Program Director's Signature:	**Date:**
Department Chair's Signature:	**Date:**

Department of Chemistry

Program of Chemistry for International Students (2019)

I. Introduction

Chemistry is regarded as the central science because of its role in connecting different subjects and its importance in interdisciplinary research, such as chemical biology, materials science, energy, agricultural development, drug discovery and so on.

For the teaching, the comprehensive 4 years credit-based bachelor curriculum in our Department covers a wide range of chemistry aspects and related disciplines with up-to-date literature materials for their selection. Generally it included the four basic chemistry areas as the core courses (organic, inorganic, analytical and physical chemistry), elective courses included but not limited to medicinal chemistry, polymer chemistry, chemical biology, energy and materials chemistry, supramolecular chemistry and environmental chemistry, which are closely related to the frontiers of current research and the needs of our society. Moreover, in order to encourage inter-disciplinary research, the students are motivated to study other science related subjects in the first year of admission, included but not limited to biology, physic and engineering.

Adhering to our university's motto of "Research, Innovation and Entrepreneurship," the Chemistry Department focuses on cultivating students' innovation, critical thinking and ability for interdisciplinary cooperation. The curriculum design emphasizes not only the basic theory, but also practical training particularly in the areas of new medicine, new energy, and new materials. Undergraduates are strongly encouraged to participate in various research programs supervised by professors to cultivate their creativity, practical skills and ability for interdisciplinary cooperation. The department maintains a wide array of sophisticated instrumentation necessary for modern chemical research and teaching.

Therefore, good chemistry training continues to play a substantial role in the rapid development of science and technology in this century and provides students with good prospects in industry,

academia, business as well as civil organizations.

II. Objectives and Learning Outcomes

The undergraduate Chemistry program is aimed at training new generations of top-notch innovative personnel who have a solid background in mathematics and physics, extensive knowledge of chemistry, strong experimental skills, an international perspective and an entrepreneurial spirit.

III. Study Length and Graduation Requirements

Study length: 4 years

Degree conferred: Bachelor of Science

The minimum credit requirement for graduation: 135.5 credits (not including English courses);

Category	Module	Minimum Credit Requirement
General Education (GE) Required Courses （52 creidts）	Science	32
	Physical Education	4
	Chinese Languages & Culture	16
General Education (GE) Elective Courses （10 creidts）	Humanities	4
	Social Sciences	4
	Arts	2
	Science	0
Major Course （73.5 creidts）	Major Foundational Courses	38.5
	Major Core Courses	7
	Major Elective Courses	12
	Research Projects, Internship and Undergraduate Thesis / Projects	16
Total (not including English courses)		135.5

IV. Discipline

Chemistry

V. Main Courses

General Chemistry A, General Chemistry Laboratory A, Inorganic Chemistry Fundamentals, Organometallics, Coordination Chemistry, Organic Chemistry I & II, Analytical Chemistry, Principle of Instrumental Analysis, Practice of Instrumental Analysis, Physical Chemistry I & II, Inorganic Chemistry Laboratory, Analytical Chemistry Laboratory, Organic Chemistry Laboratory, Physical Chemistry Laboratory, Principle of Chemical Engineering, and so on.

VI. Practice-Based Courses

General Chemistry Laboratory A, Inorganic Chemistry Laboratory, Analytical Chemistry Laboratory, Organic Chemistry Laboratory, Physical Chemistry Laboratory, Projects of Science and Technology

Innovation, Degree Thesis (Design), and so on.（See Table 3）

VII. Pre-requisites for Major Declaration

Major Declaration Time	Course Code	Course Name	Prerequisite
Declare major at the end of First Year	CH101A	General Chemistry A	
	CH102-17	General Chemistry Laboratory A	CH101A
	CH203	Organic Chemistry I	CH101A
	MA101B	Calculus I A	
	MA102B	Calculus II A	MA101B
	PHY103B	General Physics B (I)	
	PHY105B	General Physics B (II)	PHY103B
	PHY104B	Experiments of Fundamental Physics	
Declare major at the end of Second Year	CH101A	General Chemistry A	
	CH102-17	General Chemistry Laboratory A	CH101A
	CH203	Organic Chemistry I	CH101A
	CH205	Analytical Chemistry	CH101A
	CH213	Inorganic Chemistry Fundamentals	CH101A
	CH206	Organic Chemistry II	CH203
	CH214	Organometallics	CH213
	CH215	Coordination Chemistry	CH213
	MA101B	Calculus I A	
	MA102B	Calculus II A	MA101B
	PHY103B	General Physics B (I)	
	PHY105B	General Physics B (II)	PHY103B
	PHY104B	Experiments of Fundamental Physics	

