

## International Joint Degree Master's Program in Agro-Biomedical Science in Food and Health

Name of the degree to be conferred	Master of Agro-Biomedical Science in Food and Health
Educational purpose	In response to the challenges that humanity faces on a global scale, such as the maintenance and promotion of good health and the safe supply of food, based on the principle of "medicine and food have the same source," we will train highly-skilled international professionals with a scientific understanding of the effects of food on health and the specialized and practical skills to bridge the needs of global society and research and development.
Vision of human resources development	To develop individuals who have the following knowledge and abilities. <ul style="list-style-type: none"> <li>• Literacy: Cross-disciplinary thinking skills supported by expertise, language skills to utilize specialized knowledge and abilities</li> <li>• Coordination skills: Discernment and planning skills in overseas fields, dialogue and negotiation skills among multinationals, management skills in different fields and industries</li> <li>• Practical skills: Ability to put ideas into practice and implement them, and the ability to express oneself through presentations and self-promotion.</li> <li>• Ability to link health and food resources: Knowledge of the functionality and medical use of biological resources, knowledge of food-borne diseases and physiological disorders, knowledge of policies related to food resources and health care.</li> <li>• Ability to understand health security issues: knowledge of social medicine, including food resources and chemical safety, including pharmaceuticals</li> <li>• Ability to perceive food security issues: Knowledge on evaluation and development of biological resources (including safety) and use of sustainable food production systems</li> </ul>
Knowledge and abilities specified in diploma policy	Evaluation perspectives
1. Literacy: Cross-disciplinary thinking skills, language skills	① Does the student have the ability to think in a cross-disciplinary manner based on his/her expertise? ② Does the student have the language skills to utilize his/her specialized knowledge and abilities?
2. Coordination skills: Discernment and planning, dialogue and negotiation, management skills	① Does the student have discernment and planning skills in overseas fields? ② Does the student have multinational dialogue and negotiation skills? ③ Does the student have the ability to manage in different fields and different industries?
3. Practical skills: Ability to practice and express oneself	① Does the student have the practical ability to put ideas into practice and implement them? ② Ability to express oneself through presentations and self-promotion
4. Ability to link health and food resources	① Does the student have knowledge of the functionality and medical use of biological resources? ② Does the student have knowledge of food-borne diseases and physiological disorders? ③ Does the student have knowledge of policies related to food resources and medical care?
5. Ability to understand health security issues	Does the student have knowledge of social medicine, including food resources and chemical safety, including pharmaceuticals?
6. Ability to understand food security issues	Does the student have knowledge of the evaluation and development of biological resources (including safety) and their use in sustainable food production systems?
Dissertation evaluation criteria	
① Level standards required for the degree thesis	
1. To acquire basic knowledge and skills related to global food safety assessment and health maintenance.	
2. Understanding of the process from problem formulation to solution by professional methods, and the ability to devise and develop concrete means for solving real problems related to the safety assessment of food and health maintenance on a global scale.	
3. Can practice service to humanity and society with an international perspective and the ability to adapt to different cultures.	
4. Be able to communicate well and take a leadership role in international activities.	
5. Possess creativity to generate innovation through interdisciplinary education and advanced practical research.	
6. Acquire a cross-disciplinary way of thinking that is not limited to their specialized field.	

② Review board members (Review board members)

The degree examination committee, consisting of faculty members from the University of Tsukuba, National Taiwan University, and the University of Bordeaux, will select three examiners (one primary examiner and two secondary examiners, one from each university). One examiner and two secondary examiners will be selected from each university.

③ Review method and review items, etc.

Three examiners will evaluate the report, oral presentation, and oral examination on the specific subject research, and make a comprehensive judgment of pass or fail.

## Curriculum Policy

### Curriculum organization policy

#### <Overall Policy>

In addition to cultivating specialized skills related to the efficacy and safety of food resources and health foods for living organisms, the curriculum is organized and implemented with a view to food production and processing. Class subjects are divided into "General Foundation Subjects" to cultivate academic and management fundamentals related to food and health, "Major Subjects I" to cultivate the ability to discover and solve problems through practical learning and the qualities of advanced professionals, and "Major Subjects II" to cultivate expertise in health and food resources. In addition, based on the objective of fostering international advanced professionals with specialized and practical skills who can bridge the gap between global society and research and development, practical learning such as field activities and internships will be emphasized.

In order to emphasize the importance of cultivating the ability to conduct appropriate research and analysis on real issues related to "food and health" and to make proposals with practical and pragmatic effectiveness, this department requires the preparation of a "research report on specific issues" as the result of research on specific issues, rather than a master's dissertation. In addition, in order to maximize the merits of the international cooperative educational program among the three universities of Tsukuba University, the University of Bordeaux, and National Taiwan University, the curriculum has been designed so that students can learn the basics of medical science at Tsukuba University in the first semester, and based on that, can study advanced topics on food and health at National Taiwan University and the University of Bordeaux in the second and third semesters. The curriculum is designed so that all students will spend the first semester at the University, the second semester at National Taiwan University, and the third semester at the University of Bordeaux. In the fourth semester, students will study mainly at one of the three universities based on the theme of their specific research project and their career aspirations after completion.

