Department of Mathematics

Program of Mathematics and Applied Mathematics for Class 2018

I. Introduction

Established in 2012, Southern University of Science and Technology is a young university aiming to become a top research university in the world. In recent years, the university has attracted many outstanding researchers. The Department of Mathematics currently has 34 full-time faculty members, including 6 chair professors, 7 professors, 5 associate professor, 7 assistant professors and 3 visiting assistant professors. Three of the professors are members of the "Recruitment Program of Global Experts" and 2 are "Chang Jiang Scholars", 2 are winners of the National Science Foundation Award for Distinguished Young Scholars, and 1 has received the "Young Overseas High-level Talents" award. In addition to the 21 research professors, there are 9 teaching professors dedicated to high quality teaching, and the department is expected to grow quickly in coming years.

Research interests of the current faculty members cover a wide array of areas in mathematics, including pure mathematics, applied mathematics, financial mathematics, computational mathematics and statistics. The department is committed to becoming a first class mathematics department with outstanding research and the highest quality undergraduate and graduate programs.

There are many jobs and opportunities for further academic development for undergraduate students in mathematics and applied mathematics. Government agencies, banks, insurance companies, securities investment companies, software developers, market survey and analysis companies, e-commerce companies and many high-tech companies all have job opportunities for undergraduate students in mathematics and applied mathematics. Students who wish to pursue graduate studies in mathematics and applied mathematics can also find many opportunities either in China or overseas.

II. Objectives

The objective of the undergraduate programs in mathematics and applied mathematics is to produce outstanding students with a solid foundation in mathematics, a broad knowledge base in related areas such scientific computing and other areas of science, and excellent ability of critical thinking and working independently. The department provides a wide verity of courses that will meet the needs of students interested in pure mathematics and applied mathematics. The ultimate training objective of the undergraduate programs is to enable students to excel in their future career choices, whether they choose to work in government or industries, or to become mathematical scientists.

III. Period of Study and Degree Requirement

Time length: 4 years

Degree conferred: Bachelor of Science

The minimum credit requirement for graduation: 132 credits (not including English courses).

IV. Disciplines

First-level discipline: Mathematics

V. Main Courses

Foundational core courses: Mathematical Analysis I&II&III, Linear Algebra I&II, Ordinary Differential Equations A, Complex Analysis, Probability Theory, Mathematical Statistics, Abstract Algebra, Numerical Analysis, Mathematical Modeling, Partial Differential Equations, Theory of Functions of a Real Variable, Functional Analysis and etc.

VI. Practice-Based Courses

Undergraduate Thesis/Project, Research Projects and Internship, etc.

VII. Course Structure and Credit Requirements

General Education (GE) Required Courses: 56 credits (not including English courses)

General Education (GE) Elective Courses: 10 credits;

Major Foundational Courses： 11 credits;

Major Core Courses: 9 credits;

Major Elective Courses: 36 credits;

Undergraduate Thesis/Projects: 8 credits;

Research Projects/Internship: 2 credits;

The minimum credit requirement for graduation: 132 credits.

VIII. Requirements for Science Module of GE Required Courses

Course Cod	Course Name	Credit	Lab Credits	Hours/week	Term	Instruction Language	Prerequisite	Dept
MA101B	Calculus I A	4		4	Spr/ Fall	B		MATH
MA102B	Calculus II A	4		4	Spr/ Fall	B	MA101B	MATH
MA213-16	Real Analysis	5		5	2/Fall	B	MA102B	MATH
MA103A	Linear Algebra I-A	4		4	Spr /Fall	B		MATH
PHY103B	General Physics B (I)	4		4	Spr/ Fall	B		PHY
PHY105B	General Physics B (II)	4		4	Spr/F all	B	PHY103B	PHY
CH101B	General Chemistry B	3		3	Spr/ Fall	B		CHEM
CS102B	Introduction to Computer Programming B	3	1	4	Spr/ Fall	B		CSE
BIO102B	Introduction to Life Science	3		3	Spr /Fall	B		BIO
PHY104B	Experiments of Fundamental Physics	2	2	4	Spr/ Fall	B		PHY
Total		36	3	39				

IX. Pre-requisites for Major Declaration

Course Code	Course Name	Notes
MA101B	Calculus I A	
MA102B	Calculus II A	
MA213	Real Analysis	
MA103A	Linear Algebra I-A	
MA104b	Linear Algebra II	

X. Course Arrangement

Table 1: Major Required Course (Foundational and Core Courses)

Course Category	Course Code	Course Name	Credits	Lab Credits	Hours/week	Terms	Advised term to take the	Instruction language	Prerequisite	Dept.
Major Foundational Courses	MA104b	Linear Algebra II	4		4	Fall	1/Fall	C or E or C&E	MA103A	MATH
	MA212	Probability and Statistics	3		3	Fall	2/Fall	E	MA102a or MA102B	MATH
	MA201a	Ordinary Differential Equations A	4		4	Spr	2/Spr	C or E or C&E	MA203a or MA213, MA104b	MATH
	Total		11		11					
Major Core Courses	MA202	Complex Analysis	3		3	Spr	2/Spr	C&E	MA203a or MA213	MATH
	MA301	Theory of Functions of a Real Variable	3		3	Fall	3/Fall	C or E	MA203a or MA213	MATH
	MA303	Partial Differential Equations	3		3	Fall	3/Fall	C or E or C&E	MA201a or MA201b	MATH
	Total		9		9					
MA490	Undergraduate Thesis/Project		8	8	16	Fall & Spr	4/Spr&Fall	C&E		MATH
MA480	Research Projects*		2	2	4	Fall or Spr or Smr	Any semester after the first school year	C&E		MATH
MA470	Internship*				16	Smr	Any summer after the first school year	C&E		MATH
Total			30	10						

