

## Master's Program in Agro-Bioresources Science and Technology

Name of the degree to be conferred	Master of Agricultural Science
Educational purpose	As the first stage to train the researchers etc. in agro-biological resource sciences relating to agriculture/living things/environment, the human resources who learn fundamental specialized knowledge relating agro-biological resource sciences, can contribute to stable living and sustainable development of human beings such as stable food supply and development, maintenance and sustainable use of bioresource etc., have highly creative and excellent research/development ability and additionally have distinguished ability to have responsibility for advanced professional work shall be trained.
Vision of human resources development	Human resources that have fundamental knowledge relating agro-biological resource sciences, understand the procedures to solve the problems regarding the real issues relating bioresources based on the specialized knowledge of the areas in biosystem science, have both global perspectives and local ones together, and have the ability to plan/develop the concrete methods for problem solving.

### Diploma Policy

The degree of Master of Agricultural Science is commenced to those who have fulfilled the requirements for the completion of the Master's programs, as set out in the Graduate School Regulations of the University of Tsukuba and related university regulations, and who are deemed to have the following competencies.

Competencies	Evaluation perspectives
1. Knowledge application competence: Ability to contribute to society with advanced knowledge	① Can you apply knowledge gained through research and other activities in society? ② Can you identify new problems, even in other fields of expertise, based on broad knowledge?
2. Management competence: Ability to appropriately address challenges from broad standpoints	① Can you take on major tasks with systematic planning? ② Can you understand and solve problems from multiple perspectives?
3. Communication competence: Ability to accurately and clearly communicate expert knowledge	① Are you capable of efficient communication for research purposes? ② Can you discuss research or research-specific knowledge with experts from your own field and from other fields?
4. Teamwork competence: Ability to work with a team and actively contribute to the achievement of goals	① Do you have experience cooperatively and actively working on challenges as part of a team? ② Have you helped promote projects and activities other than your own research?
5. Internationality competence: Willingness to contribute to international society	① Are you aware of making contributions to international society and getting involved in international activities? ② Have you obtained the linguistic skills necessary for international information collection and action?
6. Specialty: professional ability relating to agro-biological resource sciences.	If having acquired the specialized knowledge and research ability in the area of expertise of agro-biological resource sciences.
7. Basic knowledge: basic knowledge relating to agro-biological resource sciences	If having acquired basic knowledge and skills relating to agro-biological resource sciences.
8. Practical skills: practical skills to solve problems relating to agro-biological resource sciences	If capable of planning/developing and putting into practice the concrete methods by utilizing the basic and specialized knowledge to solve problems relating to bioresources.

## Dissertation evaluation criteria

The dissertation that satisfies all the following items shall be a pass as the thesis for master's degree after going through final examination. The committee for master's thesis review (human informatics) composed of one chief examiner and two or more sub examiners shall examine the dissertation through examination of thesis and oral examination.

1. The research tasks of the dissertation is clearly indicated and has academic or social significance.
2. The research purpose is clarified and the background of the research that led to setting of such purpose and preceding research is accurately understood, appropriately cited and logically explained.
3. The research method is valid.
4. The research outcomes are clearly indicated and analyzed by proper methods.
5. The research outcomes are logically considered and the conclusions with academic novelty and social utility are derived.
6. The dissertation is presentable as a thesis for master's degree.

## Curriculum Policy

The program shall consist of 5 areas that are different in terms of their major research methodologies: "Agro-biological Science", "Agricultural Economics and Sociology", "Applied Biochemistry", "Bioresource Environment Engineering" and "Biosystem Science" and two new programs: "Global Food Security" course as a double degree program with overseas partner institution and "International Agricultural Science" as an English program for foreign students. Basic knowledge and skills for agro-biological resource sciences and specialized knowledge, skills and research methodologies necessary to resolve the real problems relating to bioresources shall be learned.

The curriculum shall be organized in order that the students can learn the methods to analyze and summarize the data obtained by research/surveys though the said methodologies and communication skills and presentation ability can be acquired. In "Global Food Security" (double degree program) students shall acquire international views by studying abroad for one year in the overseas partner institution and ability to adapt to different culture.

### Curriculum organization policy

As a specialized fundamental course, in addition to compulsory courses common to programs and selective compulsory courses common to courses, Inter-disciplinary Foundation Courses, Degree Programs' Common Courses and Graduate General Education Courses as elective compulsory courses shall be registered and broad culture and basic knowledge and skills of agro-biological resource sciences shall be acquired.

The specialized lectures as Foundation Subjects for Major in area of expertise and practical training and special research as selective compulsory courses shall be registered and basic knowledge and skills of the area of expertise shall be learned.

