Department of Mathematics, School of Science（for students enrolled in 2021）

Basic Major, Major, Advanced Liberal Arts Education, and Advanced Global Literacy Education Subjects

1st Year		2nd Year		3rd Year		4th Year	
Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester
Science and Society Seminar (2)		◎ Linear Algebra 1 (2)	Basic Algebra (2)	Introduction to Algebra 1 (2)	Algebra 3 (2)	◎ Advanced Seminar a (Mathematics) (8)	◎ Advanced Seminar b (Mathematics) (8)
		◎ Exercise Session (Linear Algebra 1) (2)	Exercise Session (Basic Algebra) (2)	Exercise Session (Introduction to Algebra 1) (2)	Exercise Session (Algebra 3) (2)	Algebra 4 to 10 (Single semester classes) (2) Each	
		◎ Point-Set Topology and Multivariable Calculus 1 (2)	◎ General Topology (2)	Introduction to Algebra 2 (2)	Geometry 1 (2)	Geometry 3 to 10 (Single semester classes) (2) Each	
		◎ Exercise Session (Point-Set Topology and Multivariable Calculus 1) (2)	◎ Exercise Session (General Topology) (2)	Exercise Session (Introduction to Algebra 2) (2)	Exercise Session (Geometry 1) (2)	Analysis 3 to 10 (Single semester classes) (2) Each	
		◎Advanced Calculus (2)	◎ Complex Analysis (2)	Introduction to Geometry (2)	Geometry 2 (2)	Experimental Mathematics 5 to 7 (Single semester classes) (2) Each	
		◎ Exercise Session (Advanced Calculus) (2)	◎ Exercise Session (Complex Analysis) (2)	Exercise Session (Introduction to Geometry) (2)	Exercise Session (Geometry 2) (2)	Mathematical Structures in the Large 1 to 5 (Single semester classes) (2) Each	
		◎ Vector Analysis (2)	Seminar in Mathematics (2)	Introduction to Analysis 1 (2)	Analysis 1 (2)	Applied Mathematics 1 to 6, 9 and 10 (Single semester classes) (2) Each	
		Probability and Statistics (2)	Experimental Mathematics 2 (2)	Exercise Session (Introduction to Analysis 1) (2)	Exercise Session (Analysis 1) (2)	Applied Mathematics 7 (Information System) (2)	Applied Mathematics 8 (Communication Network) (2)
		Experimental Mathematics 1 (Computer Programming) (2)	Mathematics Honors Seminar 2 (1)	Introduction to Analysis 2 (2)	Analysis 2 (2)	◎ Bibliographic Survey in Mathematics a (1)	◎ Bibliographic Survey in Mathematics b (1)
		Mathematics Honors Seminar 1 (1)	☆ Special Lectures for Future Outlook A (0.5)	Exercise Session (Introduction to Analysis 2) (2)	Exercise Session (Analysis 2) (2)	☆ Seminar on Science and Technology A1 Spring Term (1)	☆ Special Lectures for Future Outlook A (0.5)
		Science and Society Seminar (2)	☆ Special Lectures for Future Outlook B (0.5)	Advanced Complex Analysis (2)	Experimental Mathematics 4a (Introduction to Multi Media) (1)	☆ Seminar on Science and Technology A2 Summer Term (1)	☆ Special Lectures for Future Outlook B (0.5)
			English Communication Skills for Science Students (1)	Exercise Session (Advanced Complex Analysis) (2)	Experimental Mathematics 4b (Introduction to the Information Profession) (1)	☆ Seminar on Science and Technology B1 Spring Term (1)	English Communication Skills for Science Students (1)
				Experimental Mathematics 3 (2)	Numerical Computation (2)	☆ Seminar on Science and Technology B2 Summer Term (1)	
				Mathematics Honors Seminar 3 (1)	Mathematics Honors Seminar 4 (1)	English Communication Skills for Science Students (1)	
				☆ Seminar on Science and Technology A1 Spring Term (1)	◎ Roads to Mathematics (2)	Science and Society Seminar (2)	
				☆ Seminar on Science and Technology A2 Summer Term (1)	☆ Special Lectures for Future Outlook A (0.5)		
				☆ Seminar on Science and Technology B1 Spring Term (1)	☆ Special Lectures for Future Outlook B (0.5)		
				☆ Seminar on Science and Technology B2 Summer Term (1)	English Communication Skills for Science Students (1)		
				English Communication Skills for Science Students (1)			
				Science and Society Seminar (2)			

◎ Compulsory subjects
Elective subjects

() enclose the number of credits earned in a course.
☆ Offered every other year
Subjects that have the same name (and if appropriate, letter/number), are not different subjects, but the same subject offered at different times. Credits in such a subject may be acquired only once.

