



(8) Systematic and hierarchical knowledge and understanding regarding physiology of microorganisms, plants, and animals and functionality of living bodies from the level of molecule and cell to that of the individual organism and ecosystem;

(9) Data collection and analysis capabilities and systematic skills for research in the academic fields regarding molecule, cell, functionality of living bodies, and ecosystem and ability to practically use and apply those fundamental skills; and

(10) Capability of applying such as the knowledge, skills, and attitude that he/she has obtained in an integrated manner to solve problems that he/she identifies and logically present the conclusion orally or in writing and discuss with the other persons in the area that studies functionality of a cell and living body from the molecular point of view.

4.

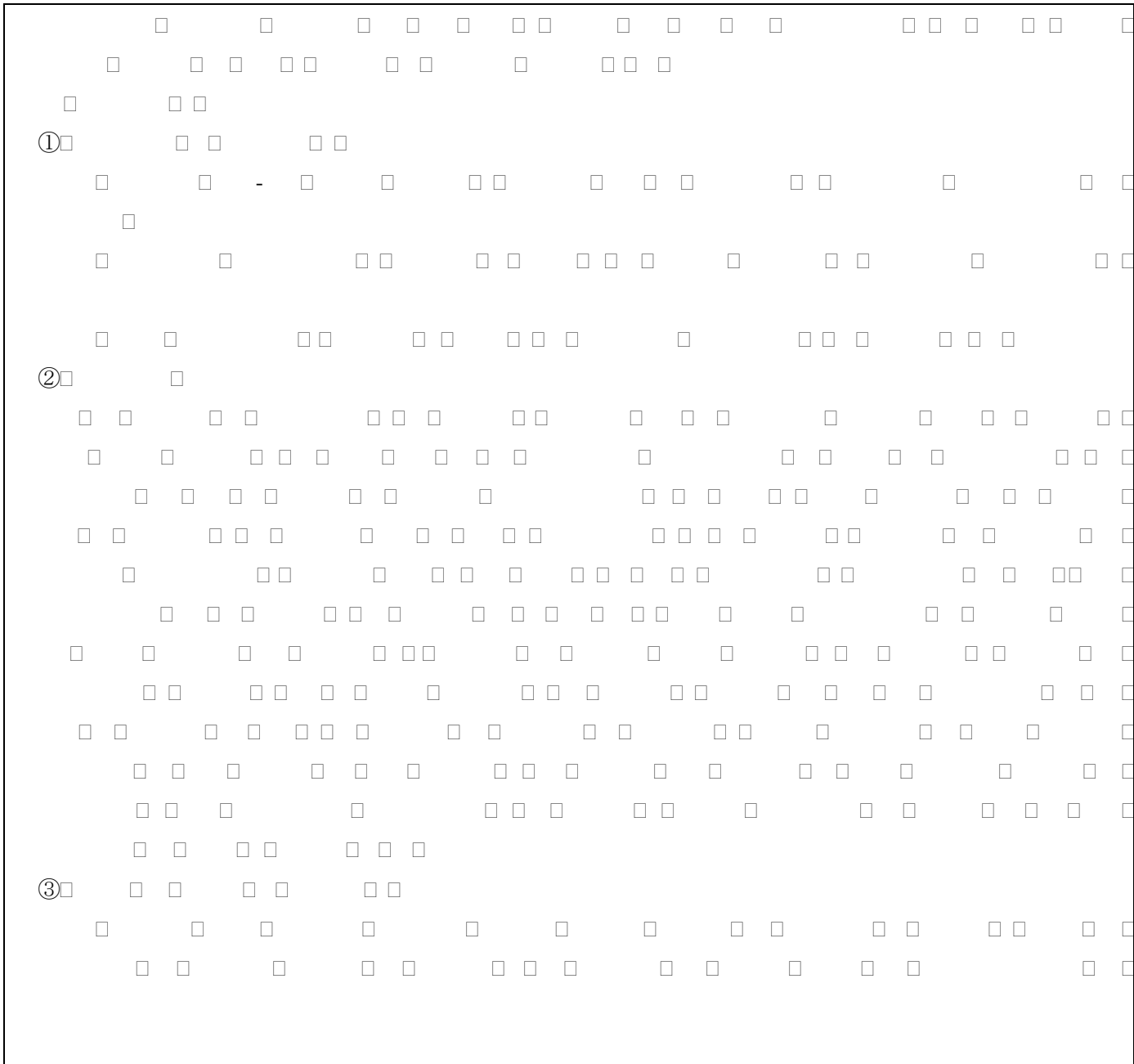
(3) The "specialized subjects" provided in the specialized education in this Program are categorized in "base subjects" in which students study molecular biology regarding organic molecule, cell, individual organism, and population and "advanced subjects" in which the molecule biology is applied and developed to provide systematic education with continuity. They aim to develop capabilities for understanding natural phenomena from the view point of molecular biology and developing the understanding for practical science. In addition to that, this Program provides subjects of "exercise and practicum" in which Problem-based Learning (PBL) is conducted for identifying and solving problems to allow students to acquire skills and attitudes that he/she can widely use and apply in areas of agricultural science. In addition to that, students develop general capabilities for problem solving including skills for communication, presentation, and practical foreign language capability while preparing his/her "graduation thesis."