#### <Learning objectives for each semester>

In order for the three universities to collaborate and organize and implement a systematic curriculum in sequence according to the purpose of human resource development in this major, the abilities to be cultivated in each semester are as follows.

#### 【Semester 1 / University of Tsukuba】

- Basic professional skills in health and food resources, professional skills in evaluation of biological effects and safety of substances, entrepreneurial spirit, management skills, and professional English skills

#### 【Semester 2 / National Taiwan University】

- Expertise in health and food resources, ability to identify and solve problems in the Asian social and natural environment, basic R&D and project management skills in Asian companies

#### 【Semester 3 / University of Bordeaux】

- Expertise in the connection between health and food resources and the evaluation and development of food resources, ability to identify and solve problems in the European social and natural environment, European corporate affairs and food safety policy, career development and professional awareness

#### 【Semester 4 / Choose from 3 universities】

- More specialized skills according to the research theme, enhanced career path through corporate internship, practical skills for post-graduation career

#### <Policy on the arrangement of courses>

#### 【General Foundation Subjects】

- In order to formulate a two-year study plan by grasping the competencies and learning content in this program, "Agro-Biomedical Science Group seminar" is arranged as a compulsory subject. (Semester 1 / University of Tsukuba)

- In order to develop systematic basic knowledge and the ability to understand and think from the big picture, "Introduction of Agro-Biomedical Science" is a compulsory subject. (Semester 1 / University of Tsukuba)
- "Basic Molecular Nutrition" a compulsory subject to develop the basic professional skills common to all majors. (Semester 1 / University of Tsukuba)
- In order to cultivate the foundation of management, there are courses related to "Entrepreneurship", and at least 4 credits are required. (Semester 1 / University of Tsukuba / Semester 2 / National Taiwan University)
- In order to foster career development and job awareness, "Professional Project Building" a compulsory subject. (Semester 3 / University of Bordeaux)
- At least one unit of specialized English is required. (Semester 1 / University of Tsukuba)

#### **[Major Subjects I]**

- To cultivate the ability to find and solve problems in a social and natural environment that differs from one's own, "Fusion of Field and Laboratory Studies" will be arranged at the two partner foreign graduate schools. (2nd semester, National Taiwan University / 3rd semester / University of Bordeaux)
- Common seminar courses include "Agro-Biomedical Science Laboratory Seminar I "Basic Toxicology" (1st semester, University of Tsukuba), "Agro-Biomedical Science Laboratory Seminar II" (2nd semester, National Taiwan University), and "International Scientific Seminars" (3rd semester, University of Bordeaux).
- As common practical and experimental subjects, "Research and Development for Agro-Biomedical Science I" (1st semester / University of Tsukuba), "Research and Development for Agro-Biomedical Science II" (2nd semester / National Taiwan University), and "Integrative Unit with Omic and Bioinformatic Tools" (3rd semester / University of Bordeaux) will be arranged.
- In order to learn about actual R&D in companies and the basics of project management, "Corporate Internship" will be established in three universities, and at least one of them will be compulsory. In addition, "Biomedical Translation Boot Camp" (2nd semester/National Taiwan University) will be arranged to strengthen the skills to tackle social and environmental related issues in R&D.

#### **[Major Subjects II]**

- In the first semester (Tsukuba University), "Critical Path Research Management" "Cancer Biology" "Human Pathology and Oncology," "Health Care Policy and Management" "Advanced Global Food Security" , "Advanced Course on Global Food Security" and "Advanced Food System" will be placed as "Health and Food Resources Subject Group I" in order to develop specialized skills related to health and food resources, focusing on expertise in evaluating the efficacy and safety of substances on living organisms.
- In order to develop professional skills in health and food resources, focusing on specialized knowledge of bioscience and technology related to living organisms and food resources, the following courses will be held in the second semester as "Health and Food Resources Subject Group II" (National Taiwan University): "Contemporary Issues in Global Health", "Cellular Network of Biological Molecules", "Principle and Application in Health Research Methods", "Environmental and Occupational Health", "Measuring Burden of Disease: Methods and Applications", "Molecular Nutrition", "Agriculture of Taiwan", "Biotechnology in Milk Products" and "Applied Translational Microbiology".
- In order to develop in-depth expertise in health and food resources with a focus on the link between health and food resources and the evaluation and development of food resources, the following courses will be offered in the third semester (University of Bordeaux) as "Health and Food Resources Subject Group III": "Water and Food-borne Microbiological Diseases and Dietary Habits in Human Population", "Nutrition, Microbiome and Immunity", "Nutrition, Physiological Regulation and Major Human Diseases", "Nutrition, Biological Regulation and Major Diseases", "Nutrition and Health Organization in Europe", "Impact of Environmental Stresses on Crops Production", "Integrated and Advanced Plant Breeding", "Green Biotechnology", and "Quality of Animal-based Foodstuff".
- In the fourth semester, there are no courses offered by this department as "Major Subjects II," but students may take courses offered by other departments if deemed necessary in relation to the theme of the Special Subject Research.