Advanced Liberal Artrs Education subjects

Advanced Global Literacy Education subjects

Basic Major subjects

1st Year Spring-Summer Semester	1st-Year Fall-Winter Semester	2nd Year
◎ Linear Algebra with Exercises I (3)	◎ Linear Algebra with Exercises II (3)	Thermodynamics (2)
◎ Calculus with Exercises I (3)	◎ Calculus with Exercises II (3)	Electromagnetism II (2)
※ Elementary Mechanics, Introduction to Mechanics, Mechanics I (2)	※ Elementary Electromagnetism, Introduction to Electromagnetism, Electromagnetism I (2)	
Earth and Space Science I Spring Term (1)	Mechanics II (2)	
Earth and Space Science II Summer Term (1)	Introductory Chemistry BI Fall Term (1)	
Introductory Chemistry AI Spring Term (1)	Introductory Chemistry BII Winter Term (1)	
Introductory Chemistry AII Summer Term (1)	Advanced Biology (2)	
Introductory Biology (2)		
Basic Physics Experiments, Basic Chemistry Experiments, Basic Biology Experiments, Basic Experiments in Earth and Space Science (1*4)		

※The subject taken is determined by the program.

Lectures in Japanese

Lectures in English

Lectures in Japanese with English materials

Note:
This table is the course schedule planned at the time of admission,; the allocation of a course to a specific year may be changed to provide a more effective curriculum.
Please check the website of the School of Science for an updated list of courses offered and timetables for each academic year.

Department of Physics, School of Science（for students enrolled in 2021）

Basic Major, Major, Advanced Liberal Arts Education, and Advanced Global Literacy Education Subjects

1st Year		2nd Year		3rd Year		4th Year	
Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester
Physics Seminar (1)	◎ Mechanics 1 (2)	◎ Mechanics 2 (2)	◎ Quantum Mechanics 1 (2)	◎ Physics Laboratory 1 (4) ◎ Physics Laboratory 2 (4)		□ Undergraduate Research in Physics (8) □ Undergraduate Research in Earth and Space Science (8)	
Science and Society Seminar (2)	◎ Exercises for Mechanics 1 (2)	◎ Exercises for Mechanics 2 (2)	◎ Exercises for Quantum Mechanics 1 (2)	◎ Quantum Mechanics 2 (2)	◎ Statistical Mechanics 2 (2)	□ Literature Survey in Physics (1) □ Literature Survey in Earth and Space Science (1)	
	Introduction to Modern Physics (2)	◎ Electricity and Magnetism 1 (2)	◎ Thermal Physics (2)	◎ Exercises for Quantum Mechanics 2 (2)	Introduction to Planetary Science (2)	Relativistic Quantum Mechanics (2)	Introduction to Elementary Particle Physics 2 (2)
		◎ Exercises for Electricity and Magnetism 1 (2)	Exercises for Thermal Physics (2)	◎ Statistical Mechanics 1 (2)	Quantum Mechanics 3 (2)	Nuclear Physics 2 (2)	Numerical Computation (2)
		◎ Mathematical Physics 1 (2)	◎ Mathematical Physics 2 (2)	◎ Exercises for Statistical Mechanics 1 (2)	Plasma Physics (2)	General Relativity (2)	Field Work in Earth and Space Science 2 (1)
		◎ Exercises for Mathematical Physics 1 (2)	◎ Exercises for Mathematical Physics 2 (2)	Mathematical Physics 3 (2)	Introduction to Biophysics (2)	Condensed Matter Physics 3 (2)	Field Work in Earth and Space Science 4 (1)
		Numerical Analysis (2)	Electricity and Magnetism 2 (2)	Optical Physics in Extreme (2)	Nuclear Physics 1 (2)	Introduction to Elementary Particle Physics 1 (2)	☆ Special Lectures for Future Outlook A (0.5)
		Sciences of Earth and Planetary Materials (2)	Methods of Experimental Physics (2)	Condensed Matter Physics 1 (2)	Condensed Matter Physics 2 (2)	Field Work in Earth and Space Science 1 (1)	☆ Special Lectures for Future Outlook B (0.5)
		Field Work in Earth and Space Science 1 (1)	Introduction to Earth Science (2)	Mass Spectrometry (2)	Structure Formation Theory in the Universe (2)	Field Work in Earth and Space Science 3 (1)	English Communication Skills for Science Students (1)
		Physics Honors Seminar (1)	Mechanics of Continuous Media (2)	Optical Physics (2)	Astrophysics (2)	☆ Seminar on Science and Technology A1 Spring Term (1)	
		Science and Society Seminar (2)	Field Work in Earth and Space Science 2 (1)	Field Work in Earth and Space Science 1 (1)	Field Work in Earth and Space Science 2 (1)	☆ Seminar on Science and Technology A2 Summer Term (1)	
			Physics Honors Seminar (1)	Field Work in Earth and Space Science 3 (1)	Field Work in Earth and Space Science 4 (1)	☆ Seminar on Science and Technology B1 Spring Term (1)	
			☆ Special Lectures for Future Outlook A (0.5)	Physics Honors Seminar (1)	Physics Honors Seminar (1)	☆ Seminar on Science and Technology B2 Summer Term (1)	
			☆ Special Lectures for Future Outlook B (0.5)	☆ Seminar on Science and Technology A1 Spring Term (1)	Current Topics in Physics, Earth and Space Science (2)	English Communication Skills for Science Students (1)	
			English Communication Skills for Science Students (1)	☆ Seminar on Science and Technology A2 Summer Term (1)	☆ Special Lectures for Future Outlook A (0.5)	Science and Society Seminar (2)	
				☆ Seminar on Science and Technology B1 Spring Term (1)	☆ Special Lectures for Future Outlook B (0.5)		
				☆ Seminar on Science and Technology B2 Summer Term (1)	English Communication Skills for Science Students (1)		
				English Communication Skills for Science Students (1)			
				Science and Society Seminar (2)			

