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For entrants in FY 2022

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Students study the fundamental subjects for one year after entering the university to acquire the basic knowledge required for studying the expertise. Then they mainly study the specialized fundamental subjects common for the all students of School of Applied Biological Science in the second semester of the second year. Particularly, they take the subjects of Laboratory Work in General Chemistry, Laboratory Work in General Physics, and Laboratory Work in General Biology I & II (including computer exercise) as those regarding experiments that are common for all students of the School of Applied Biological Science that consist of to get basic training for experiments in a wide area that is commonly required for the students of the School of Applied Biological Science. Students acquire a wide range of intelligence, capability in foreign languages such as English, data processing skills, basic knowledge common for the students of the School of Applied Biological Science, understanding for bioethics and ethics of science by the first semester of the second year to allow themselves to understand the aim and characteristics of each major program and select the most appropriate program.

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6.Available qualification

(1) Educational personnel certification: Type 1 License for High School Teacher (science)

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Attachment 2

Results of study in Integrative Hydrospheric Science Program

Relation between evaluation items and evaluation criteria

Study achievement			Evaluation criteria		
Evaluation items			Excellent	Very Good	Good
Knowledge & understanding	(1)	Ability for comprehensive and cross-disciplinary thinking and knowledge / understanding required to see a phenomenon from a wide bird's eye view to take an action for solving problems regarding the specialized area.	Has superior ability for comprehensive and cross-disciplinary thinking and capability to see a phenomenon from a wide bird's eye view to take an action for solving problems regarding the specialized area.	Has sufficient ability for comprehensive and cross-disciplinary thinking and capability to see a phenomenon from a wide bird's eye view to take an action for solving problems regarding the specialized area.	Has basic ability for comprehensive and cross-disciplinary thinking and capability to see a phenomenon from a wide bird's eye view to take an action for solving problems regarding the specialized area.
	(2)	Basic knowledge and understanding required for studying the expertise	Has fundamental knowledge and profound understanding required for studying the expertise and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge required for studying the expertise and is capable of sufficiently understanding issues in the specialized area and explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and general understanding required for studying the expertise and is capable of providing basic explanation regarding the knowledge and understandings.
	(3)	Comprehensive understanding on characteristics regarding morphology, ecology, physiology, pathology, biochemistry, and genetics of various hydrosphere organisms	Has fundamental knowledge and profound understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and sufficient understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and general understanding is capable of providing basic explanation regarding the knowledge and understandings.
	(4)	Understanding on economic trend regarding management, breeding, and use of aquatic resources and fishery	Has fundamental knowledge and profound understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and sufficient understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and general understanding is capable of providing basic explanation regarding the knowledge and understandings.
	(5)	Understanding on physiologic, pathologic, biochemical, and genetic mechanisms required for management and breeding of aquatic resources	Has fundamental knowledge and profound understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and sufficient understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and general understanding is capable of providing basic explanation regarding the knowledge and understandings.
	(6)	Understanding on relation between form and ecology of hydrosphere organisms and hydrosphere environment	Has fundamental knowledge and profound understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and sufficient understanding and is capable of explaining the knowledge while associating it with items regarding any other area.	Has fundamental knowledge and general understanding is capable of providing basic explanation regarding the knowledge and understandings.

(1)	Basic ability for communication, information processing, and physical activities required for studying the expertise	Has superior ability for all the elements regarding communication, information processing, and

capability	sive	(1) Ability to identify issues that he/she should pursue for a specific phenomenon related to hydrosphere organisms, organize his/her own opinion, logically publish them orally and/or in writing, and discuss the topic	Has advanced capabilities regarding elements of comprehensive ability and skills for such as identification of targeted issues, information processing, statistical analysis, and responsive communication.	Has capabilities regarding elements of comprehensive ability and skills for such as identification of targeted issues, information processing, statistical analysis, and responsive communication.	Has basic capabilities regarding elements of comprehensive ability and skills for such as identification of targeted issues, information processing, statistical organization, and responsive communication.

