

**Course List and Graduation Requirements for International Programs,
Fundamental and Applied Physics 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		
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		
	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		
*2 Liberal Education Courses in Humanities and Social Sciences	International Society of Globalization Age	*1 AY2019	I		2			2		
	Science of Materials		III		2			2		
	Modern Biology		II		2			2		
Liberal Education Courses in Natural Sciences	Biotechnology		I		2			2		
	Exploration of Japan: From the Outside Looking Inside		II		2			2		
	Introduction to Career Development Theory		I		2			2		
	Preparedness for Imminent Natural Disasters		III		2			2		
*2 Liberal Education Courses in Interdisciplinary Fields	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		
	Calculus I		I		2		2	6		
	Calculus II		II		2		2			
Linear Algebra I		I		2		2				
Linear Algebra II		II		2		2				
Complex Analysis		III		2		2				
Basic Courses in Natural Sciences	Fundamentals of Physics I		I		2	2		8		
	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	6		
	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	1.5		
	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						26	6	17.5	49.5
Basic Specialized Course	Compulsory Courses ①		Fundamental Physics Tutorial Ia	I	1	1			22.5	
			Fundamental Physics Tutorial Ib	I	1	1				
			Mathematical Physics I	III	2	2				
			Mathematical Physics II	III	2	2				
			Mathematical Physics Tutorial I	III	1	1				
			Mathematical Physics Tutorial II	III	1	1				
			Analytical Mechanics I	III	2	2				
			Statistical Physics I (Thermodynamics)	III	2	2				
			Physics Tutorial Ia	III	0.5	0.5				
			Physics Tutorial Ib	III	0.5	0.5				
			Electricity and Magnetism	IV	2	2				
			Quantum Mechanics I	IV	2	2				
			Analytical Mechanics II	IV	2	2				
			Physics Tutorial IIa	IV	1	1				
		Physics Tutorial IIb	IV	1	1					
		Physics Tutorial IIc	IV	1.5	1.5					
		Partial Sum					22.5	0	0	22.5
	Elective Courses ②			Mathematics Tutorial Ia	I	1			1	[23]
			Mathematics Tutorial Ib	I	1			1		
			Mathematics Tutorial IIa	II	1			1		
			Mathematics Tutorial IIb	II	1			1		
			Fundamental Physics Tutorial II a	II	1			1		
			Fundamental Physics Tutorial II b	II	1			1		
Elective Courses ③			Physical Chemistry I	III	2			2	(~8)	
			Earth and Planetary Science	V	2			2		
Sum						22.5	0	[20.5]	[43]	
Courses in Specialized Fields	Compulsory Courses ④		Quantum Mechanics II	V	2	2			14	
			Statistical Physics II	V	2	2				
			Physics Tutorial IIIa	V	1	1				
			Physics Tutorial IIIb	V	1	1				
			Physics Laboratory I	V	4	4				
		Physics Laboratory II	VI	4	4					
	Compulsory Elective Courses ⑤			Physics Seminar I		4		4		24
				Physics Seminar II		4		4		
				Physics Seminar III		4		4		
				Physics Seminar IV		4		4		
				Physics Seminar V		4		4		
				Physics Seminar VI		4		4		
				Graduation Research-Theoretical studies	VII, VIII	16		16		
			Graduation Research-Experiments	VII, VIII	20		20			
Specialized Course	Elective Courses ⑥		Mechanics of Continuous Media	IV	2			2	[23]	
			Biophysics	IV	2			2		
			Astrophysics	IV	2			2		
			Optics	VI	2			2		
			Condensed Matter Physics I	V	2			2		
			Particle Physics	V	2			2		
			Chemical Physics	V	2			2		
			Statistical Physics III	VI	2			2		
			Physics Tutorial IVa	VI	0.5			0.5		
			Physics Tutorial IVb	VI	0.5			0.5		
			Quantum Mechanics III	VI	2			2		
			Condensed Matter Physics II	VI	2			2		
	Condensed Matter Physics III	VII	2			2				
Elective Courses ⑦			Computer Software I	I	2			2	(~8)	
			Computer Software II	II	2			2		
			Fluid Mechanics and Tutorial	IV	2.5			2.5		
			Computational Chemistry	V	2			2		
			Scientific Measurements	V	2			2		
Sum						14	24	[23]	[61]	
Sum for Courses in Specialized Fields						36.5	24	23	83.5	
Total Sum						62.5	30	40.5	133	

(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,
Fundamental and Applied Physics Program – School of Science (for Undergraduate)**

<p>1. Liberal Arts and Sciences Courses: A combined total of at least 49.5 credits must be acquired.</p> <p>(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.</p> <p>(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.</p> <p>(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.</p> <p>(4) Basic Courses in Natural Sciences: A total of at least 21.5 credits must be acquired, consisting of 8 compulsory course credits from four Fundamentals of Physics courses and a total of at least 13.5 course credits from the remaining Basic Courses in Natural Sciences, which should include a total of at least 6 compulsory elective course credits from 5 Fundamental Mathematics courses, at least 1.5 course credit from three Laboratory courses, and a total of at least 6 course credits from six elective courses, i.e. Fundamentals of Chemistry I and II, Fundamentals of Biology I and II, and Fundamentals of Earth Science I and II.</p> <p>2. Courses in Specialized Fields: A combined total of at least 83.5 course credits must be acquired from these course categories.</p> <p>(1) Compulsory Courses: A total of at least 14 course credits must be acquired from Compulsory Specialized Courses ④, and that of at least 22.5 course credits must be acquired from Basic Specialized Courses ①.</p> <p>(2) Compulsory Elective Courses: A total of at least 24 course credits must be acquired from Compulsory Elective Courses ⑤.</p> <p>(3) Elective Courses: A total of at least 23 course credits must be acquired from Elective Courses ② and ⑥. However a total of at most 8 elective course credits from Elective Courses ③ and ⑦ may be included in the total number of 23 elective course credits.</p>

**Requirements for Advancement for International Programs,
Fundamental and Applied Physics 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.