

**Course List and Graduation Requirements for International Programs,
Fundamental and Applied Physics Program – School of Science (for Undergraduates Enrolled in October 2019)**

Course Category □	Course	Term	Credits				Minimum Requirement			
			No of Credits	Compulsory	Compulsory Elective	Elective				
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			2
			Health and Sports Science: Practicum I		II	1	1			2
			Health and Sports Science: Practicum II		III	1	1			2
		Partial Sum				18			18	
	Basic Courses in Humanities and Social Sciences ★	History		II	2			2	6	
		Literature		I	2			2		
		Comparative Studies of Cultures		2020-I	2			2		
		Introduction to Cultural Studies		II	2			2		
		Culture and Representation		II	2			2		
	Liberal Education Courses in Humanities and Social Sciences ★	Past and Present of Democracy		2020-I	2			2		
		International Society of Globalization Age		I	2			2		
	Liberal Education Courses in Natural Sciences	Biotechnology		I	2			2	4 consisting of 2 credits from LECNS. see 6page 1(3)	
		Modern Biology		II	2			2		
		Science of Materials		III	2			2		
	Liberal Education Courses in Interdisciplinary Fields ★	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		
		Thinking about Japanese Society in the 21st Century from Gender Perspectives		I	2			2		
		Special Lecture (Studium Generale I)		I	2			2		
		Special Lecture (Studium Generale II)		II	2			2		
		Special Lecture (Go in Japanese Culture)		III	1			1		
	Special Lecture (Summer Camp for General Academic Skills)		IV	2			2			
	Basic Courses in Natural Sciences	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			
		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				
	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		
Courses in Specialized Fields	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]	
	Specialized Courses	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					
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	IV	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		

• Confirm the prerequisite for each subject with the syllabus.

• Refer to the detail of the Term on the page 4 of "AY2019 Liberal Arts and Sciences Course Registration Guide for International Programs Students"

★ Some of the courses on this column are offered in every other year. Confirm the offering term with the "Liberal Arts and Sciences Class Timetable" of the said year.

**Graduation Requirements for International Programs,
Fundamental and Applied Physics Program – School of Science (for Undergraduate)**

- 1. Liberal Arts and Sciences Courses: A combined total of at least 49.5 credits 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 2 credits from Liberal Education Courses in Natural Sciences.
- (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.
- 2. Courses in Specialized Fields: A combined total of at least 83.5 course credits must be acquired from these course categories.**
- (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.
- (2) Compulsory Elective Courses:
A total of at least 24 course credits must be acquired from Compulsory Elective Courses ⑤.
- (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.

**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.