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Attachment 3

Relation between evaluation items and class subjects

Subject category	Name of class subject	Number of credits	Required or Electivee	Semester when the class is provided	Evaluation item																										Total of weightings for evaluation items for the subject
					Knowledge & understanding												Ability & skills												Comprehensive capability			
					(1)		(2)		(3)		(4)		(5)		(6)		(1)		(2)		(3)		(4)		(5)		(6)		(1)			
					Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	Weighting for evaluation item for the subject	Weighting for evaluation item	
Liberal arts education subjects	Peace Science Courses	2	Required	1st semester	100	1																									100
Liberal arts education subjects	Introductory Seminar for First-Year Students	2	Required	1st semester	100	1																									100
Liberal arts education subjects	Introduction to University Education	2	Required	1st semester	100	1																									100
Liberal arts education subjects	Foreign Languages	10	Required / Elective required	1st - 2th semesters													100	1													100
Liberal arts education subjects	Information and Data Science Courses	4	Required	1st - 2th semesters													100	1													100
Liberal arts education subjects	Area Courses	10	Elective required	1st - 6th semesters	100	1																									100
Liberal arts education subjects	Health and Sports Courses	2	Elective required	1st - 2nd semesters													100	1													100
Liberal arts education subjects	"Basic Calculus" or "Elements of Calculus"	2	Required	1st semester			100	1																							100
Liberal arts education subjects	Organic Chemistry	2	Required	2nd semester			100	1																							100
Liberal arts education subjects	Species Biology	2	Required	2nd semester			100	1																							100
Liberal arts education subjects	Cell Science	2	Required	2nd semester			100	1																							100
Liberal arts education subjects	"General Chemistry" or "Basic Concepts of Chemistry"	2	Required	1st semester			100	1																							100
Liberal arts education subjects	Basic Laboratory Work in Chemistry	1	Required	1st semesters															100	1											100
Liberal arts education subjectsLiberal arts education subjects	"Experimental Methods and Laboratory Work in Biology I"	1	Required	2nd semesters															100	1											100
Specialized subjects	Introduction to Applied Biological Science	2	Required	1st semester			100	1																							100
Specialized subjects	Introduction to Microbiology	2	Required	1st semester			100	1																							100

Specialized subjects	Introduction to Molecular Biochemistry	2	Required	2nd semester			100	1																											100
Specialized subjects	Agricultural Production Resources	2	Required	2nd semester\			100	1																											100
Specialized subjects	Physics for Applied Biological Science	2	Required	2nd semester			100	1																											100
Specialized subjects	Ethics of Science and Technology	2	Required	2nd semester			100	1																											100
Specialized subjects	Statistics in Biology	2	Required	3rd semester			100	1																											100
Specialized subjects	Environmental Sciences for Bioproduction	2	Required	3rd semester			100	1																											100
Specialized subjects	Laboratory Work in General Biology I	1	Required	3rd semester			50	1											50	1															100
Specialized subjects	Laboratory Work in General Biology II	1	Required	3rd semester			50	1											50	1															100
Specialized subjects	Laboratory Work in General Chemistry	1	Required	3rd semester			50	1											50	1															100
Specialized subjects	Laboratory Work in General Physics	1	Required	3rd semester			50	1											50	1															100
Specialized subjects	Seminar in Field Science	2	Elective required	2nd semester			100	1																											100
Specialized subjects	Research Front of Applied Biological Sciences	2	Elective required	2nd semester			100	1																											100
Specialized subjects	Introduction to Physiology	2	Elective required	3rd semester			100	1																											100
Specialized subjects	Public Health	2	Elective required	6th semester			100	1																											100
Specialized subjects	Aquaculture I	2	Elective required	4th semester					50	1	25	1	25	1																					100
Specialized subjects	Hydrospheric Zoology I	2	Elective required	4th semester					50	1			50	1																					100
Specialized subjects	Hydrospheric Ecology I	2	Elective required	4th semester					50	1					50	1																			100
Specialized subjects	Hydrospheric Environmental Science I	2	Elective required	4th semester					50	1			25	1	25	1																			100
Specialized subjects	Hydrospheric Primary Production I	2	Elective required	4th semester					50	1					50	1																			100
Specialized subjects	Introduction to Hydrospheric Biodiversity I	2	Elective required	4th semester							50	1			50	1																			100
Specialized subjects	Laboratory Work in Hydrospheric Biology	1	Elective required	4th semester																			50	1	50	1									100
Specialized subjects	Laboratory Work in Hydrospheric Biology	1	Elective required	4th semester																			50	1	50	1									100
Specialized subjects	Aquaculture II	2	Elective required	5th semester					50	1	25	1	25	1																					100
Specialized subjects	Hydrospheric Zoology II	2	Elective required	5th semester					50	1			50	1																					100
Specialized subjects	Hydrospheric Ecology II	2	Elective required	5th semester					50	1					50	1																			100
Specialized subjects	Hydrospheric Environmental Science II	2	Elective required	5th semester					50	1			25	1	25	1																			100
Specialized subjects	Hydrospheric Primary Production II	2	Elective required	5th semester					50	1					50	1																			100

