

平成30年度入学生対象

別記様式 1

食品科学主専攻プログラム詳述書  
開設学部（学科）名〔生物生産学部（生物生産学科）〕

|              |                      |
|--------------|----------------------|
| プログラムの名称（和文） | 食品科学主専攻プログラム         |
| （英文）         | Food Science Program |

1. 取得できる学位 学士（農学）

2. 概要

生物生産学部の5つの主専攻プログラム（生物圏環境学、水産生物学、動物生産科学、食品科学および分子細胞機能学）では、生物生産に係わる自然科学から社会科学に及ぶ幅広い知識と知恵を身につけさせることを目標とする。具体的には、①生物資源と食料生産、バイオテクノロジー、生物環境の保全に関する基礎的知識の修得、②フィールド科学分野の体験学修、③生命倫理や技術者倫理の理解、④英語等の語学能力や情報処理能力の修得を目指した教育を行う。

食品科学主専攻プログラムは、6つの教育科目（食品物理学、食品工学、食品衛生学、分子栄養学、海洋生物資源化学、動物資源化学）に所属する教員により実施され、食品と食品素材の機能性、安全性の評価、新食品加工技術の開発、海洋および陸上生物由来の有用機能性物質の探索と作用機序の解明、生体や環境への影響ならびに、生物資源の有用素材としての利用と開発等に関する幅広い教育・研究が行われている。本プログラムを履修することにより最先端の知見に触れながら、食品科学の基礎から応用までを幅広く学修することができる。

このような観点から、本プログラムでは、安全で高品質・高機能な食品の開発・製造および生物資源の機能解析と有効利用に関する基礎知識と技術を総合的に教育し、広い視野から健康で豊かな食生活の創成に貢献できる人材を養成する。

本プログラムを卒業した学生は、大学院への進学や農林水産関係の官公庁、食品・化学・医薬等に関係する業界で、国際的視野を持った研究者・専門技術者となることを期待する。

3. ディプロマ・ポリシー（学位授与の方針・プログラムの到達目標）

食品科学主専攻プログラムでは、安全で高品質・高機能な食品の開発・製造および生物資源の機能解析と有効利用に関する基礎知識と技術を総合的に教育し、広い視野から健康で豊かな食生活の創成において活躍できる人材を養成する。そのため本プログラムでは、以下の能力を身につけ、基準となる単位を修得すると共に規定の到達目標に達し、かつ生物生産学部が定める審査に合格した学生に「学士（農学）」の称号を授与する。

