

## For entrants in AY 2018

Appended Form 1

Specifications for Major Program  
Name of School (Program) [School of Applied Biological Science comprises]

Program name (Japanese)	
(English)	Food Science Program

1 Degree to be obtained: Bachelor of Agriculture

2 Overview

In the five major programs of the School of Applied Biological Science (Integrated Ecoscience Program, Fisheries Biology Program, Animal Science Program, Food Science Program, and Applied Molecular and Cellular Biology Program), the aim is to enable students to acquire a wide range of knowledge and wisdom in the realms of natural and social sciences related to applied biology. Specifically, we provide education that allows students to acquire basic knowledge regarding biotic resources and food production, biotechnology, and protection of the biological environment; gain experience in field science; understand bioethics and engineering ethics; and obtain capabilities in foreign languages such as English and in data processing.

In the Food Science Program, education is provided to students by faculty members engaged in six educational subjects (biomolecular physical chemistry, food engineering, food microbiology and hygiene, molecular nutrition, marine bioresource chemistry, and food chemistry). Studies are undertaken in various areas regarding the functionality and safety evaluation of foods and food materials, the development of new food processing technology, research into useful functional materials derived from aquatic and terrestrial organisms, the identification of the action mechanism of materials, effects on living organisms and the environment, and the use and development of biological resources as useful materials. Through this program, students are enabled to study food science from the fundamentals to the practical application, while being exposed to cutting edge knowledge.

From the perspective described above, this program aims to provide general education regarding the fundamental knowledge and technologies related to the development and manufacture of safe foods with high quality and functionality, and the function analysis and effective use of bioresources, in order to develop professionals who can contribute to the creation of a rich and healthy dietary life from a broad perspective.

The students who graduate from this program are expected to go on to graduate school, or to become researchers and specialists with an international outlook working in institutions such as the public office for agriculture and fisheries, or in business fields related to foods and chemical/pharmaceutical products.

3 Diploma policy (policy for awarding degrees and goal of the program)

The Food Science Program aims to provide general education regarding the fundamental knowledge and technologies related to the development and manufacture of safe foods with high quality and functionality, and the function analysis healthy dietary life from a broad perspective. Therefore, in this program, the degree bachelor of agriculture will be awarded to students have earned the required credits and certification to satisfy the specified level of achievement, passed the examination that is administered by the School of Applied Biological Science, and acquired the following abilities.

Through the liberal arts education, the student is required to acquire:

1. The ability to study independently, collecting, analyzing, and criticizing data, together with the willingness to demonstrate of the use of this ability;
2. Insight from a broad perspective into the essentials and background of phenomena, and the linguistic ability and interest in peace that are required for a citizen of the world;
3. The ability to identify a problem based on broad knowledge, to integrate findings to establish a "knowledge system" that is truly useful for problem solving, and to examine phenomena from a comprehensive perspective; and
4. General and basic knowledge of science that enables the student to develop the knowledge and skills required for application in any of the specialized fields of applied biological science.

Through the specialized education (specialized fundamental subjects), the student is required to acquire:

5. The ability to understand advanced topics and basic ideas related to organisms and the biosphere;
6. The ability to understand the value, orientation, and relevance to the globalized society of applied biology, and the importance of communication and consensus building related to the application of scientific results; and
7. An understanding of the problems regarding research misconduct, and the importance of research and engineering ethics.

