Course List and Graduation Requirements for International Programs,
Biological Science Program - School of Science (for Undergraduates Enrolled in October 2020)

Death   South   Sout					_			Credits	, , , , , , , , , , , , , , , , , , ,	
Control Course    Cart Science   C		Course Ca	tegory	Course	Term		Compulsory		Elective	Minimu Requirem
Countries   Near   Service   Countries   Near   Service   Countries   Near   Countries   Near   Countries   Near   Countries   Near   Countries   Near   N				First Year Seminar A						
Course   Index   Index   Course   Index   Course   Index   I		Basic General	Language and Culture							12
Decision   Paper   P			Harrist Court Colons					4		2
Basic Courses in Humanistes and Social Sciences #   Social Scien			meaith and Sports Science					1		2
Basic Course in Hamarities and Social Society   2   2   2   2   2   2   2   2   2					1 111					18
Comparison   Com					2022-II	2			2	
Development			Humanities and Social						2	
Library Execution Courses in Natural Sciences   Part of Part		Sciences *							2	
Social Sciences   Page and Proposery   1   2   2   2   2										6
Liberel Education Courses in Natural Sciences  Selectivity  Liberel Education Courses in Natural Sciences  Selectivity  S										4
University   Company   C		Social Sciences *					ł			-
Level Exception Courses in Natural Sciences   Secretary Area   Secretary							! 			1
Social Assertion   Social Assertion   Social Course   Social Course   Social Assertion   Social Course   Social Cours		Liberal Education Courses in Natural Sciences								4
Captoristic of Juspers From the Outdook Carbon Proceed   E   7										
Institution						2				2 credits
Computer									2	see 13 pag
## # Centre Solitoteon Courtes in Interescipatory   From Genetic Proprietation   1   2   2   2   2   2   2   2   2   2					III	2			2	1(3)
Facility   Formation   Form		Liberal Education	Courses in Interdisciplinary		ш	2			2	
Secola Lecture (Studens Generals II)			. ,	· · · · · · · · · · · · · · · · · · ·			ļ			1
Special Lecture (Clore algorises Cuttines)										-
Sexical scarces Science (Science Comp for General Asserting (State 1)   77   2   2   2   2   2   2   2   2	001303									-
Catoulus										1
Catolus II								İ		l
Linear Algebra       2   2   2   2   2   2   2   2										1
Computer								1		]
Genetics Analysis								1		]
Basic Courses in Natural Sciences				Complex Analysis	III				2	]
Sasio Courses in Natural Sciences					I				2	1
Seic Courses in Natural Sciences								1		15
Fundamentals of Chemistry II		Basic Courses in Natural Sciences						1		
Fundamentate of Bology     1   2   2   2   2								1		1
Eurodementals of Bology II										1
Fundamentals of Earth Science   1										1
Euclidentials of Earth Science										1
Laboratory in Physics										1
Laboratory in Chemistry										
Sum for Liberal Arts and Sciences Courses										1.5
Genetics				Laboratory in Biology	II	1.5			1.5	
Biochemistry			Sum for Liberal Arts and S				18		26.5	44.5
Cell Biology I										
Compulsory Elective							1		1	
Physiology and Anatomy									1	
Compulsory Elective Courses (1)										
Computation										
Genetics										24
Physiology and Developmental Biology   W   2   2   2   2   1   1   1   1   1   2   2										24
Basic Specialized   Genetics III										
Basic Specialized Courses   Call Biochemistry   II										
Basic Specialized   Cell Biology III										
Basic Specialized   Courses   Cell Biology III   V   Z   Z									1	
Basic Specialized Courses   Fundamental Physics Tutorial Is							1			
Courses   Fundamental Physics Tutorial   b					Ī	1			1	
Mathematics Tutorial Ib				Fundamental Physics Tutorial Ib					1	
Elective Courses (2)   Elective Courses (2)   Elective Courses (3)   Elective Courses (4)   Elective Courses (5)   Elective Courses (6)   Elective Courses (7)   Elective Courses (8)		Elective Courses ②							-	
Elective Courses 2    Elective Courses 2    Elective Courses 3    Elective Courses 3    Elective Courses 3    Elective Courses 4  Elective Courses 5  Elective Courses 6  Elective Cours							1	1		1
Elective Courses (2)   Mathematics Tutorial II							1	1		1
Elective Courses   2				Mathematics Tutorial IIa				1		1
Analytical Mechanics				Mathematics Tutorial IIb	II			1		4
Mathematical Physics Tutorial   III   1   1   1   1   1   2   2   2   2   2		1						•		
Statistical Physics   (Thermodynamics)					Ш					,
Durses in pecialized elids				Mathematical Physics I	Ш	2			2	4
Earth and Planetary Sciences				Mathematical Physics I Mathematical Physics Tutorial I	III III	2			2 1	4
Environmental Earth Sciences				Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I	III III III IV	2 1 2 2			2 1 2 2	4
Partial Sum	pecialized			Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism		2 1 2 2 2			2 1 2 2 2	4
Bioscience Laboratory	pecialized			Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences		2 1 2 2 2 2			2 1 2 2 2 2	4
Advanced Bioscience Laboratory I	pecialized			Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences		2 1 2 2 2 2	0	24	2 1 2 2 2 2 2 2	4
Advanced Bioscience Laboratory II   VI   2   2   2   Advanced Bioscience Laboratory III   VI   2   2   2   2   2   2   2   2   2	pecialized			Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum		2 1 2 2 2 2 2 2		24	2 1 2 2 2 2 2 2	
Advanced Bioscience Laboratory III	ourses in pecialized ields			Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II		2 1 2 2 2 2 2 2 2 8	8	24	2 1 2 2 2 2 2 2	28
Graduation Research in Bioscience   VII, VIII   20   20	pecialized		Compulsory Courses ③	Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory I	III	2 1 2 2 2 2 2 2 2 2 8 8	8 8 2	24	2 1 2 2 2 2 2 2	
Agricultural Science	pecialized		Compulsory Courses ③	Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory II	III	2 1 2 2 2 2 2 2 2 2 8 8 8 2	8 8 2 2	24	2 1 2 2 2 2 2 2	28