Specialized subjects	Introduction to Hydrospheric Biodiversity II	2	Elective required	5th semester							50	1			50	1																					100
Specialized subjects	Laboratory Work in Hydrospheric Biology III	1	Elective required	5th semester																	50	1	50	1													100
Specialized subjects	Practical Work in Hydrospheric Field Science I	1	Elective required	5th semester																	50	1	25	1	25	1											100
Specialized subjects	Practical Work in Hydrospheric Field Science II	1	Elective required	5th semester																	50	1	25	1	25	1											100
Specialized subjects	Exercises in Integrative Hydrospheric Science I	1	Elective required	5th semester																							20	1	80	1							100
Specialized subjects	Exercises in Integrative Hydrospheric Science II	1	Elective required	5th semester																							20	1	80	1							100
Specialized subjects	Aquatic Biogeochemical Cycles	1	Elective required	5th semester									50	1	50	1																					100
Specialized subjects	Introduction to International Fishery	1	Elective required	5th semester							100	1																									100
Specialized subjects	Fisheries Socioeconomics	1	Elective required	5th semester							100	1																									100
Specialized subjects	Specialized Practical Work in Marine Biology	1	Elective required	7th semester																	50	1			50	1											100
Specialized subjects	Field Work on Training Vessel	2	Required	5th semester																	50	1			50	1											100
Specialized subjects	Reading of Foreign Literature in Hydrospheric Science	2	Required	5th semester																							80	1	20	1							100
Specialized subjects	Graduation Thesis I	2	Required	6th semester																							20	1	80	1							100
Specialized subjects	Graduation Thesis II	2	Required	7th semester																							20	1	80	1							100
Specialized subjects	Graduation Thesis III	2	Required	8th semester																							20	1	80	1							100

Curriculum map for Integrated Hydrospheric Science Program

Study achievementStudy achievementStudy achievement Evaluation items		1st year		2nd year		3rd year		4th year	
		1st semester	2nd semester	3rd semester	4th semester	5th semester	6th semester	7th semester	8th semester
dingKnowledge & understandingKnowledge & understanding	Knowledge and understanding required to see a phenomenon from a broad, top-down perspective and for action based on comprehensive and cross-disciplinary thinking	Peace Science Courses ( )							
		Seminar for developing							
		Introduction to University Education ( )							
		Area Courses subjects (○)							
	Basic knowledge and understandings required for acquiring expertise	Basic Calculus / Elements of Calculus ( )	Organic Chemistry ( )	Environmental Sciences for Bioproduction( )			Public Health(○)		
		General Chemistry / Basic Concepts of Chemistry ( )	Cell Science ( )						
			Species Biology ( )	Laboratory Work in General Biology I & II ( )					
				Laboratory Work in General Chemistry ( )					
		"Basic Laboratory Work in Chemistry"		Laboratory Work in General Physics ( )					
			"Experimental Methods and Laboratory Work in Biology I"	Introduction to Physiology (○)					
		Introduction to Applied Biological	Agricultural Production	Statistics in Biology ( )					
		Introduction to Microbiology ( )	Physics for Applied Biological Science( )						