5.

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.









		“Basic Laboratory Work in Chemistry” or	1									
			1	Required								
	Total	40										



## ○ Instruction regarding credits

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

Note 5: It is required to take "Basic Laboratory Work in Chemis



		Seminar in Field Science	2								
		Research Front of Bioresource Sciences	2								
		Research Front of Food and AgriLife Science	2								
		Introduction to Physiology	2								
		Public Health	2								
		Elective Required Subjects Take 6 credits from above subjects (Redundant credits over 6 credits move to Elective Subjects in each Program)									



		Egm"Vgejppqni {"	4"				
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		Rncpv"Oqngewnc"Dkqni {"	4"				
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Vqvcn"	346"	"					

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## Results of study in Food Science Program

### Relation between evaluation items and evaluation criteria

Study achievement		Evaluation criteria		
Evaluation items		Excellent	Very Good	Good
— — — — — — — — — —	(1) Ability for comprehensive and cross-disciplinary thinking and knowledge / understandings required to see a phenomena from a broad, top-down perspective and to take 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 broad, top-down perspective and to take 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 broad, top-down perspective and to take 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 broad, top-down perspective and to take action for solving problems regarding the specialized area.
	(2) Basic knowledge and understanding required for acquiring expertise	Has fundamental knowledge and profound understanding required for acquiring expertise, and is capable of explaining this knowledge while	Has fundamental knowledge and profound understanding required for acquiring expertise, and is capable of sufficiently explaining this knowledge	Has fundamental knowledge and profound understanding required for acquiring expertise, and is capable of providing basic explanation of this
	(3)			
— — — — — — — — — —	(1) Basic ability in communication, information processing, and physical activities required for acquiring expertise	Has superior ability in all the elements regarding communication, information processing, and physical activities required for acquiring expertise.	Has sufficient ability in all the elements regarding communication, information processing, and physical activities required for acquiring expertise.	Has basic ability in all the elements regarding communication, information processing, and physical activities required for acquiring expertise.
	(2) Basic experimentation abilities and skills required for acquiring expertise	Has sufficient basic experimentation abilities and skills required for acquiring expertise, and is capable of autonomously applying them.	Has sufficient basic experimentation abilities and skills required for acquiring expertise, and is capable of autonomously applying them under instruction.	Generally has sufficient basic experimentation abilities and skills required for acquiring expertise, and is capable of supporting their execution.
	(3) Intellectual ability and techniques in study fields regarding organic molecule, cell, individual organism, and population	Has sufficiently acquired intellectual ability and techniques in areas regarding organic molecule, cell, individual organism, and population and is capable of applying them.	Has acquired intellectual ability and techniques in areas regarding organic molecule, cell, individual organism, and population and is capable of applying them.	Has intellectual ability and techniques in areas regarding organic molecule, cell, individual organism, and population.
	(4) Ability regarding scientific English that is required as a basis for understanding technical English manuals	Has a basic ability for reading English texts and capable of sufficiently understanding technical manuals to explain to the others.	Has a basic ability for reading English texts and capable of understanding technical manuals to explain to the others.	Has a basic ability for reading English texts and capable of understanding technical manuals.
— — — — — — —	Ability to collect information related to peripheral disciplines to complement the knowledge regarding the specialized area and comprehensively consider functions of organic molecule, cell, individual organism, and population from view points related to molecules	Capable of collecting information related to peripheral disciplines to complement the knowledge regarding the specialized area, comprehensively considering functions of organic molecule, cell, individual organism, and population from view points related to molecules, explaining to others, and applying the information.	Capable of collecting information related to peripheral disciplines to complement the knowledge regarding the specialized area, comprehensively considering functions of organic molecule, cell, individual organism, and population from view points related to molecules, and explaining to others.	Capable of collecting information related to peripheral disciplines to complement the knowledge regarding the specialized area and comprehensively considering functions of organic molecule, cell, individual organism, and population from view points related to molecules.

Ability to organize own ideas, demonstrate comprehension based on those ideas, logically represent own conclusion orally or in a document, and exchange ideas in areas in which themes regarding functions of organic molecule, cell, individual organism, and population are discussed from view points related to molecules.