教養教育を通して

1. 自主的・自立的に学修する態度を習慣づけており、情報収集力・分析力・批判力を身につけ、これらを活用できる。

2. ものごとの本質と背景を広い視野から洞察する力や、国際人として生きるにふさわしい語学力と平和に関する関心を持っている。

3. 幅広い知識から、問題を発見し、真に問題解決に役立つ「知識体系」へと統合し、総合的な見地からものごとを俯瞰できる。

4. 一般的な科学的基礎知識を持ち、生物生産学の専門領域への応用展開に必要な知識と技能を理解できる。

専門教育（専門基礎科目）を通して

5. 生物及び生物圏に関する先端的な話題や基本的な概念を理解できる。

6. 生物生産学の価値志向性やグローバル化した社会との関わりを理解でき、科学の応用における対話や合意形成の重要性を理解できる。

7. 研究上の不正行為の問題性と研究者・技術者倫理の重要性を理解できる。

本プログラムの専門教育を通して

8. 食品および食品素材、さらに生物資源由来の有用機能物質の機能性・安全性の分析・評価法に関する専門的知識を利用できる。

9. 食品の加工技術や有用素材の応用・開発等に関する専門的知識、および汎用的技能を習得し、科学的見地に立って食品に関する諸現象を理解できる。

10. 生物資源から食品を製造する技術を習得するとともに、安全かつ機能性の高い食品へと変換するための実践

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) | 食品科学主専攻プログラム         |
| (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 ① acquire basic knowledge regarding biotic resources and food production, biotechnology, and protection of the biological environment; ② gain experience in field science; ③ understand bioethics and engineering ethics; and ④ 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 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. 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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| <p>的方策について総合的に考察できる。</p> <p>1 1. 食糧生産から食品加工に至るまでの流れを統合的に学修することで、一貫したシステムとして理解し、生物資源を安全で品質の高い食品として有効利用するための方策を考えることができる。身につけた知識・技能・態度等を総合的に活用し、自らが立てた課題を解決し、結論を文章や口頭で論理的に表現し、議論できる。</p>  | <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>  |
| <p>4. カリキュラム・ポリシー（教育課程編成・実施の方針）</p> <p>食品科学主専攻プログラムでは、プログラムが掲げる到達目標を学生に実現させるために、次の方針に従って教育課程を編成し、実践する。</p> <p>1. 教養教育では、平和を希求し、幅広く深い教養と総合的な判断力を培い、豊かな人間性を涵養することを目指すし、さらに実用的外国語運用能力、国際的視野や異文化理解能力、情報活用能力やコミュニケーション能力を養成する。また、教養教育の中に基盤科目を配置し、生物生産学の専門領域への応用展開に必要な科学的な基礎知識と技能を理解する能力を養成する。</p> <p>2. 専門教育では、まず、学部共通の「専門基礎科目」を通して、生物及び生物圏に関わる専門基礎力を養成する。この中には、海外演習、インターンシップ、フィールド演習、科学技術倫理学も含まれ、国際社会及び地域社会において指導的な活動をするための想像力と実践性を備えた基礎力、並びに研究上の不正行為の問題性と研究者・技術者倫理の重要性を理解する能力を養成する。</p> <p>3. 本プログラムの専門教育では、食品および食品素材の機能・安全性、食品物理、食品加工技術等に関する「専門科目」を通して、食品科学分野の基礎から応用において体系のおよび階層的に理解することのできる能力、および、当該分野の「演習」や「実験」を通じて、実践的に応用・活用できる技能や姿勢を修得する教育を実施する。さらに「卒業論文」により、コミュニケーション・プレゼンテーション・実践的外国語能力も含めた総合的な問題解決能力を身につけた人材を養成する。</p> <p>4. 学修の成果は、各科目の成績評価と共に本プログラムで設定する到達目標への到達度の2つで評価する。</p>   | <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> <p>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.</p> <p>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.</p> <p>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."</p> <p>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.</p>  |
| <p>5. 開始時期・受入条件</p> <p>生物生産学部では、生物生産学科として一括して入学試験を行う。入学後、1年次前・後期および2年次前期において、全学向けに開講されている教養教育科目（教養ゼミ・平和科目・パッケージ別科目・外国語科目・情報科目・領域科目・健康スポーツ科目）を中心に履修する。食品科学主専攻プログラムへの実質的な配属時期は、2年次後期である。</p> <p>学生は入学後の1年間、基盤科目を履修し、専門分野を学ぶために必要な基礎的知識を学修する。その後、2年次の前期では、生物生産学部共通に関わる専門基礎科目を中心に履修する。特に、生物生産学部共通の実験科目として、基礎化学実験、基礎物理学実験、基礎生物学実験Ⅰ・Ⅱ（コンピューター演習を含む）を履修し、生物生産学部共通で必要とされる幅広い分野における基礎的な実験トレーニングを行う。この2年次前期までに、幅広い教養と、英語等の語学能力や情報処理能力、生物生産学部として共通の基礎的知識、生命倫理や技術者倫理を修得するとともに、各学生が、各主専攻プログラムの教育目標、特徴等を十分理解し、最適なプログラムを選択する。</p> <p>生物生産学部には、生物圏環境学、水産生物科学、動物生産科学、食品科学および分子細胞機能学の5つのコースがあり、それぞれが生物圏環境学、水産生物科学、動物生産科学、食品科学および分子細胞機能学という5つの同名の主専攻プログラムを提供している。2年次後期に、本人の希望と成績により、以下の「コース分属方法」によって、5つのコースに分属する。各コースに分属された学生は、同名のプログラムを主専攻プログラムとして履修する。</p> <p>（コースへの分属方法）</p> <p>その年度の分属対象者を各コースの特任教員を除いた教員数を基準に比例配分して各コースに分属することを原則とする。ただし、小数点以下は繰り上げる。</p> <p>参考教員数（平成29.4.1現在）：</p> <p>生物圏環境学（12）、水産生物科学（15）、動物生産科学（15）、食品科学（12）、分子細胞機能学（10）</p> <p>なお、各コースに分属されるためには、規定の「コース分属要件」を満たさなければならない。</p> | <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 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> |
| <p>6. 取得可能な資格</p>   | <p>6. Obtainable qualifications</p> <p>○ Educational personnel certification</p>  |