Study achievementStudy achievementStudy achievement Evaluation items		1st year		2nd year		3rd year		4th year	
		1st semester	2nd semester	3rd semester	4th semester	5th semester	6th semester	7th semester	8th semester
Knowledge & understar			Ethics of Science and Technology( )						
			Seminar in Field Science (○)						
			Introduction to Molecular Biochemistry( )						
			Research Front of Applied Biological Sciences (○)						
	Comprehensive understanding				Aquaculture ○	AquacultureI ○			
	on characteristics regarding				Hydrospheric Zoology ○	Hydrospheric ZoologyII ○			
	morphology, ecology,				Hydrospheric Ecology	Hydrospheric EcologyII			
	physiology, pathology,				Hydrospheric Primary Production ○	Hydrospheric Primary ProductionII ○			
	biochemistry, and genetics of				Hydrospheric Environmental Science ○	Hydrospheric Environmental ScienceII ○			
	Understanding on economic				Aquaculture ○	AquacultureII ○			
	trend regarding management,				Introduction to Hydrospheric Biodiversity	Introduction to Hydrospheric BiodiversityII			
	breeding, and use of aquatic					International Fishery ○			
	resources and fishery					Fisheries Socioeconomics			
	Understanding on physiologic,				Aquaculture ○	AquacultureI ○			
	pathologic, biochemical, and				Hydrospheric Zoology ○	Hydrospheric ZoologyII ○			
	genetic mechanisms required for				Hydrospheric Environmental Science ○	Hydrospheric EcologyII			
	management and breeding of					Aquatic Biogeochemical Cycles			
					Hydrospheric Ecology	Hydrospheric EcologyII			
	Understanding on relation				Hydrospheric Primary Production ○	Hydrospheric Primary ProductionII ○			
	between form and ecology of				Hydrospheric Environmental Science ○	Hydrospheric Environmental Science II			
	hydrosphere organisms and				Introduction to Hydrospheric Biodiversity	Introduction to Hydrospheric BiodiversityII			
	hydrosphere environment					Aquatic Biogeochemical Cycles			

Study achievementStudy achievementStudy achievement Evaluation items		1st year		2nd year		3rd year		4th year	
		1st semester	2nd semester	3rd semester	4th semester	5th semester	6th semester	7th semester	8th semester
Ability & skills	Basic ability for communication, information processing, and physical	Foreign Languages (○)( )							
		Information and Data Sciece Courses ( )							
		Health and Sports Courses (○)							
	Basic experiment abilities and skills required for studying the expertise	"Basic Laboratory Work in Chemistry"							
			"Experimental Methods and Laboratory Work in Biology I"						
				Laboratory Work in General Biology I & II ( )					
				Laboratory Work in General Chemistry					
				Laboratory Work in General Physics ( )					
	Method for analyzing and evaluating various characteristics of hydrosphere organisms and environment				Laboratory Work in Hydrospheric Biology	Laboratory Work in Hydrospheric Biology		Specialized Practical Work in Marine Biology ○	
					Laboratory Work in Hydrospheric Biology II	Practical Work in Hydrospheric Field Science			
						Practical Work in Hydrospheric Field ScienceII			
						Field Work on Training Vessel			
	Basic skills and analysis methods for breeding and management of hydrosphere				Laboratory Work in Hydrospheric Biology	Laboratory Work in Hydrospheric Biology			
					Laboratory Work in Hydrospheric Biology II	Practical Work in Hydrospheric Field Science			
						Practical Work in Hydrospheric Field ScienceII			
	Method for analyzing and evaluating roles of fishery for human lives and the impact of it					Practical Work in Hydrospheric Field Science		Specialized Practical Work in Marine Biology ○	
						Practical Work in Hydrospheric Field ScienceII			
						Field Work on Training Vessel			
	Ability for reading and communication in English regarding hydrosphere organisms					Reading of Foreign Literature in Integrative Hydrospheric Science	Graduate Thesis I ( )	Graduate Thesis II	Graduate Thesis III
						Exercises in Integrative Hydrospheric ScienceI			
						Exercises in Integrative Hydrospheric ScienceII			
Comprehensive c	Ability to identify issues that he/she should pursue for a specific phenomenon related to hydrosphere organisms, organize his/her own opinion, logically publish them orally and/or in					Reading of Foreign Literature in Integrative Hydrospheric Science	Graduate Thesis I ( )	Graduate Thesis II	Graduate Thesis III
						Exercises in Integrative Hydrospheric ScienceI			
						Exercises in Integrative Hydrospheric ScienceII			

