Course List and Graduation Requirements for International Programs, Chemistry Program – School of Science (for Undergraduates Enrolled in October 2018)

Course Category			Course	*Notes (Offered Academic Year)	Term	Credits				
						No of Credits	Compulsory	Compulsory Elective	Elective	Minimum Requirement
Liberal Arts and Sciences Courses	Basic General Education Courses	First Year Seminar	First Year Seminar A		I	2	2			2
		Language and Culture	Japanese/Languages except English		I, II	12	12			12
		Health and Sports Science	Health and Sports Science: Lecture		I	2	2			4
			Health and Sports Science: Practicum I		II	1	1			
			Health and Sports Science: Practicum II		III	1	1			
		Partial Sum					18			18
	*2 Basic Courses in Humanities and Social Sciences		History	*1 AY2020	TBD	2			2	6
			Literature	*1	II	2			2	
			Comparative Studies of Cultures	*1	I	2			2	
	*2 Liberal Education Courses in Humanities and Social Sciences		Introduction to Cultural Studies	*1 AY2020	TBD	2			2	
			Culture and Representation	*1 AY2020	TBD	2			2	
			Past and Present of Democracy	*1	I	2			2	
			International Society of Globalization Age	*1 AY2019	I	2			2	
	Liberal Education Courses in Natural Sciences		Biotechnology		I	2			2	4
			Modern Biology		II	2			2	
			Science of Materials		III	2			2	
	*2 Liberal Education Courses in Interdisciplinary Fields		Exploration of Japan: From the Outside Looking Inside		II	2			2	consisting of 2 credits from LECNS. see 10page 1(3)
			Introduction to Career Development Theory		I	2			2	
			Preparedness for Imminent Natural Disasters		III	2			2	
			Thinking about Japanese Society in the 21st Century from Gender Perspectives		I	2			2	
			Special Lecture (Studium Generale)		I・II	2			2	
			Special Lecture (Go in Japanese Culture)		III	2			2	
	Basic Courses in Natural Sciences		Calculus I		I	2			2	18
			Calculus II		II	2			2	
			Linear Algebra I		I	2			2	
			Linear Algebra II		II	2			2	
			Complex Analysis		III	2			2	
			Fundamentals of Physics I		I	2			2	
			Fundamentals of Physics II		I	2			2	
			Fundamentals of Physics III		II	2			2	
			Fundamentals of Physics IV		II	2			2	
			Fundamentals of Chemistry I		I	2			2	
			Fundamentals of Chemistry II		II	2			2	
			Fundamentals of Biology I		I	2			2	
			Fundamentals of Biology II		II	2			2	
			Fundamentals of Earth Science I		I	2			2	
			Fundamentals of Earth Science II		II	2			2	
			Laboratory in Physics		III	1.5			1.5	1.5
			Laboratory in Chemistry		II	1.5			1.5	
			Laboratory in Biology		II	1.5			1.5	
	Sum for Liberal Arts and Sciences Courses						18	0	29.5	47.5
Courses in Specialized Fields	Basic Specialized Courses	Compulsory Courses ①	Chemistry Seminar I		IV	2	2			4
			Chemistry Seminar II		III	2	2			
		Compulsory Elective Courses ②	Analytical Chemistry		III	2		2		28
			Inorganic Chemistry I		IV	2		2		
			Inorganic Chemistry II		V	2		2		
			Inorganic Chemistry III		VI	2		2		
			Organic Chemistry I		III	2		2		
			Organic Chemistry II		IV	2		2		
			Organic Chemistry III		V	2		2		
			Physical Chemistry I		III	2		2		
			Physical Chemistry II		IV	2		2		
			Quantum Chemistry I		IV	2		2		
			Quantum Chemistry II		V	2		2		
			Quantum Chemistry III		VI	2		2		
			Biochemistry I		III	2		2		
			Biochemistry II		IV	2		2		
			Chemistry of Inorganic Materials I		V	2		2		
			Chemistry of Inorganic Materials II		VI	2		2		
			Mathematical Physics I		III	2		2		
			Mathematical Physics Tutorial I		III	1		1		
		Elective Courses ③	Mathematics Tutorial Ia		I	1			1	8
			Mathematics Tutorial Ib		I	1			1	
			Mathematics Tutorial IIa		II	1			1	
			Mathematics Tutorial IIb		II	1			1	
			Fundamental Physics Tutorial Ia		I	1			1	
			Fundamental Physics Tutorial Ib		I	1			1	
			Fundamental Physics Tutorial II a		II	1			1	
			Fundamental Physics Tutorial II b		II	1			1	
			Cell Biology I		III	2			2	
			Cell Biology II		III	2			2	
			Statistical Physics Ⅰ(Thermodynamics)		III	2			2	
			Analytical Mechanics I		III	2			2	
			Electricity and Magnetism		IV	2			2	
			Earth and Planetary Science		V	2			2	
			Environmental Earth Science		VI	2			2	
		Partial Sum					4	28	8	40
	Specialized Courses	Compulsory Courses ④	Chemistry Laboratory		V, VI	17	17			37
			Graduation Research		VII, VIII	20	20			
		Elective Courses ⑤	Organic Chemistry IV		VI	2			2	7
			Organic Chemistry V		V	2			2	
			Polymer Chemistry		V	2			2	
			Computational Chemistry		V	2			2	
			Current Organic and Polymer Chemistry		VI	2			2	
			Biochemistry IV		VI	2			2	
			Cell Biology IV		VI	2			2	
			Chemical Physics		V	2			2	
			Biophysics		IV	2			2	
			Structural Chemistry		V	2			2	
		Partial Sum					37	0	7	44
	Sum for Courses in Specialized Fields						41	28	15	84
Total Sum							**59**	**28**	**44.5**	**131.5**