Biophysics   IV   2     2	pecialized		Compulsory Courses ③	Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2	28
Physiology and Anatomy II	pecialized		Compulsory Courses ③	Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science	II	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 4	28
Organic Chemistry III	pecialized		Compulsory Courses ③	Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 4	28
Computational Chemistry   V   2   2   2   2   2   2   2   2   2	pecialized		Compulsory Courses ③	Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 4	28
Chemical Physics	pecialized		Compulsory Courses ③	Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 4	28
Biochemistry IV   VI   2   2   2   2   2   2   2   2   2	pecialized	Special Control Control		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 4	28
Cell Biology IV   VI   2   2   2	pecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III Computational Chemistry	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 4 4	28
Microbiology	ecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II Computational Chemistry Chemical Physios Plant Physiology	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 4 4	28
Bioorganic Chemistry   VI   2   2   2   18     Organic Chemistry IV   VI   2   2   2     Current Organic and Polymer Chemistry   VI   2   2   2     Advanced Bioscience Laboratory IV   VI   2   2   2     Advanced Bioscience Laboratory V   VI   2   2   2     Summer Course in Marine Biology   VI   2   2   2     Partial Sum   42   0   18   60	ecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III Computational Chemistry Chemical Physios Plant Physiology Plant Physiology Biochemistry IV	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 4 4	28
Organic Chemistry IV	pecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III Computational Chemistry Chemical Physics Plant Physiology Biochemistry IV Cell Biology IV	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 4 4	28
Current Organic and Polymer Chemistry         VI         2         2           Advanced Bioscience Laboratory IV         VI         2         2           Advanced Bioscience Laboratory V         VI         2         2           Summer Course in Marine Biology         VI         2         2           Partial Sum         42         0         18         60	pecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III Computational Chemistry Chemical Physics Plant Physiology Biochemistry IV Cell Biology IV Microbiology	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 4 4 4 2 2 2 2 2 2 2 2 2 2	42
Advanced Bioscience Laboratory V   VI   2   2   2	pecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III Computational Chemistry Chemical Physics Plant Physiology Biochemistry IV Cell Biology IV Microbiology Bioorganic Chemistry Cell Biology IV Microbiology Bioorganic Chemistry	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 4 4 4 2 2 2 2 2 2 2 2 2	42
Summer Course in Marine Biology         VI         2         2           Partial Sum         42         0         18         60	pecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III Computational Chemistry Chemical Physics Plant Physiology Biochemistry IV Cell Biology IV Microbiology Bioorganic Chemistry Organic Chemistry IV Organic Anatomy II Organic Chemistry IV Organic Chemistry IV Organic Chemistry IV Organic Chemistry IV Organic Anatomy II Organic Anatomy IV Organic Chemistry IV Organic Chemistry IV Organic Anatomy IV	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 4 4 4 2 2 2 2 2 2 2 2 2 2	42
Partial Sum 42 0 18 60	pecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Advanced Bioscience Laboratory III Organic Chemistry III Graduation Research in Bioscience Organic Chemistry III Organic Chemistry III Organic Chemistry III Computational Chemistry Chemical Physics Plant Physiology Biochemistry IV Cell Biology IV Microbiology Microbiology Bioorganic Chemistry Organic Advanced Bioscience Laboratory IV	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 4 4 4 2 2 2 2 2 2 2 2 2	42
	ecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Agricultural Science Organic Chemistry II Biophysics Physiology and Anatomy II Organic Chemistry III Computational Chemistry Chemical Physics Plant Physics Plant Physics Plant Physiology Biochemistry IV Cell Biology IV Microbiology Bioorganic Chemistry Organic Chemistry Organic Chemistry Organic Chemistry IV Current Organic and Polymer Chemistry Advanced Bioscience Laboratory IV Advanced Bioscience Laboratory V	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2	24	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	42
	ecialized	Specialized Course		Mathematical Physics I Mathematical Physics Tutorial I Statistical Physics Tutorial I Statistical Physics I (Thermodynamics) Quantum Mechanics I Electricity and Magnetism Earth and Planetary Sciences Environmental Earth Sciences Partial Sum Bioscience Laboratory I Bioscience Laboratory II Advanced Bioscience Laboratory II Advanced Bioscience Laboratory III Graduation Research in Bioscience Organic Chemistry II Biospisics Physiology and Anatomy II Organic Chemistry III Computational Chemistry Chemical Physics Plant Physiology Biochemistry IV Cell Biology IV Microbiology Bioorganic Chemistry IV Cerrent Organic Chemistry Organic Chemistry IV Cell Biology IV Microbiology Bioorganic Chemistry IV Current Organic and Polymer Chemistry Advanced Bioscience Laboratory IV Advanced Bioscience Laboratory IV Advanced Bioscience Laboratory V Summer Course in Marine Biology	III	2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	8 8 2 2 2 2 20		2 1 2 2 2 2 2 2 4 4 4 4 4 2 2 2 2 2 2 2	28