Capable of organizing own ideas, demonstrating comprehension based on those ideas, logically representing own conclusion orally or in a document, and exchanging advanced ideas in areas in which themes regarding functions of organic

					Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	Weighting for evaluation on item for the subject	
Liberal arts education subjects	Peace Science Courses	2	Required	1st - 4th semesters	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	03120184	24344	rt1	732 Tf1 0 0 140 g3 53184 2616 re63120*13(m)F1 732 Tf1 0 0 1 2051 2719 Tm0 g0 G(/)3(E)4(lectiv																			







# Attachment 4

## Curriculum map for Food Science Program

Study achievement Study achievement	1st year		2nd year		3rd year		4th year	
	1st semester	2nd semester	3rd semester	4th semester	5th semester	6th semester	7th semester	8th semester
①Ability for comprehensive and cross-disciplinary thinking and knowledge / understandings required to see a phenomena from a broad, top-down perspective and to take action for solving problems regarding the specialized area.	Seminar for developing intelligence (◎)	Research Front of Food and AgriLife Science (○)						
	Introduction to University Education (◎)	Research Front of Bioresource Sciences (○)						
	Peace Science Courses (◎)	Introduction to Molecular Biochemistry(◎)						
	Area Courses subjects (○)							
K n o w l e d g e & u n d e r s t a n d i n g	Introduction to Applied Biological Science(◎)	Organic Chemistry (◎)	Environmental Sciences for Bioproduction(◎)			Public Health(○)		
	Introduction to Microbiology (◎)	Cell Science (◎)	Statistics in Biology (◎)					
	Introduction to Applied Biological Science(◎)	Agricultural Production Resources(◎)						
	Introduction to Microbiology (◎)	Physics for Applied Biological Science(◎)	Introduction to Physiology (○)					
		Ethics of Science and Technology(◎)						
		Seminar in Field Science (○)						

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③ Knowledge and understanding regarding organic molecule, cell, individual organism, and population

Introduction to  
Molecular  
Biochemistry(◎)

Genome Science I  
(◎)

Cell Technology(○)

Animal Breeding and  
Genetics(○)

Genome Science II  
(◎)

Reproductive Biology  
(○)

Bioorganic Chemistry  
(◎)

Plant Molecular  
Biology(○)

Chemistry of natural  
organic compounds  
(◎)

Food Microbiology  
(○)

Molecular Cell  
Biology (◎)

Bioresource  
Utilization Science  
(○)

Bio-Analytical Science  
(◎)

Nutrition(○)

Systemic Life Science  
(◎)

Hydrospheric  
Biochemistry(○)  
Pathology (○)

Applied extremophilic  
life science(○)

—

① Basic ability in communication, information processing, and physical activities required for acquiring expertise

Foreign Languages (○)(◎)  
Information and Data Science Courses (◎)  
Health and Sports Courses (○)

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② Basic experimentation abilities and skills required for acquiring expertise

"Basic Laboratory Work in Chemistry"

Laboratory Work in General Biology I & II (◎)  
Laboratory Work in General Chemistry (◎)  
"Experimental Methods and Laboratory Work in Biology I"  
Laboratory Work in General Physics (◎)

③ Intellectual ability and techniques in study fields regarding organic molecule, cell, individual organism, and population

Laboratory Work in Molecular Agro-life Science I (◎)  
Problem Based Learning for Molecular Agro-Life Science I (◎)  
Laboratory Work in Molecular Agro-life Science II (◎)  
Problem Based Learning for Molecular Agro-Life Science II (◎)

④ Ability regarding scientific English that is required as a basis for understanding technical English manuals

Laboratory Work in Molecular Agro-life Science III (◎)  
Reading of Foreign Literature in Molecular Agro-Life Science (◎)

o m p r e h e n s i v e c o n c l u s i o n	①Ability to collect information related to peripheral disciplines to complement the knowledge regarding the specialized area and comprehensively consider functions of organic molecule, cell, individual organism, and population from view points related to molecules					Food Biochemistry(O)		
	②Ability to organize own ideas, demonstrate comprehension based on those ideas, logically represent own conclusion orally or in a document, and exchange ideas in areas in which themes regarding functions of organic molecule, cell, individual organism, and population are discussed from view points related to molecules.					Graduation Thesis I (◎)	Graduation Thesis II (◎)	Graduation Thesis III (◎)

(Example) Liberal arts subjects Specialized fundament Specialized subjects Graduation thesis (◎) Required subjects (○) Elective required (△) Elective subjects

List of Faculty Members of the Molecular Agro-Life Science Program

Name of faculty	Name of program and position	Extension number	Laboratory	Mail address
	Professor			@
	Professor			@
	Professor			@
	Professor			@
	Professor			@
	Professor			@
				@
				@
				@
				@
				@
				@
				atsukoikeda@hiroshima-u.ac.jp
		7961	B203	