(Important) Please confirm the prerequisite for each subject with the syllabus.

*1 Some of the courses on this column are offered in every other year. Please confirm the offering term with the "Liberal Arts and Sciences Class Timetable-Table B" of the said year. Please refer to the detail of the Term on the page 1 of 'Student Handbook'.

*2 Offering term of the courses in this column may be subject to change.

Graduation Requirements for International Programs, Chemistry Program – School of Science (for Undergraduate)

1. Liberal Arts and Sciences Courses: A combined total of at least 47.5credits must be acquired.

(1) Basic General Education Courses:
A total of at least 18 credits must be acquired, consisting of 2 credits from first year seminar A, 12 credits from Japanese/Languages except English, 2 credits of Health and Sports Science: Lecture and at least 2 credits from Health and Sports Science: Practicum courses.

(2) Basic Courses in Humanities and Social Sciences and Liberal Education Courses in Humanities and Social Sciences:
A total of at least 6 elective course credits must be acquired from these two Courses Categories.

(3) Liberal Education Courses in Natural Sciences and Liberal Education Courses in Interdisciplinary Fields:
A total of at least 4 elective course credits must be acquired from these two Course Categories, consisting of 2credits from Liberal Education Courses in Natural Sciences.

(4) Basic Courses in Natural Sciences:
A total of at least 19.5 credits must be acquired, consisting of 18 course credits from this category of fundamental science courses except three Laboratory courses and at least 1.5 course credits from the three Laboratory Courses.

2. Courses in Specialized Fields: A combined total of at least 84 course credits must be acquired from these course categories.

(1) Compulsory Courses: A total of 41 compulsory course credits must be acquired, consisting of a total of 37 from Compulsory Specialized Courses ④ and that of 4 compulsory course credits from Compulsory Basic Specialized Courses ①.

(2) Compulsory Elective Courses: A total of at least 28 course credits must be acquired from Compulsory Elective Courses ②.

(3) Elective Courses: A total of at least 15 course credits must be acquired from Elective Courses ③ and ⑤, consisting of a total of at least 8 course credits from Elective Basic Specialized Courses ③ and a total of at least 7 course credits from Elective Specialized Courses ⑤.

(4) If a total of compulsory elective course credits acquired from ② is larger than 28 credits, a maximum of 4 credits out of the exceeding credits can be included in the acquired credits of Elective Specialized Courses ⑤.

Requirements for Advancement for International Programs, Chemistry Program - School of Science (for Undergraduate)

Time the Judgment is made	Course Categories and Required Number of Credits	Students unable to advance to the next year
At the End of the First Grade	A total of a minimum of 20 course credits must be acquired at the end of the first grade.	1. Remain in the first year. 2. Must take no longer than 5 years to complete their first year. [Duration of enrollment (8 years)] minus [second to forth years(3 years)] 3. Students unable to advance to the next year within the 5-year limit stated in 2. above will be expelled from the school.