(Example) Liberal arts subjects | Specialized fundament | Specialized subjects | Graduation thesis ( ) Required subjects (○) Elective required s ( ) Elective subjects

Attachment 5

List of Faculty Members of the Integrative Hydrospheric Science Program

Name of faculty	Name of program and position	Extension number	Laboratory	Mail address
Tetsuya Umino	Professor	7944	A317	umino@hiroshima-u.ac.jp
Susumu Ohtsuka	Professor	4116	Takehara Station	ohtsuka@hiroshima-u.ac.jp
Koichiro Kawai	Professor	7894	A217	kawagogi@hiroshima-u.ac.jp
Kazuhiko Koike	Professor	7996	A413	kazkoike@hiroshima-u.ac.jp
Yoichi Sakai	Professor	7975	A216	sakai41@hiroshima-u.ac.jp
Satoshi Asaoka	Associate Professor	7945	A417	stasaoka@hiroshima-u.ac.jp
Aki Kato	Associate Professor	6377	Takehara Station	katoa@hiroshima-u.ac.jp
Hidetoshi Saito	Associate Professor	7895	A218	saito@hiroshima-u.ac.jp
Takeshi Tomiyama	Associate Professor	7941	A214	tomiyama@hiroshima-u.ac.jp
Toshiya Hashimoto	Associate Professor		A418	thasimt@hiroshima-u.ac.jp
Lawrence M. LIAO	Associate Professor	4375	A318	lliao@hiroshima-u.ac.jp
Masayuki Yoshida	Associate Professor	7982	A311	yosidam@hiroshima-u.ac.jp
Kaori Wakabayashi	Associate Professor	7989	A315	kaoriw@hiroshima-u.ac.jp
Yusuke Kondo	Assistant Professor		TakeharaStation	ykondo@hiroshima-u.ac.jp
Shizuka Ohara	Assistant Professor			

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Type	Subject type			Required No. of credits	Class subjects	No. of credits	Type of course registration	Year in which the subject is taken							
								1st grade		2nd grade		3rd grade		4th grade	
								Springs	Fall	Springs	Fall	Springs	Fall	Springs	Fall
Liberal Arts Education	Peace Science Courses			2		2	Required								
	Basic Courses in University Education	Introductory Seminar for First-Year Students		2	Introductory Seminar for First-Year Students	2	Required								
		Introduction to University Education		2	Introduction to University Education	2	Required								
	Common Subjects	Foreign Languages	English(Note2)	Basic English Usage	2	Communication Basic I	1	Required							
						Communication Basic II	1								
				Communication I	2	Communication I A	1	Required							
						Communication I B	1								
				Communication II	2	Communication II A	1	Required							
						Communication II B	1								
			Non-English Foreign Languages (Select one language)		4	Basic Foreign Language I	1	Elective Required							
						Basic Foreign Language II	1								
						Basic Foreign Language III	1								
						Basic Foreign Language IV	1								

Information and Data Science

			Basic Concepts of Chemistry (Note7)											
			E B .	1										
			E B	1	Required									
	Total	44												

Note 1: The year indicated with a circle mark represents that in which students typically take the subject. The year with a double circle mark indicates the year in which students are highly recommended to take the subject. Students are allowed to take the subject in any year after that indicated with a circle or double circle mark. It is required to confirm the semester in which the subject is provided in the class schedule for liberal arts education subjects in the Students' Handbook because some subjects might be provided in different semester from that which is provided in this document.

Note 2: The credit for "Field Research in the English-speaking World" that is earned through such as a short-term study abroad and that for "Online English Seminar I," "Online English Seminar II," and "Online English Seminar III" that is earned through a self-study, are accepted as the credit for English required for graduation. Achievement in a foreign language skill test and language training might be accepted as a credit. For further information, refer to the description regarding English subjects in the liberal arts education and the item "Credit based on Achievement in Foreign Language Skill Test" in the Students Handbook.
(PP. 30 - 31, Liberal Arts)

Note 3: For the information and Data Science subject, it is required to take the subject " Introduction to Information and Data Sciences " that is provided in the first semester in the first year. Only when failing to earn the credit for " Introduction to Information and Data Sciences " , is it allowed to take the subject " Elements of Information Literacy " that is provided in the second semester in the first year.