◎ Compulsory subjects
□ Partly elective subjects
Elective subjects

() Enclose the number of credits earned in a course.
☆ Offered every other year
Subjects that have the same name (and if appropriate, letter/number), are not different subjects, but the same subject offered at different times. Credits in such a subject may be acquired only once.
However, there is an exception made for the Physics Honors Seminars, for which a maximum of 6 credits may be earned.

Advanced Liberal Artrs Education subjects

Advanced Global Literacy Education subjects

Basic Major subjects

1st Year Spring-Summer Semester	1st-Year Fall-Winter Semester	2nd Year
◎ Calculus with Exercises I (3)	◎ Calculus with Exercises II (3)	Statistics C-I (2)
◎ Linear Algebra with Exercises I (3)	◎ Linear Algebra with Exercises II (3)	Statistics C-II (2)
◎ Mechanics I (2)	◎ Electromagnetism I (2)	
◎ Introductory Chemistry AI Spring Term (1)	◎ Introductory Chemistry BI Fall Term (1)	
Introductory Chemistry AII Summer Term (1)	Introductory Chemistry BII Winter Term (1)	
Introductory Biology (2)	Advanced Biology (2)	
◎ Earth and Space Science I Spring Term (1)		
Earth and Space Science II Summer Term (1)		
◎ Basic Physics Experiments, Basic Chemistry Experiments, Basic Biology Experiments, Basic Experiments in Earth and Space Science (1*4)		

Lectures in Japanese

Lectures in English

Lectures in Japanese with English materials

Note:
This table is the course schedule planned at the time of admission,; the allocation of a course to a specific year may be changed to provide a more effective curriculum. Please check the website of the School of Science for an updated list of courses offered and timetables for each academic year.

