
Table of Registration Standards for Earth and Planetary Systems Science Program(Entrants of 2022)

Refer to Study Guidance for the Earth and Planetary Systems Science Program for requirements for attending the course.

Students are allowed to take class subjects provided in other programs and schools, and in other universities, in addition to the class subjects listed in this table, and the credit for those subjects that the faculty committee of the Earth and Planetary Systems Science Program certifies is accepted as the required credit for graduation.

* Students who have earned the required credits (refer to the Students Handbook for the details) can acquire the type 1 license for junior high school teacher (science), the type 1 license for senior high school teacher (science), the certification for assistant registered surveyor, and the curator license.

(Liberal Arts Education)

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Liberal Arts Education Subjects	Basic Courses in University	Peace Science Courses		2	From "Peace Science Courses"		Each 2	Elective/required	○								
		Introduction to University Education		2	Introduction to University Education		2	Required	②								
		Introductory Seminar for First-Year Students		2	Introductory Seminar for First-Year Students		2	Required	②								
	Common Subjects	Area Courses		8	From "Area Courses" (Note 2)		1or2	Elective/required	○	○	○	○					
		English (Note 3)	Basic English Usage	8	2	Basic English Usage I		1	Required	①							
					Basic English Usage II		1			①							
			Communication I		2	Communication IA		1	Required	①							
					Communication IB		1	①									
			Communication II		2	Communication IIA		1	Required		①						
					Communication IIB		1			①							
			Non-English Foreign Languages (Select one language from German, French, Spanish, Russian, Chinese, Korean, and Arabic)		2	Foreign Languages: Basic Studies I		1	Elective/required	○							
						Foreign Languages: Basic Studies II		1	Elective/required	○							
						I and II must be the same language											
		Information and Data Science Courses		4	2	Introduction to Information and Data Sciences		2	Required	②							
					2	Ground zero programming		2	Elective/required		○						
					2	Fundamental Date Science		2			○						
		Health and Sports Courses (Note 4)		(0)	From "Health and Sports Courses"		1or2	Free elective	○	○							
		Social Cooperation Courses (Note 5)		(0)	From "Social Cooperation Courses"		1or2	Free elective	○	○							
	Foundation Courses		4	Calculus I		2	Elective/required	○									
				Calculus II		2			○								
				Linear Algebra I		2		○									
				Linear Algebra II		2			○								
				2 subjects (4 credits) from the four subjects above													
			4	Experimental Methods and Laboratory Work in Physics I		1	Elective/required		○								
				Experimental Methods and Laboratory Work in Physics II		1			○								
				Experimental Methods and Laboratory Work in Chemistry I		1				○							
				Experimental Methods and Laboratory Work in Chemistry II		1				○							
				Experimental Methods and Laboratory Work in Biology I		1			○								
Experimental Methods and Laboratory Work in Biology II				1		○											
Experimental Methods and Laboratory Work in Earth Sciences I				1	○												
Experimental Methods and Laboratory Work in Earth Sciences II				1	○												
I and II of the same subject (4 credits) from the 8 subjects above																	
Total (Liberal Arts Education Subjects)		34															

(Note 1) The indicated semester represents that in which students typically take the subject. It is permitted to take the subject in the same (first or second) semester in the following year, however, it is required to confirm the details in syllabus for that academic year, because the subject might be provided in a different semester or term.

(Note 2) It is required to earn 4 credits in "Human & Social Science Subjects" and 4 credits in "Natural Science Subjects". Students who want to acquire an educational personnel certification must take the subject "Japanese Constitution" in the "Human & Social Science Subjects".

Credits earned through the subject "Advanced English for Communication", "Foreign Languages: Intensive Studies" and "Overseas Language Seminar (German, French, Spanish, Russian, Chinese, and Korean)" in "Foreign Languages" are accepted as the credits required for "Human & Social Science Subjects".

(Note 3) The credit for "Field Research in the English-speaking World" that is earned through such activities as a short-term study abroad, and that for "Online English Seminar A" and "Online English Seminar B", that is earned through self-study, are accepted as the credit for the subject "Communication I and II".

Achievement in a foreign language skill test might also be accepted as credit. For the details, refer to the description of English subjects in Liberal Arts Education and the item "Credit based on Achievement in Foreign Language Skill Tests" in the Student Handbook.

(Note 4) The credit of the subject "Health and Sports Courses" is accepted as credit for the category of "Any subject".

(Note 5) The credit of the subject "Social Cooperation Courses" is accepted as credit for the category of "Any subject".