*Note: Students are required to choose Research Projects (including all kinds of scientific research activities, scientific and technological innovation projects, wining prizes in competitions above the provincial level, publishing papers, engaging in advanced studies both at home and abroad as well as attending a certain number of seminars or public lectures, and related credits are identified by the Department) and one course in Internship to carry out practice. Students can also choose to carry out Research Projects and Internship in any semester after the first school year, and the minimum required period for Internship is 4 weeks.

Table 2: Major Elective Courses

Course Code	Course Name	Credits	Lab Credits	Hours /week	Terms	Advised term to take the	Instruction language	Prerequisite	Dept.
MA209-16	Elementary Number Theory	3		3	Fall	2/Fall	C&E	NA	MATH
MA216	Computational Finance	3		3	Fall	3/Fall	C&E	MA203a or MA213	MATH
MA214	Abstract Algebra	3		3	Spr	2/Spr	C or E or C&E	MA104b	MATH
MA205	Discrete Mathematics	3		3	Spr	2/Spr	C	MA203a or MA213	MATH
MA206	Mathematical Modelling	3		3	Spr	2/Spr	C&E	MA203a or MA213	MATH
MA208	Applied Stochastic Processes	3		3	Spr	2/Spr	E	MA212 or MA204	MATH
MA333	Introduction to Big Data Science	3		3	Fall	3/Fall	C&E	MA203a or MA213	MATH
MA321	Representations of groups	3		3	Fall	3/Fall	C or E or C&E	MA104b	MATH
GGC5001	Mathematics Writing in English(PG)	2		2	Smr	2/Smr	C&E		MATH
MA305	Numerical Analysis	3		3	Fall	3/Fall	C	MA203a or MA213	MATH
MA323	Topology	3		3	Fall	3/Fall	C	MA104b	MATH
MA309	Time Series Analysis	3		3	Fall	3/Fall	C	MA212 or MA204	MATH
MA304	Multivariate Statistical Analysis	3		3	Spr	3/Spr	C	MA212 or MA204	MATH
MA302	Functional Analysis	3		3	Spr	3/Spr	C&E	MA301，MA202	MATH
MA325	Numerical Solution of Partial Differential Equations	3		3	Spr	3/Spr	C&E	MA303	MATH
MA327	Differential Geometry	3		3	Spr	3/Spr	C	MA201a or MA201b	MATH
MAT7002	Measure Theory and Integration（PG）	3		3	Fall	4/Fall	C or E or C&E	MA301	MATH
MAT7003	Functional Analysis（PG）	3		3	Fall	4/Fall	C or E or C&E	MA302	MATH
MAT7008	Advanced Statistics(PG)	3		3	Fall	4/Fall	C or E or C&E	MA203a or MA213	MATH
MAT7035	Computational Statistics	3		3	Fall	4/Fall	C or E or C&E	MA329	MATH
MA401	Dynamical Systems	3		3	Fall	3/Fall	C&E	MA201a or MA201b	MATH
Total		**62**		**62**					

Note 1: Each student is required to take at least 36 credits.
Note 2: Beginning time for Elective Courses is subject to the actual beginning time.

Table 3: Overview of Practice-Based Courses

Major of Mathematics and Applied Mathematics

Course Code	Course Name	Credits	Lab Credits	Hours /week	Terms	Advised term to take the	Instruction language	Prerequisite	Dept.
MA490	Undergraduate Thesis/Project	8	8	16	Fall & Spr	4/Spr & Fall	C&E		MATH
MA480	Research Projects*	2	2	4	Fall or Spr or Smr	Any semester after the first school year	C&E		MATH
MA470	Internship*	2	2	16	Smr	Any summer after the first school year	C&E		MATH
Total		12	12	36					

*Note: Students are required to choose Research Projects (including all kinds of scientific research activities, scientific and technological innovation projects, wining prizes in competitions above the provincial level, publishing papers, engaging in advanced studies both at home and abroad as well as attending a certain number of seminars or public lectures, and related credits are identified by the Department) and one course in Internship to carry out practice. Students can also choose to carry out Research Projects and Internship in any semester after the first school year, and the minimum required period for Internship is 4 weeks.

Table 4: Overview of Course Hours and Credits

Course Category	Total Course Hours	Total Credits	The Minimum Credit Requirement
General Education (GE) Required Courses (not including English courses)	1008	56	56
General Education (GE) Elective Courses			10
Major Foundational Courses	176	11	11
Major Core Courses	144	9	9
Major Elective Courses	1008	63	36
Research Projects, Internship and Undergraduate Thesis/Projects	320	10	10
Total (not including English courses)	2656	149	132

Mathematics and Applied Mathematics