Department of Chemistry, School of Science（for students enrolled in 2021）

Basic Major, Major, Advanced Liberal Arts Education, and Advanced Global Literacy Education Subjects

1st year		2nd Year		3rd year		4th Year	
Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester	Spring-Summer Semester	Fall-Winter Semester
Seminar for Freshpersons in Chemistry (1)		◎ Analytical Chemistry 1 (2)	Analytical Chemistry 2 (2)	Radiochemistry (2)	Industrial Inorganic Chemistry (2)	◇ Undergraduate Research in Chemistry (10)	
Science and Society Seminar (2)		◎ Organic Chemistry 1 (2)	Inorganic Chemistry 2 (2)	○ Exercises in Inorganic and Radiochemistry (1)	Organic Biochemistry (2)	◇ Undergraduate Research in Polymer Science (10)	
		◎ Inorganic Chemistry 1 (2)	◎ Organic Chemistry 2 (2)	Analytical Chemistry 3 (2)	Organometallic Chemistry (2)	Literature Searching and Reading in Chemistry (2)	
		○ Exercises in Organic Chemistry 1 (1)	○ Exercises in Organic Chemistry 2 (1)	Inorganic Chemistry 3 (2)	Biochemistry 2 (2)	Advanced Inorganic and Radiochemistry (2)	Numerical Computation (2)
		◎ Elementary Quantum Mechanics (2)	Quantum Chemistry 1 (2)	Organic Chemistry 3 (2)	Structural Chemistry 2 (2)	Heterocyclic Chemistry (1)	☆ Special Lectures for Future Outlook A (0.5)
		○ Exercises in Elementary Quantum Mechanics (1)	◎ Chemical Kinetics and Dynamics 1 (2)	Exercises in Organic Chemistry 3 (1)	Quantum Chemistry 2 (2)	Electronic Structure in Organic Chemistry (1)	☆ Special Lectures for Future Outlook B (0.5)
		◎ Chemical Thermodynamics 1 (2)	Chemical Thermodynamics 2 (2)	Biochemistry 1 (2)	○ Exercises in Statistical Thermodynamics (1)	Spectrometric Analysis of Organic Compounds (2)	English Communication Skills for Science Students (1)
		Upgrade Seminar in Chemistry (1)	Structural Chemistry 1 (2)	Chemical Kinetics and Dynamics 2 (2)	Synthetic Polymer Chemistry 2 (2)	Solid State Physical Chemistry (2)	
		Chemistry Honors Seminar 1 (1)	◎ Macromolecular Science (2)	Elementary Statistical Mechanics (2)	Physical Chemistry of Polymers 2 (2)	Chemical Kinetics and Dynamics 3 (2)	
		Science and Society Seminar (2)	Computer Programming for Chemistry (2)	○ Exercises in Macromolecular Sciences (1)	Chemical Biology (2)	Chemical Thermodynamics 3 (2)	
			◎ Technique of Chemistry (2)	Synthetic Polymer Chemistry 1 (2)	Introduction to Advanced Chemistry (1)	Industrial Organic Chemistry (2)	
			Chemistry Honors Seminar 2 (1)	Physical Chemistry of Polymers 1 (2)	◎ Chemical Experiments 2 (6)	☆ Seminar on Science and Technology A1 Spring Term (1)	
			☆ Special Lectures for Future Outlook A (0.5)	◎ Chemical Experiments 1 (6)	◎ Advanced Chemical Experiments (2)	☆ Seminar on Science and Technology A2 Summer Term (1)	
			☆ Special Lectures for Future Outlook B (0.5)	Chemistry Honors Seminar 3 (1)	Chemistry Honors Seminar 4 (1)	☆ Seminar on Science and Technology B1 Spring Term (1)	
			English Communication Skills for Science Students (1)	☆ Seminar on Science and Technology A1 Spring Term (1)	English Communication Skills for Science Students (1)	☆ Seminar on Science and Technology B2 Summer Term (1)	
				☆ Seminar on Science and Technology A2 Summer Term (1)		English Communication Skills for Science Students (1)	
				☆ Seminar on Science and Technology B1 Spring Term (1)		Science and Society Seminar (2)	
				☆ Seminar on Science and Technology B2 Summer Term (1)			
				English Communication Skills for Science Students (1)			
				Science and Society Seminar (2)			

◎ Compulsory subjects
◇ Partly elective subjects A
○ Partly elective subjects B
Elective subjects

() enclose the number of credits earned in a course.
☆ Offered every other year
Subjects that have the same name (and if appropriate, letter/number), are not different subjects, but the same subject offered at different times. Credits in such a subject may be acquired only once.
However, there is an exception made for the half-credit subjects "Secial Lectures for Future Outlook A" and "Special Lectures for Future Outlook B".
These may be taken twice, to yield a total of one credit each, and the appropriate half-credit will appear in your academic transcript as Special Lectures for Future Outlook A1, A2, B1, and/or B2, respectively.