* Note for the "Specialized Education Subjects" listed in the next page and after

(Note 6) Only for foreign students, if credits are acquired in any subjects taught in English by any other programs of other faculties (including those of Liberal Arts Education Subjects) after proper course registration, then among these the successfully acquired credits of the registered subjects which are accepted by the faculty committee of the Earth and Planetary Systems Sciences can be included as the required credit units for the graduation.

(Note 7) To achieve the 84 credits required for the "Specialized Subjects", it is required to earn 8 or more credits for elective required subjects and free elective subjects, as well as 52 credits for required subjects and 24 credits for elective required subjects.

(Note 8) To attend the subject "Special Study for Graduation", it is required to earn 108 or more credits of the 128 credits required for graduation, including "Practice of Earth and Planetary Systems Science A (Field Work)" and "Practice of Earth and Planetary Systems Science B (Field Work)".

(Note 9) The class of the subject "Surveying" is provided biannually.

(Note 10) The classes of "Special Lectures in Earth and Planetary Systems Science" are provided as an integrated course within a certain period of time (after the 5th semester).

(Note 11) Because 128 credits are required for graduation, it is required to earn 10 or more credits regardless of the categorization of Liberal Arts Education Subjects and Specialized Education Subjects, in addition to the required credits for each subject category (118 credits in total that consist of 34 credits for Liberal Arts Education Subjects and 84 credits for Specialized Education Subjects).

However, the credit for the subjects described below is not accepted as the required credit for graduation: For the details of subjects related to educational personnel certification, refer to the list of required credits in "Acquisition of Educational Personnel Certification" in the Student Handbook.

- Any credit that exceeds 8 credits for "Area Courses"
- Any credit for subjects only related to educational personnel certification
- Credits for "Experiments in General Physics A", "Experiments in Chemistry A", "Laboratory Work in Biology A" and "Experiments in General Geology A"
- "Specialized fundamental subjects" and "Specialized Subjects" provided in another program in another school (except those that are admitted by the faculty committee of Earth and Planetary Systems Science Program)

(Specialized Education)

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Specialized Education Subjects (Note 6)	Basic Specialized Subjects	19	Introduction to Physics A	2	Required	②											
			Introduction to Chemistry A	2		②											
			Introduction to Biological Sciences A	2		②											
			Introduction to Earth and Planetary Sciences A	2		②											
			Field Excursion for Earth Science A	1		①											
			Tectonics of the Earth	2			②										
			Introduction to Earth and Planetary Sciences B	2			②										
			Basics of Earth and Planetary Materials Science	2				②									
			Geologic Mapping	2					②								
			English for Earth and Planetary Sciences I	2					②								
		2 or more	Introduction to Mathematics	2	Elective/required	○											
			Introduction to Information Mathematics	2			○										
			Introduction to Physics B	2			○										
			Introduction to Chemistry B	2			○										
			Introduction to Biological Sciences B	2			○										
			At least 1 subject (2 credits) from the five subjects above														
		(Note 7)	33	Sedimentology and Paleontology I	2	Required			②								
				Physics of Earth and Planetary Interiors I	2				②								
				Solid Geochemistry I	2				②								
				Optical crystallography laboratory	1				①								
	Practice for Basics of Earth and Planetary Materials Science			1				①									
	Physics of Earth and Planetary Interiors II			2					②								
	Earth and Planetary Materials Science I			2					②								
	Petrology			2					②								
	Petrology laboratory			1					①								
	Practice for Earth and Planetary Materials Science I			1					①								
	Field Excursion for Earth Science B			1					①								
	English for Earth and Planetary Sciences II			2						②							
	Practice of Earth and Planetary Systems Science A (Field Work)			4						④							
	Practice of Earth and Planetary Systems Science B (Field Work)			2						②							
	Special Study for Graduation (Note 8)			Each 4							④	④					
	2 or more			Advanced Mathematics	2		Elective/required					○					
				Advanced Physics	2						○						
				Advanced Chemistry	2							○					
				Advanced Biology	2							○					
				Advanced Earth and Planetary Science	2							○					
			At least 1 subject (2credits) from the five subjects above														
	20 or more		Astrobiology	2	Elective/required					○							
			Earth and Planetary Materials Science II	2					○								
			Sedimentology and Paleontology II	2					○								
			Exercise of Astronomy & Planetary Science	1					○								
			Physics of Earth and Planetary Interiors A	2						○							
			Solid Geochemistry II	2						○							
			Practice for Earth and Planetary Materials Science II	1						○							
			Material evolution in the solar system	2						○							
			Mathematical and numerical methods in the physics of Earth and Planetary Interiors A	1						○							
			Rock Deformation I	2						○							
			Physics of Earth and Planetary Interiors B	2							○						
			Cosmochemistry and Geochemistry	2							○						
			Rock Deformation II	2							○						
			Mathematical and numerical methods in the physics of Earth and Planetary Interiors B	1							○						
			Special Lectures in Earth and Planetary Systems Science (Note 10)							○	○	○	○				
			Surveying (Note 9)	2						← ○ →							
			Geochemistry and Geophysics Internship	1					○								
			Basic Specialized Subjects and *Specialized Subjects* offered by other programs of School of Science					○	○	○	○	○	○	○	○		
			Any subject			10	(Note 11)			○	○	○	○	○	○	○	○
			Total			128											