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| <div>1 0. 責任体制</div> <div>(1) PDCA責任体制 (計画(plan)・実施(do)・評価 (check)・改善 (action))</div> <div>1. 計画 (plan)・実施(do)は, 学部教務委員会および講義担当者が行う。</div> <div>2. コースは, 責任を持って主専攻プログラムを計画・実施する。その責任者としてコース主任を置く。</div> <div>3. 学部教務委員会は, 学部で実施される主専攻プログラムを統括する。</div> <div>4. 学部教務委員会は, 各コースから選出された5名の委員と学部から選出された委員長等からなる。</div> <div>5. 評価検討(check)は, 教育改革推進委員会が行う。</div> <div>6. 教育改革推進委員会は, 各コースから選出された5名の委員と学部から選出された委員長, 学部教務委員長, 研究科長補佐からなる。</div> <div>7. 教育改革推進委員会は, 各コースが実施した主専攻プログラムの評価検討を行い, その結果を学部教務委員会, コースに報告し, 助言・勧告を行う。</div> <div>8. 対処(action)は, 主専攻プログラムの実施責任母体であるコース委員会が行う。</div> <div>9. コース委員会, 学部教務委員会は, 教育改革推進委員会が行った評価検討後の報告および助言・勧告を尊重し, 改善のための計画案を作り, 実施する。</div> <div>コース委員会, 学部教務委員会, 教育改革推進委員会は, 各役割を責任もって実行し, お互いに連携をとりながら, 学部教育の計画(plan)・実施(do)・評価検討(check)・対処(action)を行い, 学部教育の改善に勤める。</div> <div>(2) プログラムの評価</div> <div>(a) プログラム評価の観点</div> <div>本プログラムでは, 「教育的効果」と「社会的効果」を評価の観点とする。</div> <div>「教育的効果」では, プログラムの実施に伴う学生の学修効果を判定する。</div> <div>「社会的効果」では, プログラムの学修結果の社会的有効性を判定する。</div> <div>(b) 評価の実施方法</div> <div>本プログラムでは, 上記の評価の観点に従い, 4年次後期にプログラムの成果を評価する。</div> <div>「教育的効果」に関しては, 本プログラムを学修した学生の成績および到達度について, 実施した教員グループによる総合的な評価を行う。また, 学生全体のプログラム達成水準を評価し, 点検する。</div> <div>「社会的効果」に関しては, 本プログラムの内容と密接に関連する企業への就職率, 公務員試験合格率等を調べ, 評価を行う。一定期間毎に, 学生の主に就職する企業の人事担当者に本プログラムの評価を依頼する。</div> <div>さらに, 卒業生にも, 当人の自己評価および本プログラムの評価を依頼する。企業および卒業生に依頼する本プログラムの評価の内容は, 本プログラムの各授業科目およびその内容が社会的活動を行う上で有益であったか, 授業内容が科学技術の変化や社会の変化に対応しているか, 今後必要となる授業科目はないか等について, 評価や意見を求める。</div> <div>(c) 学生へのフィードバックの考え方とその方法</div> <div>教育改革推進委員会は, 一定期間毎に, 学生へのアンケートやヒアリングを行い, プログラムを点検・評価するとともに, プログラム内容の見直し, 改善のための助言・勧告を行う。</div> | <div>graduation thesis and the situation in the laboratory.</div> <div>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.</div> <div>10. Responsibility</div> <div>(1) Responsibility for PDCA (plan, do, check, and act) cycle</div> <div>1. The education affairs committee of school and the faculty members who provide the lectures are engaged in the "plan" and "do" processes.</div> <div>2. Each course has responsibility for planning and executing its major program. A chief faculty member is designated as the supervisor of the course.</div> <div>3. The education affairs committee of the school exercises control over the major programs provided by the school.</div> <div>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.</div> <div>5. The education reform promotion committee is engaged in the process of "check."</div> <div>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.</div> <div>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.</div> <div>8. The course committee that takes the responsibility for execution of the major program is engaged in the process of "act."</div> <div>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.</div> <div>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.</div> <div>(2) Evaluation of program</div> <div>(a) Viewpoint for evaluation of program</div> <div>The program is evaluated from the viewpoints of "educational effectiveness" and "social effectiveness."</div> <div>The "educational effectiveness" is evaluated by the effect of the implementation of the program on the educational achievement of students.</div> <div>The "social effectiveness" is evaluated by the effect of educational achievement in the program on society.</div> <div>(b) Evaluation method</div> <div>Achievement in this program is evaluated from the perspectives described above for students in the second semester of the fourth year.</div> <div>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.</div> <div>“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.</div> <div>(c) Policy and method for feedback to students</div> <div>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.</div> |