 数学分析能力拓展训练③			
31503100011026	Numerical analysis (1) 数值分析（1）	Optional	4	3
33503100011066	Commutative algebra 交换代数	Optional	3	4
33503100011067	Fourier analysis 傅里叶分析	Optional	3	5
33503100011068	Complex analysis in several complex variables 多复分析	Optional	3	5
31503100011048	Numerical analysis (2) 数值分析(2)	Optional	3	5
33503100011070	Multiscale analysis 多尺度分析	Optional	3	6
31503100011031	Mathematical experiment 数学实验	Optional	3	6
33503100011072	Fluid mechanics 流体力学	Optional	3	6
33503100011073	Database technology 数据库技术	Optional	3	6
31503100011054	Mathematical statistics 数理统计	Optional	4	6
33503100011075	Riemannian Geometry 黎曼几何	Optional	4	6
33503100011076	Wavelet analysis 小波分析	Optional	3	6
31503100011060	Stochastic process 随机过程	Optional	4	7
33503100011078	Algebraic topology 代数拓扑	Optional	3	7
33503100011079	Computational mechanics 计算力学	Optional	3	7
33503100011080	Number theory and code 数论与密码	Optional	3	7
33503100011081	Harmonic analysis 调和分析	Optional	3	7
33503100011082	Selected topics on modern mathematics (1) 现代数学专题选讲（1）	Optional	2	7
33503100011083	Selected topics on modern mathematics (2)	Optional	2	7

	现代数学专题选讲（2）				7
33503100110084	Applicable partial differential equation model 应用偏微分方程模型	Optional	3		7
31503100110030	Optimization theory and method 优化理论与方法	Optional	4		7
33503100110086	Algebraic geometry 代数几何	Optional	3		8
31503100110050	Numerical solution of differential equations 微分方程数值解	Optional	3		8
33503100110088	Selected topics on modern mathematics (3) 现代数学专题选讲（3）	Optional	2		8
33503100110089	Selected topics on modern mathematics (4) 现代数学专题选讲（4）	Optional	2		8
33503100110090	Linear control system 线性控制系统	Optional	3		8
33503100110091	Topics in pure mathematics 基础数学专题讨论	Optional	1		7-8
31503100110016	Abstract algebra 抽象代数	Optional	4		3
31503100110053	Statistical computation and software 统计计算与软件	Optional	3		4
33503100110094	Theoretical mechanics 理论力学	Optional	4		4
33503100110095	Discrete mathematics 离散数学	Optional	3		5
33503100110096	Data structure and algorithm 数据结构与算法	Optional	3		5
31503100110047	Mathematical physics equation 数学物理方程	Optional	4		5
31503100110019	Topology 拓扑学	Optional	4		5
31503100110020	Differential geometry 微分几何	Optional	4		5
33503100110100	Fuzzy mathematics 模糊数学	Optional	3		6
33503100110101	Complex network 复杂网络	Optional	3		6
33503100110102	Graph theory 图论	Optional	3		6
31503100110035	Macroeconomics 宏观经济学	Optional	3		7

3350310011104	Chaos dynamics 混沌动力学基础	Optional	3	7
3350310011105	Software design method 软件设计方法	Optional	3	7
3350310011106	Digital image processing 数字图像处理	Optional	3	7
3350310011107	Operations research 运筹学	Optional	4	7
3350310011108	Topics in applied mathematics 应用数学专题	Optional	3	8
3350310011109	International finance 国际金融	Optional	3	4
3150310011056	Multivariate statistical analysis 多元统计分析	Optional	4	5
3350310011111	Financial Engineering 金融工程	Optional	3	5
3350310011112	Interest theory 利息理论	Optional	3	5
3350310011113	Securities investment 证券投资学	Optional	3	5
3150310011055	Sampling survey 抽样调查	Optional	3	6
3150310011022	Functional analysis 泛函分析	Optional	4	6
3350310011116	Risk management 风险管理	Optional	3	6
3150310011017	Complex Analysis 复变函数	Optional	4	6
3350310011118	Financial Mathematics 金融数学	Optional	3	6
3350310011119	Options futures and derivatives 期权期货与衍生工具	Optional	3	6
3350310011120	Financial management 财务管理	Optional	3	7
3150310011058	Practical regression analysis 实用回归分析	Optional	4	7
3350310011122	Seminar on finance 金融专题讲座	Optional	3	7
3350310011123	Computational geometry 计算几何	Optional	3	5
3350310011124	Introduction to data science 数据科学引论	Optional	3	6
3350310011125	Inverse problem computation 反问题计算	Optional	3	7

3350310011126	Quantum information and quantum computation 量子信息与量子计算基础	Optional	3	7
3350310011127	Neural network and deep learning 神经网络与深度学习	Optional	3	6
3350310011128	Topics in computational mathematics 计算数学专题	Optional	2	8
3350310011129	Python language programming Python 语言程序设计	Optional	3	4
3350310011130	Machine learning 机器学习	Optional	4	5
3350310011131	Data mining 数据挖掘	Optional	3	6
3350310011132	Nonparametric statistics 非参数统计	Optional	3	6
3350310011133	Experimental design and variance analysis 试验设计与方差分析	Optional	3	6
3350310011134	Biostatistics 生物统计	Optional	3	6
3150310011040	Econometrics 计量经济学	Optional	3	7

Remark:

1. The courses with ⓒ are innovation and entrepreneurship courses.

2. The courses with ㊂ are offered for the third semester.

1. 带 ⓒ 字的课程为创新创业类课程。　　2. 带 ㊂ 字的课程为第三学期开设课程。

Requirement:

1. Each student is required to take at least 3 credits of innovation and entrepreneurship courses, and can also take the innovation and entrepreneurship courses from the school modules.
每个学生至少选修创新创业类课程 3 学分，也可以从学校大模块中选修创新创业类课程。

2. Each student is required to take at least one course in the third semester.
每个学生至少选修一门第三学期课程。

3. Each student is required to at least 18 credits in the professional elective courses.
每个学生至少选修专业选修课程 18 学分。

4. Each student is required to take at least 4 credits of professional education courses from the other school.
学生必须跨学院（系）选课。要求在所跨的学院（系）至少修读 4 个学分的专业教育课程。

5. Total credits requirement for graduation: 140 credits.
毕业应取得总学分：140 分