Academic achievements of Earth and Planetary Systems Science Program

Relationships between the evaluation items and evaluation criteria

Academic achievements			Evaluation criteria		
Evaluation items			Excellent	Very Good	Good
Knowledge and Understanding	(1)	To acquire knowledge and understanding about the origin and development of the solar system and the earth.	To be able to very thoroughly understand technical knowledge about the birth and development of the solar system and the earth.	To be able to thoroughly understand technical knowledge about the birth and development of the solar system and the earth.	To be able to understand technical knowledge about the birth and development of the solar system and the earth.
	(2)	To acquire understanding and technical knowledge about earthquake phenomena and the earth's internal structure.	To be able to very thoroughly understand technical knowledge about earthquake phenomena and the earth's internal structure.	To be able to thoroughly understand technical knowledge about earthquake phenomena and the earth's internal structure.	To be able to understand technical knowledge about earthquake phenomena and the earth's internal structure.
	(3)	To acquire understanding and technical knowledge about the progress of Earth surface environment and biosphere.	To be able to thoroughly understand technical knowledge about the progress of supracrustal environment and biosphere.	To be able to understand technical knowledge about the progress of the supracrustal environment and biosphere.	To be able to understand technical knowledge about the progress of the supracrustal environment and biosphere.
	(4)	Being able to collect materials by basic ways. Being able to find issues from specific phenomena and explain them. Being able to make clearly arguable discussion and effective presentation.	Being able to collect materials by basic ways, find issues from specific phenomena and explain them and to make clearly arguable discussion and effective presentation very superbly.	Being able to collect materials by basic ways, find issues from specific phenomena and explain them and to make clearly arguable discussion and effective presentation superbly.	Being able to collect materials by basic ways, find issues from specific phenomena and explain them and to make clearly arguable discussion and effective presentation.
	(5)	To be able to express opinions by thinking of peace from multiple perspectives, including understanding various causes and complex aspects which hinder the realization of peace, as well as conflicts between ideal and reality. Also, to be able to explain one's knowledge.	To be able to express opinions by thinking of peace from multiple perspectives, including understanding various causes and complex aspects which hinder the realization of peace, as well as conflicts between ideal and reality. Also, to be able to explain one's knowl	To be able to express opinions by thinking of peace from	
			multiple perspectives, including understanding various causes and complex aspects which hinder the realization of peace, as well as conflicts between ideal and reality.		
			multiple perspectives, including understanding various causes and complex aspects which hinder the realization of peace, as well as conflicts between ideal and reality.		
To be able to explain historical or modern issues that human and society face (social structure and the way science should be, significance of intellectual activities, and significance of multicultural relations and coexistence with nature) from multiple perspective in a good way.			To be able to explain historical or modern issues that human and society face (social structure and the way science should be, significance of intellectual activities, and significance of multicultural relations and coexistence with nature) from multiple perspective.		

historical or modern issues that human and society face (social structure and the way science should be, significance of intellectual activities, and significance of multicultural relations and coexistence with nature) from multiple perspective.

of construction and development of each academic discipline and very explain the relationship between each academic discipline and culture and society.

Being able to explain the process of construction and development of each academic discipline and explain the relationship between each academic discipline and culture and society.