Learning methods · Processes	<ul style="list-style-type: none"> <li>· Students will study at Tsukuba University for the first semester, National Taiwan University for the second semester, University of Bordeaux for the third semester, and at their choice of one of the three universities for the fourth semester.</li> <li>· Students must earn at least 15 credits from required and elective courses at each university during the first three semesters, for a total of 45 credits. In addition, students must take at least one internship course from among the internship courses offered by the three universities in the fourth semester.</li> <li>· Each student will be assigned three academic advisors, one from each university, and will study and conduct research in accordance with the theme of the specific subject research under the guidance of the academic advisor during each semester.</li> </ul>
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Evaluation of learning outcomes	<ul style="list-style-type: none"> <li>· Students will submit a proposal for a specific research theme in the first semester, and their supervisors will provide appropriate advice and guidance.</li> <li>· Students will submit a proposal for a specific research plan in the second semester, and their supervisors will provide appropriate advice and guidance.</li> <li>· In the third semester, students give oral presentations and oral examinations on the progress of their specified subject research, and three examiners selected from the Degree Examination Committee (one from each university) and their supervisors provide appropriate advice and guidance for the completion of the specified subject research.</li> <li>· In the fourth semester, students will submit a report on their specific research project, and will make an oral presentation and take an oral examination based on the submitted report. Three examiners selected from the Degree Examination Committee (one primary examiner and two secondary examiners, one from each university) will examine the report, oral presentation, and oral examination.</li> </ul>
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### Admission Policy

Desired students	We seek individuals with a background in medical science or bioresource science, a spirit of collaboration, and a strong will to actively address global issues related to health and food across borders and academic disciplines, and to create innovations that contribute to the future vision of humanity and society.
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Selection policy	<p>Application documents will be accepted at each university. At the time of acceptance, the three universities will mutually confirm that the applicants meet the qualifications for application. The first stage of the selection process will be a document review and group discussion at the university that received the application, and the second stage of the selection process will be an interview with faculty members from the three universities.</p> <p>&lt;First round of selection&gt;</p> <p>At the university where the application is received, documents will be screened based on the application documents, followed by a group discussion. In the first round of the selection process, in addition to the requirements common to all three universities, the university conducting the first round of the selection process may, at its discretion, conduct preliminary interviews and other necessary screening.</p> <p>The documents to be screened shall include the applicant's motivation for application, research plan, academic records and graduation certificate of the applicant's home university (bachelor's course), recommendation letter, and documents certifying English proficiency. These documents will be used to confirm the content and results of the candidate's study in the bachelor's course, the purpose and plan of study in this major, career plans after completion, English proficiency, etc., and to evaluate the candidate's background in "food and health," will to solve global-scale issues related to "food and health," and aptitude for internationality and interdisciplinarity. The evaluation items will include the applicant's motivation for applying, the applicant's desire to solve global issues related to food and health, and the applicant's aptitude for international and interdisciplinary perspectives. The evaluation items will be motivation, research plan, study plan, career plan, and writing skills, and will be scored by multiple judges. For English proficiency, TOEFL-iBT: 61 or higher, TOEIC: 600 or higher, IELTS: 5.0 or higher are required for application.</p> <p>Group discussions will be held on the theme of global issues related to food and health. A topic will be provided before the start of the group discussion, and several examinees and one faculty member will form a group to discuss the solutions. In this way, the ability of the candidates to apply their background in medical science or bioresource science to the issues, and their communication skills to proceed with things jointly will be evaluated. The evaluation items will be the level of understanding of global issues related to food and health, ability to speak up, listening to others, coherence of statements, and contribution to the discussion, and will be scored by multiple judges.</p>
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The academic background of the candidates in the field of "Food and Health" will be evaluated based on the subjects taken in the bachelor's course and their grades, the research plan, and the contents of the group discussion, to ensure that they have a basic background in the field of medical science and bioresource science.

<Second round of selection>

Interviews will be conducted by faculty members of the three universities. The interview will be held at the university that received the application, and the other two universities will participate via video conference system. At the interview, the applicant's suitability for the program will be evaluated through questions and answers concerning the purpose and plan of study at the program, basic knowledge of "food and health," career plans after completion of the program, and experience in extracurricular and social activities. The evaluation items are motivation for application, research and study plan, career plan, presentation, and question and answer session, which will be graded by multiple judges.

Finally, the results of the document review, group discussion, and interview will be comprehensively evaluated by the three universities to determine acceptance or rejection.

Through the above selection process, we will secure students who have a strong academic background in "food and health" and a strong will to solve problems through collaboration, interdisciplinarity, and internationality, and who are appropriate for the goal of development and the educational program of this department.