Through the specialized education in this program, the student is required to acquire:

8. The ability to use their expertise in the analysis and evaluation of the functionality and safety of foods, food materials, and functional materials derived from bioresources;
9. Expertise and general skills related to food processing technologies and the application and development of useful materials, in order to understand various phenomena related to foods from a scientific point of view;

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	Food Science Program
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	<p>10. Techniques for producing foods from bioresources, and the ability to comprehensively discuss practical methods for converting these into safe and highly functional food; and</p> <p>11. Comprehensive understanding of various processes, from foodstuff production to food processing, as an integrated system, in order to be able to discuss methods for effective use of bioresources as safe and highly functional food. The student is also required to become capable of applying the knowledge, skills, and attitude that he/she has obtained in an integrated manner, in order to solve problems that he/she identifies, to logically present conclusions orally or in writing, and to discuss these with others.</p>
4	<p>4 Curriculum policy (policy for arranging and executing education courses)</p> <p>To enable students to achieve the targets that are set for the Food Science Program, the educational courses are organized and implemented according to the following policies:</p> <ol style="list-style-type: none"> <li>1. Liberal arts education courses aim to impart wide-ranging and in-depth education and general intelligence, and to foster deep humanity with a desire for peace. They also aim to develop practical foreign language abilities, an international perspective, the ability to understand different cultures, and the ability to utilize information and communication. In addition to this, courses in basic subjects are integrated into the liberal arts education in order to develop the basic scientific knowledge and skills required for application in any of the specialized fields of applied biological science.</li> <li>2. Specialized education courses develop the basic capabilities related to organisms and the biosphere through the "specialized fundamental subjects" that are common to all programs in the School of Applied Biological Science. The courses include overseas exercises, internships, fieldwork, and lectures regarding ethics in science and engineering, in order to develop the imagination and practical basic capabilities required for working in a leading position in the international and/or local community. The courses also aim to develop the ability to understand problems regarding research misconduct, and the importance of research and engineering ethics.</li> <li>3. The courses in the specialized education for this program provide the "specialized subjects" related to such topics as the functionality and safety of foods and food materials, biomolecular physical chemistry, and food processing technology, in order to enable students to acquire the ability to systematically and hierarchically understand food science from its basics to their application. Also, the courses in "exercises" and "experimentation and practice" in related areas are provided in order for students to acquire the skills and attitudes to practically apply and make use of their results. In addition to this, students develop general capabilities for problem solving, including skills for communication, presentation, and practical foreign language abilities, while preparing their "graduation thesis."</li> <li>4. The achievement in education is evaluated based on the grade scores for the subjects and the achievement level against the target set for this program.</li> </ol>
5	<p>5 Start time and acceptance conditions</p> <p>The School of Applied Biological Science holds the entrance examination together with the Department of Applied Biological Science. In the first and second semesters of the first year and the first semester of the second year, students mainly take the liberal arts subjects that are common to the whole university (educational seminars, subjects related to peace, package subjects, foreign languages, data processing, area subjects, and subjects related to health and sports). Assignment of students to the Applied Molecular and Cellular Biology Program is conducted in the second semester of the second year.</p> <p>Students study the basic subjects for one year after entering the university, in order to acquire the basic knowledge required for studying the specialized fields. They then mainly study the specialized basic subjects common to all students of the School of Applied Biological Science in the second semester of the second year. In particular, they take the subjects Laboratory Work in General Chemistry, Laboratory Work in General Physics, and Laboratory Work in General Biology I &amp; II (including computer exercises), since these relate to experimentation, are common to all students of the School of Applied Biological Science, and consist of receiving the basic training in a wide range of experimentation procedures that is commonly required for the students of the School of Applied Biological Science. By the first semester of the second year, students acquire a wide-ranging education, ability in foreign languages such as English, data processing skills, the basic knowledge common to students of the School of Applied Biological Science, and an understanding of bioethics and engineering ethics, in order to allow them to understand the aim and characteristics of each major program and select the most appropriate program.</p> <p>The School of Applied Biological Science comprises five courses, i.e. the Integrated Ecoscience Course, the Fisheries Biology Course, the Animal Science Course, the Food Science Course, and the Applied Molecular and Cellular Biology Course, and each of these provides an educational program under the same name as its course name, i.e. the Integrated Ecoscience Program, the Fisheries Biology Program, the Animal Science Program, the Food Science Program, and the Applied Molecular and Cellular Biology Program. The student is allocated to one of the five courses based on his/her wishes and level of achievement, according to the "course allocation method" described below. The allocated student takes the program with the name of the course to which he/she is allocated as his/her major program.</p> <p>(Course allocation method)</p> <p>Students who are to be allocated to the courses in a given year are allocated to each course proportionally to the number of faculty members, excluding specially appointed faculty members, for each course. In making these calculations, digits after a decimal point are rounded up.</p> <p>Number of faculty members (as of April 1, 2017):</p> <p>Integrated Ecoscience Course (12), Fisheries Biology Course (15), Animal Science Course (15), Food Science Course (12), and Applied Molecular and Cellular Biology Course (10)</p> <p>The student must meet the specified "requirements for allocation to the course" in order to be allocated to the course.</p>
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6	<p>6 Obtainable qualifications</p> <ul style="list-style-type: none"> <li>o Educational personnel certification</li> </ul>