<sup>•</sup>Confirm the prerequisite for each subject with the syllabus.
•Refer to the details of the Term on the page 3 of "AY2020 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, Biological Science Program - School of Science (for Undergraduate)

## Liberal Arts and Sciences Courses: A combined total of at least 44.5credits 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/Second Foreign Language, 2 credits of 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 the two Course 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 16.5 credits must be acquired, consisting of at least 15 course credits from Basic Courses in Natural Sciences except three Laboratory Courses and 1.5

## 2. Courses in Specialized Fields: A combined total of at least 88 course credits must be acquired from these course categories.

(1) Compulsory Courses: A total of 42 course credits must be acquired from Compulsory Specialized Courses ③.
(2) Compulsory Elective Courses: A total of at least 24 course credits must be acquired from Compulsory Elective Basic Specialized Courses ①.
(3) Elective courses: A total of at least 22 course credits must be acquired from Elective Courses ② and ④. consisting of a total of at least-18 credits from Specialized Courses ④ and a total of at least 4 course credits from Related Elective Basic Specialized Courses ②.

Requirements for Advancement for International Programs, Biological Science 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
	A total of a minimum of 20 course credits must be acquired at the end of the first grade.	Remain in the first year.     Must take no longer than 5 years to complete their first year.     [Duration of enrollment (8 years)] minus [second to forth years(3 years)]     Students unable to advance to the next year within the 5-year limit stated in 2. above will be expelled from the school.