VIII. Requirements for of GE Required Courses

(I) Science Module

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	Language Instruction	Prerequisite	Dept
MA101B	Calculus I A	4		4	Spr/Fall	B/E	NA	MATH
MA102B	Calculus II A	4		4	Spr/Fall	B/E	MA101B	
MA107B	Linear Algebra B	4		4	Spr/Fall	B/E	NA	
PHY103B	General Physics B (I)	4		4	Spr/Fall	B/E	NA	PHY
PHY105B	General Physics B (II)	4		4	Spr/Fall	B/E	PHY103B	
CH101A	General Chemistry A	4		4	Spr/Fall	B/E	NA	CHEM
CS102B	Introduction to Computer Programming B	3	1	4	Spr/Fall	B/E	NA	CSE
BIO102B	Introduction to Life Science	3		3	Spr/Fall	B/E	NA	BIO
PHY104B	Experiments of Fundamental Physics	2	2	4	Spr/Fall	B/E	NA	PHY
Total		32	3	35				

(II) Physical Education

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	Language Instruction	Prerequisite	Dept
GE131	Physical Education I	1		2	1/Fall		NA	PE Center
GE132	Physical Education II	1		2	1/Spr		NA	
GE231	Physical Education III	1		2	2/Fall		NA	
GE232	Physical Education IV	1		2	2/Spr		NA	
Total		4		8				

(III) Chinese Languages & Culture

Course Code	Course Name	Credit	Hours/week	Term	Language Instruction	Prerequisite	Dept
CLE008	Elementary Chinese I	2	4	1/Fall	B	NA	CLE
CLE009	Elementary Chinese II	2	4	1/Spr	B	CLE008	
CLE027	Intermediate Chinese I	2	4	2/Fall	B	CLE009	
CLE028	Intermediate Chinese II	2	4	2/Spr	B	CLE027	
CLE031	Advanced Chinese I	2	4	3/Fall	B	CLE028	
CLE032	Advanced Chinese II	2	4	3/Spr	B	CLE031	
CLE033	Chinese Culture	2	2	Spr/Fall	B/E	NA	CLE/ HUM/ SSC
CLE034	Chinese History	2	2	Spr/Fall	B/E	NA	

(IV) English Language

All students are required to undertake the English Placement Test before selecting courses, based on which students will be assigned to 3 levels to be ready for the courses with English as the instruction language.

SUSTech English III, English for Academic Purposes are required for Level A.

SUTech English II, SUSTech English III, English for Academic Purposes for Level B.

SUSTech English I, SUSTech English II, SUSTech English III, English for Academic for Level C.

Course Code	Course Name	Credit	Hours/week	Instruction Language	Prerequisite	Dept
CLE021	SUSTech English I	4	4	E	NA	CLE
CLE022	SUSTech English II	4	4	E	CLE021	
CLE023	SUSTech English III	4	4	E	CLE022	
CLE030	English for Academic Purposes	2	2	E	CLE023	

IX Requirements for of GE Elective Courses

Students are required to complete 4 credits for the Humanities Module and Social Sciences Module respectively, and 2 credits for the Music and Art Module. (Information about the available courses and the instruction language will be announced before the course selection session)