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	S=4	A=3	B=2	C=1	
Good)	(Good)	(Excellent)	(Very		
	(Excellent)	3.00	4.00		
	(Very Good)	2.00	2.99		
	(Good)	1.00	1.99		
	90				
	80	89			
	70	79			
	60	69			
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	1. Type 1 License for High School Teacher (Science) <ul style="list-style-type: none"> <li>○ Curator License</li> <li>○ Appointment qualification for food sanitation supervisor and food sanitation inspector</li> <li>* For details of acquisition of these qualifications, refer to the "Student Handbook."</li> </ul>				
7	Class subjects and their contents				
	* For the class subjects, refer to the subject table in Attachment 1. (The subject table is to be attached.) * For the details of the class subjects, refer to the syllabus that is published for each academic year.				
	8. Academic achievement The evaluation criteria are specified for each evaluation item for academic achievement, and the level of achievement against the criteria is given at the end of the semester. The evaluation score for each evaluation item is converted to a numerical value (S = 4, A = 3, B = 2, and C = 1) and the evaluation standard for academic achievement, from the time the student entered the university to the end of the current semester, is determined using these values while applying weightings. The evaluation standard values correspond to three levels, i.e. Excellent, Very Good, and Good.				
	Study achievement	Evaluation standard	Achievement evaluation	Numerical conversion	
	Excellent	3.00 - 4.00	S (Excellent: 90 or more points)	4	
	Very Good	2.00 - 2.99	A (Very good: 80 - 89 points)	3	
	Good	1.00 - 1.99	B (Good: 70 - 79 points)	2	
			C (Passed: 60 - 69 points)	1	
	* Refer to the relationship between evaluation items and evaluation criteria described in Attachment 2. * Refer to the relationship between evaluation items and class subjects described in Attachment 3. * Refer to the curriculum map in Attachment 4.				
	9. Graduation thesis (graduation research) (meaning, student allocation, timing, etc.)				
	○ Purpose In graduation research, students conduct experiments in their selected area of study, while directly observing the research activities being conducted by faculty members, in order to organize the basic knowledge food science that they have acquired up to the first semester of the third year. They are required to acquire the ability to identify new phenomena, and to solve problems from a scientific perspective, while studying their topics, in order to become engineers and/or researchers in food science who have creativity, an international outlook, and the skills in applied development necessary for working in the production, functional analysis, and effective use of bioresources, based on an international and interdisciplinary outlook.				
	○ Overview Students are allocated to one of six laboratories to conduct their graduate research on the topic that they have been given by their mentor. In their graduation research, students learn the concepts and ethics fundamentally required for research activities, establish a plan for the research, study the methods needed for the research and experiments, and carry out their research under the instruction of their mentor. Furthermore, students review the results obtained in the research and identify targets for further research. Students experience a series of research processes in person, and have the chance to observe cutting-edge research activities. An interim debriefing session is held in each laboratory, and students compile their results in their graduation thesis by the specified date. Also, students present the results of their research in the graduation thesis presentation assembly that is held for whole the program.				
	In the process of graduation research, students learn the abilities and skills described above.				
	○ Student allocation method and timing				
	1. Students are allocated to a laboratory in the second semester of the third year.				
	2. Students are allocated to a laboratory under the guidance of the tutor in charge, according to the allocation method stipulated for the food science course.				
	Since the contents of the graduation research vary by laboratory, students are instructed to choose a laboratory to which they are to be allocated at a guidance seminar. The tutor holds a guidance seminar for students in their second year to explain the specialties of faculty members. The tutor also instructs students to attend the presentation assembly for graduation theses and master's theses, in order to understand the details of the research undertaken by each faculty member. A session is held in the first semester of the third year to allow faculty members to explain to students the details				