Advanced Liberal Artrs Education subjects
Advanced Global Literacy Education subjects

Basic Major subjects

1st Year Spring-Summer Semester	1st Year Fall-Winter Semester	2nd Year
◎ Linear Algebra I (2)	◎ Linear Algebra II (2)	Statistics C-I (2)
◎ Calculus I (2)	◎ Calculus II (2)	Statistics C-II (2)
※ Elementary Mechanics, Introduction to Mechanics, Mechanics I (2)	※ Elementary Electromagnetism, Introduction to Electromagnetism, Electromagnetism I (2)	Electromagnetism II (2)
Earth and Space Science I Spring Term (1)	Mechanics II (2)	
Earth and Space Science II Summer Term (1)	◎ Introductory Chemistry BI Fall Term (1)	
◎ Introductory Chemistry AI Spring Term (1)	◎ Introductory Chemistry BII Winter Term (1)	
◎ Introductory Chemistry AII Summer Term (1)	Advanced Biology (2)	
◎ Introductory Biology (2)		
◎ Basic Physics Experiments, Basic Chemistry Experiments, Basic Biology Experiments, Basic Experiments in Earth and Space Science (1*4)		

※The subject taken is determined by the program.

Lectures in Japanese
Lectures in English
Lectures in Japanese with English materials

Note:
This table is the course schedule planned at the time of admission,; the allocation of a course to a specific year may be changed to provide a more effective curriculum. Please check the website of the School of Science for an updated list of courses offered and timetables for each academic year.

IUPS Graduation Requirements (for students enrolled in 2021)
国際科学特別プログラム 卒業要件単位表（令和3年度入学者用）

Course Category 履修区分			Dept of Math 数学科 Min no. of Credits 単位数	Dept of Phys 物理学科 Min no. of Credits 単位数	Dept of Chem 化学科 Min no. of Credits 単位数	Language of Instruction 開講言語
Liberal Arts General Education Subject categories 教養教育系科目	A Door to Academia 学問への扉		2	2	2	English
	Advanced Seminar アドヴァンスト・セミナー		-	-	-	Japanese/English
	Liberal Arts Education Subjects 基盤教養教育科目	Humanities 人文科学系	6 (see note 1)	6 (see note 1)	6 (see note 1)	Japanese/English
		Social Sciences 社会科学系				
		Natural Sciences 自然科学系				
		Integrated Studies 総合型				
	Information Processing Education Subjects 情報教育科目		2	2	2	English
	Health and Sports Education Subjects 健康・スポーツ教育科目		2	2	2	English
	Advanced Liberal Arts Education Subjects 高度教養教育科目		2	2	2	Japanese
	Total - A 計A		14	14	14	
Major Subject categories 専門教育系科目	Basic Major Subjects 専門基礎教育科目		25	25	25	English/Japanese *See the Curriculum Table for the language of each subject.
	Major Subjects 専門教育科目	Compulsory Subjects 必修科目	38	44	32	
		Partly Elective Subjects 選択必修科目	-	8	A：10 B： 4	
		Elective Subjects 選択科目	24	12	26	
	Total - B 計B		87	89	97	
Global Literacy Education Subject categories 国際性涵養教育系科目	Multilingual Education Subjects マルチリンガル教育科目	Multilingual Education Subjects	13 (see note 2)	13 (see note 2)	13 (see note 2)	Japanese
	Advanced Global Literacy Education Subjects 高度国際性涵養教育科目		2	1	2	Japanese/English
	Total - C 計C		15	14	15	
	Free Transfer credits - D 自由選択D		8	8	2	
Total Graduation Requirement Credits (A + B + C + D) 総卒業要件単位数 (A + B + C + D)			**124**	**125**	**128**	

Note 1: Credits earned in “Natural Sciences” subjects cannot be used to fulfill graduation requirements.

Note 2: Japanese language courses have to be selected from the Multilingual Education Subjects categories. For those students who are fluent in Japanese, surplus credits earned within "Liberal Arts Education Subjects" or non-Japanese, non-English language courses can be counted as credits in this field.