X. Major Course Arrangement

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

Category Course	Course Code	Course Name	Credits	Lab Credits	Hours/week	Terms	Advised term to take the course	language Instruction	Prerequisite	Dept.
Major Foundational Courses	CH102-17	General Chemistry Laboratory A	1.5	1.5	3	Spr	1/ Spr	B	CH101A	Chem.
	CH203	Organic Chemistry I	4		4	Spr	1/ Spr	B	CH101A	Chem.
	CH206	Organic Chemistry II	4		4	Fall	2/ Fall	B	CH203	Chem.
	CH208	Organic Chemistry Laboratory	2	2	4	Fall	2/ Fall	B	CH203, CH102-17	Chem.
	CH213	Inorganic Chemistry Fundamentals	3		3	Fall	2/ Fall	B	CH101A	Chem.
	CH205	Analytical Chemistry	4		4	Fall	2/ Fall	B	CH101A	Chem.
	CH207	Analytical Chemistry Laboratory	2	2	4	Fall	2/ Fall	B	CH205	Chem.
	CH214	Organometallics	3		3	Spr	2/ Spr	E	CH213	Chem.
	CH215	Coordination Chemistry	3		3	Spr	2/ Spr	E	CH213	Chem.
	CH204	Inorganic Chemistry Laboratory	2	2	4	Spr	2/ Spr	B	CH213, CH102-17	Chem.
	CH301	Physical Chemistry I	4		4	Fall	3/ Fall	B	MA102B, PHY105B , CH101A	Chem.
	CH303	Physical Chemistry Laboratory	2	2	4	Fall	3/ Fall	B	CH301	Chem.
	CH302	Physical Chemistry II	4		4	Spr	3/ Spr	B	CH301	Chem.
	Total		**38.5**	**9.5**	**48**					
Major Core Courses	CH305-1	Principle of Instrumental Analysis	2		2	Spr	2/ Spr	B	CH205, CH207	Chem.
	CH305-2	Practice of Instrumental Analysis	2	2	4	Spr	2/ Spr	C	CH305-1	Chem.
	CH403	Principle of Chemical Engineering	3		3	Spr/ Fall	4/ Fall	B	MA102B, PHY105B	Chem.
	Total		**7**	**2**	**9**					
Practical Major Courses	CH480	Projects of Science and Technology Innovation	8	8	8	Fall & Spr	3/ Fall & Spr			Chem.
	CH490	Degree Thesis (Design)	8	8	8	Fall & Spr	4/ Fall & Spr			Chem.
	Total		**16**	**16**	**16**					
Total			**61.5**	**27.5**	**73**					

Table 2: Major Elective Courses

Course Code	Course Name	Credits	Lab Credits	Hours/week	Terms	Advised term to take the course	language Instruction	Prerequisite	Dept.
CH210	Frontiers of Chemical Science	2		2	Spr	1/ Spr	B		Chem.
CH308-14	Supramolecular Chemistry	3		3	Fall	3/ Fall	B	CH206, CH301	Chem.
CH311	Modern Strategic Synthesis	3		3	Fall	3/ Fall	B	CH206, CH214, CH215	Chem.
CH313	Chemical Biology	3		3	Fall	3/ Fall	B	CH206	Chem.
CH315	Polymer Chemistry	3		3	Fall	3/ Fall	B	CH206	Chem.
CH317	Medicinal Chemistry	3		3	Fall	3/ Fall	C	CH206	Chem.
CH319	Advanced Inorganic Chemistry Laboratory	2	2	4	Fall	3/ Fall	B	CH214, CH215, CH204	Chem.
CH321	Polymer Chemistry Laboratory	1	1	2	Fall	3/ Fall	B	CH315	Chem.
CH324	Element-Organic Chemistry	2		2	Fall	3/ Fall	B	CH214, CH215	Chem.
CH329	Stereochemistry & Chiral Synthesis	3		3	Fall	3/ Fall	B	CH206	Chem.
CH304	Nanomaterials Synthesis and Nanotechnology	2		2	Spr	3/ Spr	E	CH214, CH215, CH301	Chem.
CH306	Laboratory for Micro-Nano Synthesis, Technology and Application	2	2	4	Spr	3/ Spr	B	CH214, CH215, CH301	Chem.
CH309	Advanced Organic Chemistry Laboratory	2	2	4	Spr	3/ Spr	B	CH206, CH208	Chem.
CH312	Organic Spectroscopy	2		2	Spr	3/ Spr	C	CH206	Chem.
CH316	Bioinorganic Chemistry	2		2	Spr	3/ Spr	E	CH101A	Chem.
CH320	Organic Name Reactions	2		2	Spr	3/ Spr	B	CH101A	Chem.
CH322	Advanced Mass Spectrometry Analysis	2	1	3	Spr	3/ Spr	B	CH205	Chem.
CH323	Natural Product Total Synthesis	2		2	Spr	3/ Spr	B	CH206	Chem.
CH212-16	Advanced Instrumentation Systems I	4	2	6	Spr	3/ Spr	E	CH101A	Chem.
CH307-13	Advanced Instrumentation Systems II	2	2	4	Fall	4/ Fall	E	CH212-16	Chem.
CH401	Computational Chemistry	3	1	4	Fall	4/ Fall	C	CH302	Chem.
CH409	Organic Optoelectronic Materials and Devices	4	1	5	Fall	4/ Fall	E	CH206	Chem.
CH410	Cosmetic Chemistry and Formula	3	1	4	Fall	4/ Fall	B	CH208	Chem.
CHEMS001	Frontiers of Chemical Science （Summer）	1		1	Smr	2/ Smr	B		Chem.
CHEMS002	General Chemistry Laboratory B	0.5	0.5	1	Smr	1/ Smr	B	CH102-17	Chem.
Total		**58.5**	**15.5**	**74**					