Academic achievements			Evaluation criteria			
Evaluation items			Excellent	Very Good	Good	
Abilities and Skills	(1)	To acquire the ability to apply and develop the basic knowledge of earth and planetary science by organizing it.	To be able to very thoroughly acquire the ability to apply and develop basic knowledge of earth and planetary science by organizing it.	To be able to thoroughly acquire the ability to apply and develop the basic knowledge of earth and planetary science by organizing it.	To be able to acquire the ability to apply and develop basic knowledge of earth and planetary science by organizing it.	
	(2)	Reading related papers and acquiring the ability of understanding the contents. Verbal or written regular/daily communication can be carried out using foreign languages. Understand different languages and cultures by using multiple foreign languages.	Being able to read related papers and acquire the ability of understanding the contents very well. Verbal or written regular/daily communication can be carried out using foreign languages. Understand different languages and cultures by using multiple foreign languages.	Being able to read related papers and acquire the ability of understanding the contents well. Verbal or written regular/daily communication can be carried out using foreign languages. Understand different languages and cultures by using multiple foreign languages.	Being able to read related papers and acquire the ability of understanding the contents. Verbal or written regular/daily communication can be carried out using foreign languages. Understand different languages and cultures by using multiple foreign languages.	
	(3)	Being able to understand, learn and explain logical framework and system of basic studying according to each subject and necessary knowledge and skills for constructing learning.	Being able to understand, learn and very superbly explain logical framework and system of basic studying according to each subject and necessary knowledge and skills for constructing learning.	Being able to understand, learn and fully explain logical framework and system of basic studying according to each subject and necessary knowledge and skills for constructing learning.	Being able to understand, learn and explain logical framework and system of basic studying according to each subject and necessary knowledge and skills for constructing learning.	
	(4)	Learn field research method and acquire results and acquire ability of making a presentation	Learn field research method and being able to summarize results and extremely acquire ability of making a presentation	Learning field research method and being able to summarize results and sufficiently acquire ability of making a presentation	Learn field research method and being able to summarize results and acquire ability of making a presentation	
	(5)	To be able to learn to practice methods of presenting, collecting, examining, and analyzing geosciences data.	To be able to very thoroughly learn and practice methods of proposal, collection, examining and analysis concerning geosciences data.	To be able to thoroughly learn and practice methods of proposal, collection, examining and analysis concerning geosciences data.	To be able to learn and practice methods of presenting, collecting, examining, and analyzing geosciences data.	
	(6)	To understand and explain the moral and social issues needed to utilize information. Also, to learn basic knowledge, skills, and attitudes pertaining to information.	To understand the moral and social issues needed to utilize information. Also, to learn basic skills, knowledge, and attitudes related to information. In addition, based on these, to be able to process, input, and output information fairly appropriately.	To understand the moral and social issues needed to utilize information. Also, to learn basic skills, knowledge, and attitudes related to information. In addition, based on these, to be able to process, input, and output information fairly appropriately.	To understand the moral and social issues needed to utilize information. Also, to learn basic skills, knowledge, and attitudes related to information. In addition, based on these, to be able to process, input, and output information fairly appropriately.	
	(7)	To be able to scientifically explain the need for fitness and health promotion. Also, through practice of sports, to be able to understand and explain the significance of practicing sports for life and the importance of an appropriate attitude and sense of collaboration.	Through practice of sports, to be able to very thoroughly understand and scientifically explain the need for fitness and health promotion, the significance of practicing physical exercises for life, and the importance of an appropriate attitude and sense of collaboration.	Through practice of sports, to be able to thoroughly understand and scientifically explain the need for fitness and health promotion, the significance of practicing physical exercises for life, and the importance of an appropriate attitude and sense of collaboration.	Through practice of sports, to be able to understand and scientifically explain the need for fitness and health promotion, the significance of practicing physical exercises for life, and the importance of an appropriate attitude and sense of collaboration.	
Comprehensive Abilities	(1)	Acquire the ability and skills of setting team themes.	Being able to acquire superbly the ability and skills of setting team themes.	Being able to acquire well the ability and skills of setting team themes.	Being able to acquire the ability and skills of setting team themes.	
	(2)	Learning the ability •skills to plan and carry out research plans.	Being able to learn superbly the ability •skills to plan and carry out research plans.	Being able to learn well the ability •skills to plan and carry out research plans.	Being able to learn the ability •skills to plan and carry out research plans.	
	(3)	Having acquiring the ability•skills to compile research results and make the presentation.	Being able to compile research results and make the presentation superbly.	Being able to compile research results and make the presentation well.	Being able to compile research results and make the presentation.	

Placement of Liberal Arts Education in the Major Program

The liberal arts education in this program aims to build the academic foundation required for the specialized education, and develops the capability for autonomous study, and scientific intelligence, based on the ability to collect, analyze, and criticize data. Also, it allows students to establish a point of view for insight into the essentials and background of phenomena, to acquire the linguistic ability and concern for peace which are required of a citizen of the world, to integrate a wide variety of knowledge into a system of intelligence that is truly useful for problem solving, and to acquire the ability to pioneer and promote interdisciplinary and integrated study beyond the existing framework of the academic areas.

Relationships between the evaluation items and class subjects

[illegible]

[illegible]

[illegible]

Academic achievements Evaluation items	1st grade		2nd grade		3rd grade		4th grade	
	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester	Spring semester	Fall semester

Geochemistry and Geophysics Internship(O)		Material evolution in the solar system(O)	Cosmochemistry and Geochemistry(O)
		Surveying(O)	Advanced Earth and Planetary Science(O)