Note 4: It is required to earn 4 credits or more for the natural science subjects and 4 credits or more for the human & social science subjects.

However, "Fundamentals of Biology" of the natural science subjects is a subject for which students are requested to take if he/she did not take biology subjects in the entrance exam (including the University Testing Center Examination).

For the other students, the credit for the subject "Fundamentals of Biology" is not accepted as that for graduation.

It is allowed to include up to 4 credits for society-related subjects as credits for the Human & Social Science Subjects.

Note 5: For health & sports subjects, it is recommended to take a practicum in sports.

Note 6: Students who studied Mathematics III in high school are required to take the subject "Basic Calculus." Students who did not study Mathematics III in high school are required to take the subject "Elements of Calculus."

Note 7: Students who did not take chemistry subjects in the entrance exam (including the University Testing Center Examination) are required to take the subject "Basic Concepts of Chemistry." For those students, the credit for the subject "General Chemistry" is not accepted for graduation.

For students who take chemistry subjects, the credit for the subject "Basic Concepts of Chemistry" is not

accepted for graduation.

Note 8: It is required to take

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Table of Registration Standards(Specialized Fundamental Subjects)

Integrative Hydrospheric Science Program, Applied Animal and Plant Science Program, Food Science Program, Molecular Agro-Life Science Program

Type	Subject type	Required No. of credits	Class subjects	No. of credits	Year in which the subject is taken							
					1st grade		2nd grade		3rd grade		4th grade	
					Springs	Fall	Springs	Fall	Springs	Fall	Springs	Fall
Specialized Subjects	Specialized Fundamental Subjects	24	Introduction to Applied Biological Sciences	2								
			Introduction to Microbiology	2								
			Introduction to Molecular Biochemistry	2		○						
			Agricultural Production Resources	2		○						
			Physics for Applied Biological Science	2		○						
			Ethics of Science and Technology	2		○						
			Statistics in Biology	2			○					
			Environmental Sciences for Bioproduction	2			○					
			Laboratory Work in General Biology I	1			○					
			Laboratory Work in General Biology II	1			○					
			Laboratory Work in General Chemistry	1			○					
			Laboratory Work in General Physics	1			○					
			Required Subjects: Total 20 credits									

			Seminar in Field Science	2		○					
			Research Front of Applied Biological Sciences	2		○					
			Introduction to Physiology	2			○				
			Public Health	2						○	
			Elective Required Subjects Take 4 credits from above subjects (Redundant credits over 4 credits move to Elective Subjects in each Program)								

Table of Registration Standards (Specialized Subjects)

Integrative Hydrospheric Science Program

Type	Subject type	Required No. of credits	Class subjects	No. of credits	Year in which the subject is taken 1st grade	2nd grade	3rd grade	4th grade
			Required Subjects: Total 10credits					
			Aquaculture I	2		○		
			Hydrospheric Zoology I	2		○		
			Hydrospheric Ecology I	2		○		
			Hydrospheric Environmental Science I	2		○		
			Hydrospheric Primary Production I	2		○		
			Introduction to Hydrospheric Biodiversity I	2		○		
			Laboratory Work in Hydrospheric Biology I	1		○		
			Laboratory Work in Hydrospheric Biology II	1		○		
			Aquaculture II	2			○	
			Hydrospheric Zoology II	2			○	
			Hydrospheric Ecology II	2			○	
			Hydrospheric Environmental Science II	2			○	
			Hydrospheric Primary Production II	2			○	
			Introduction to Hydrospheric Biodiversity II	2			○	
			Laboratory Work in Hydrospheric Biology III	1			○	
			Practical Work in Hydrospheric Field Science I	1			○	
			Practical Work in Hydrospheric Field Science II	1			○	
			Exercises in Integrative Hydrospheric Science I	1			○	
			Exercises in Integrative Hydrospheric Science II	1			○	
			Aquatic Biogeochemical Cycles	1			○	
			Introduction to International Fishery	1			○	
			Fisheries Socioeconomics	1			○	
			Specialized Practical Work in Marine Biology	1				○

Elective Required Subjects: Take 25 credits from above subjects
(Redundant credits over 25 credits move to Elective Subjects)