Table 3: Overview of Practice-Based Courses

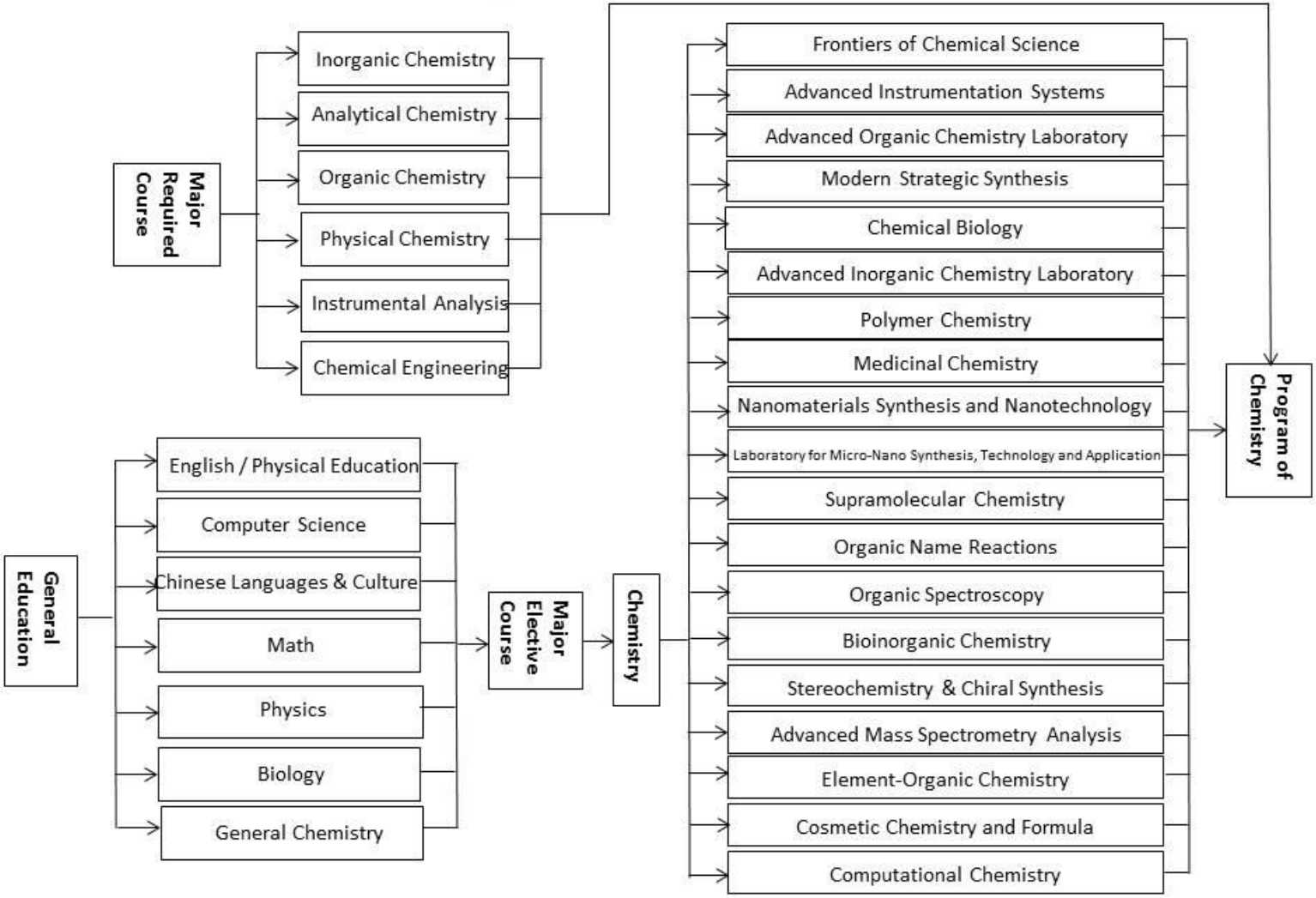
Course Code	Course Name	Credits	Lab Credits	Hours/week	Terms	Advised term to take the course	language Instruction	Prerequisite	Dept.
CH102-17	General Chemistry Laboratory A	1.5	1.5	3	Spr	1/ Spr	B	CH101A	Chem.
CHEMS002	General Chemistry Laboratory B	0.5	0.5	1	Smr	1/ Smr	B	CH102-17	Chem.
CH208	Organic Chemistry Laboratory	2	2	4	Fall	2/ Fall	B	CH203, CH102-17	Chem.
CH207	Analytical Chemistry Laboratory	2	2	4	Fall	2/ Fall	B	CH205	Chem.
CH204	Inorganic Chemistry Laboratory	2	2	4	Spr	2/ Spr	B	CH213, CH102-17	Chem.
CH305-2	Practice of Instrumental Analysis	2	2	4	Spr	2/ Spr	C	CH305-1	Chem.
CH303	Physical Chemistry Laboratory	2	2	4	Fall	3/ Fall	B	CH301	Chem.
CH319	Advanced Inorganic Chemistry Laboratory	2	2	4	Fall	3/ Fall	B	CH214, CH215, CH204	Chem.
CH321	Polymer Chemistry Laboratory	1	1	2	Fall	3/ Fall	B	CH315	Chem.
CH306	Laboratory for Micro-Nano Synthesis, Technology and Application	2	2	4	Spr	3/ Spr	E	CH214, CH215, CH301	Chem.
CH309	Advanced Organic Chemistry Laboratory	2	2	4	Spr	3/ Spr	B	CH206, CH208	Chem.
CH322	Advanced Mass Spectrometry Analysis	2	1	3	Spr	3/ Spr	B	CH205	Chem.
CH212-16	Advanced Instrumentation Systems I	4	2	6	Spr	3/ Spr	E	CH101A	Chem.
CH307-13	Advanced Instrumentation Systems II	2	2	4	Fall	4/ Fall	E	CH212-16	Chem.
CH401	Computational Chemistry	3	1	4	Fall	4/ Fall	C	CH302	Chem.
CH409	Organic Optoelectronic Materials and Devices	4	1	5	Fall	4/ Fall	E	CH206	Chem.
CH410	Cosmetic Chemistry and Formula	3	1	4	Fall	4/ Fall	B	CH208	Chem.
CH480	Projects of Science and Technology Innovation	8	8	8	Fall & Spr	3/ Fall & Spr			Chem.
CH490	Degree Thesis (Design)	8	8	8	Fall & Spr	4/ Fall & Spr			Chem.
Total		**53**	**43**	**80**					