	plan	(do)	(plan)	(do)	(check)
					(action)
			(check)		
	(action)				
			(plan)	(do)	(check)
(a)				(action)	
(b)					
(c)					

graduation thesis and the situation in the laboratory.

The upper and lower limits for the number of students allocated to each laboratory and/or faculty are determined in a food science course meeting after the tutor in charge discusses it with each faculty member. Students express their wishes and discuss with one another to determine the laboratory to which each student is to be allocated, and then the allocation is approved in the course meeting. In some cases, the tutor adjusts the number of students to be allocated to each laboratory.

10. Responsibility

(1) Responsibility for PDCA (plan, do, check, and act) cycle

1. The education affairs committee of school and the faculty members who provide the lectures are engaged in the "plan" and "do" processes.
2. Each course has responsibility for planning and executing its major program. A chief faculty member is designated as the supervisor of the course.
3. The education affairs committee of the school exercises control over the major programs provided by the school.
4. The education affairs committee of the school consists of five members who are elected from each course, and a chairman who is chosen by the school.
5. The education reform promotion committee is engaged in the process of "check."
6. The education reform promotion committee consists of five members who are elected from each course, a chairman who is chosen by the school, the chairman of the education affairs committee of the school, and an assistant chief of the graduate course.
7. The education reform promotion committee reviews and evaluates the major programs provided in each course, reports the results to the education affairs committee of the school and the courses, and provides advice and recommendations.
8. The course committee that takes the responsibility for execution of the major program is engaged in the process of "act."
9. The course committee and the education affairs committee of the school prepare and execute a plan for improvement taking into consideration the report, advice, and recommendations that are provided by the education reform promotion committee after the "check" process.

The course committee, the education affairs committee of the school, and the education reform promotion committee cooperate with one another to execute their roles with responsibility in the "plan", "do", "check", and "act" cycle in order to improve the education provided by the school.

(2) Evaluation of program

(a) Viewpoint for evaluation of program

The program is evaluated from the viewpoints of "educational effectiveness" and "social effectiveness."

The "educational effectiveness" is evaluated by the effect of the implementation of the program on the educational achievement of students.

The "social effectiveness" is evaluated by the effect of educational achievement in the program on society.

(b) Evaluation method

Achievement in this program is evaluated from the perspectives described above for students in the second semester of the fourth year.

For "educational effectiveness", the results and achievements of the students who took the program are evaluated comprehensively by the group of faculty members who are engaged in the execution of the program. Also, the level of achievement of all the students is evaluated and reviewed.

"Social effectiveness" is evaluated based on such things as the rate of employment in corporations that have a close connection with the contents of this program, and the pass rate in public servant examinations. We regularly request a member of human resources staff from a company that mainly employs students from this program to evaluate the program. In addition to this, we request graduates of this program to evaluate their own achievement and that of the program. The staff working in companies and other graduates are requested to provide evaluation and advice regarding whether the class subjects and their contents in this program had a positive effect on their social activities, whether the contents of the classes appropriately corresponded to changes in science, technology, and society, and any additional class subject that may be required in the future.

(c) Policy and method for feedback to students

The education reform promotion committee regularly conducts surveys and interviews for students to review and evaluate the program, improve the contents of the program, and provide advice and recommendations for improvement.