Table 4: Overview of Course Hours and Credits

Course Category	Total Course Hours	Total Credits	Credit Requirements	Percentage of the Total*
General Education (GE) Required Courses (not including English courses)		52	52	38%
General Education (GE) Elective Courses			10	7%
Major Foundational Courses	768	38.5	38.5	29%
Major Core Courses	144	7	7	5%
Major Elective Courses	1184	58.5	12	9%
Research Projects, Internship and Undergraduate Thesis/Projects	512	16	16	12%
Total (not including English courses)			135.5	100%

* Percentage of the total= Credit requirements of each line / Total credit requirements

Curriculum Structure of Chemistry



Recommended Plan for Courses Selection of Chemistry Program (not including English courses)

	First Year	Credits	Second Year	Credits	Third Year	Credits	Fourth Year	Credits
Fall	General Chemistry A	4	Organic Chemistry II	4	Physical Chemistry I	4	Principle of Chemical Engineering	3
	Calculus I A	4	Organic Chemistry Laboratory	2	Physical Chemistry Laboratory	2	Major Elective Courses	2
	Linear Algebra B	4	Analytical Chemistry	4	Major Elective Courses	5	GE Elective Courses	2
	General Physics B (I)	4	Analytical Chemistry Laboratory	2	Advanced Chinese I	2	Degree Thesis (Design) (1 year)	
	Physical Education I	1	Inorganic Chemistry Fundamentals	3	GE Elective Courses	4		
	Elementary Chinese I	2	Physical Education III	1	Projects of Science and Technology Innovation (1 year)			
			Intermediate Chinese I	2				
			Introduction to Computer Programming B	3				
	Total	19	Total	21	Total	17	Total	7
Spring	General Chemistry Laboratory A	1.5	Organometallics	3	Physical Chemistry II	4	Degree Thesis (Design) (1 year)	
	Organic Chemistry I	4	Coordination Chemistry	3	Major Elective Courses	5		
	Calculus II A	4	Inorganic Chemistry Laboratory	2	Advanced Chinese II	2		
	General Physics B (II)	4	Principle of Instrumental Analysis	2	Chinese Hirtory	2		
	Experiments of Fundamental Physics	2	Practice of Instrumental Analysis	2	GE Elective Courses	4		
	Physical Education II	1	Physical Education IV	1	Projects of Science and Technology Innovation (1 year)			
	Elementary Chinese II	2	Intermediate Chinese II	2				
			Chinese Culture	2				
			Introduction to Life Science	3				
	Total	18.5	Total	20	Total	17		
Summer								
	Total		Total		Total		Total	