Students will take Major Subjects, exercises, and special research in each specialized field as elective compulsory subjects to acquire basic knowledge and skills in each specialized field.

Additionally, by carrying out presentation and discussion in practical training, the knowledge relating to area of expertise shall be deepened and communication skills and presentation ability shall be acquired.

By carrying out special research, research/survey methods in area of expertise and analysis methods for and methods for summarizing data shall be learned and Management competence and Teamwork competences shall be acquired.

•By Foundation Subjects for Major, broad basic knowledge and skills relating to agro-biological resource sciences shall be learned and understanding of the issues relating to bioresource and ability for its application to the research of the area of expertise and flexible reasoning capacity having both global views and local views shall be acquired. Additionally, the basic ability such as Competence of knowledge application, Management competence, Communication competence, Teamwork competences and Competence in Internationality etc. shall be acquired.

•By the lecture courses of Major Subjects, multiple lectures, mainly the ones of the research area that each student is specialized in, shall be selected, and the basic knowledge and skills in each area of expertise and relevant areas and the ability to use them shall be acquired.

•By the practical training courses of Major Subjects, the knowledge relating to the area of expertise shall be deepened, ability to research and explore shall be acquire. By carrying out presentation and discussion, communication skills and presentation ability shall be acquired.

	<ul style="list-style-type: none"> <li>• By special research courses of Major Subjects, the basic research ability, such as research/survey methods by using specialized methodologies and analysis methods for and methods for summarizing data etc. shall be learned. Additionally, while each student proceeds his/her research along the theme in the area of expertise, the ability to consider/develop concrete methods to solve problems relating to bioresource and Management competence and Teamwork competences shall be acquired.</li> <li>• By summarizing and presenting the research outcomes as master's degree, the above-mentioned abilities shall be enhanced and internationally accepted communication skills and presentation ability and practical skills to use knowledge, tackle diversified problems relating to bioresource, and to contribute to human beings/society shall be acquired.</li> </ul>
Learning methods • Processes	<ul style="list-style-type: none"> <li>• The standard learning year shall be two years. As the requirements to complete master's degree, it is necessary to acquire the following 30 or more credits, to put the research outcomes together in master's thesis and to pass the final examination.</li> </ul> <p>(1) Foundation Subjects for Major:</p> <ul style="list-style-type: none"> <li>• Research method for agro-biological resource sciences or international research method for agro-biological resource sciences (one selective required course)</li> <li>• One credit from Degree Programs' Common Courses, Inter-disciplinary Foundation Courses and Graduate General Education Courses respectively.</li> </ul> <p>(2) Major Subjects:</p> <ul style="list-style-type: none"> <li>• Major Subjects (lecture courses): two or more credits in the area of expertise and the relevant ones that each student is specialized in (two selective required credits).</li> <li>• Major Subjects (Special research courses): four courses, 12 credits (selective compulsory courses) of special research in the area of expertise that each student is specialized in, as research supervision/thesis supervision courses.</li> </ul>
Evaluation of learning outcomes	<ul style="list-style-type: none"> <li>• Upon commencing the 1<sup>st</sup> year, for all the students the advisory committee (AC) composed of two or more supervisors including thesis supervisor shall be established to organize validity and tasks of research plan for each student by holding meetings to investigate problems. Additionally, instruction shall be provided to confirm registered courses and acquired credits etc. The advisory committee shall participate in other master' programs, as necessary.</li> <li>• During the spring term in the 2<sup>nd</sup> year, AC supervisors shall implement interim evaluation and examine research progress of each student through oral examination. The following three points shall be evaluated: ① if having basic knowledge relating to agro-biological resource sciences suitable for master's degree course. ② If having basic research ability (including technical knowledge) to promote research for master's thesis in the area that students belong to. ③ If research being appropriately implemented toward acquisition of master's degree.</li> <li>• For the students who are supposed to be in university for more than two years and to acquire the credits more than necessary, thesis examination and final examination shall be implemented. The committee for master's thesis review (human informatics) composed of one chief examiner and two or more sub examiners shall examine the thesis through dissertation examination and oral examination if the students have abilities suitable for master's degree (in agriculture) in light of the above-mentioned degree awarding policy (DP). Additionally, public presentation shall be carried out for each area.</li> </ul>

## Admission Policy

### Desired students

The desired student shall be the one who has a deep interest in agro-biological resource sciences relating to agriculture/living things/environment, has a high motivation to learn independently, has basic knowledge relating to agro-biological resource sciences, basic academic skills of natural science or social economics as the foundation of research methodologies, linguistic skill necessary for learning such as reading and understanding literature in English, ability for logical thinking to scientifically analyze various kinds of information toward problem solving and ability to express to accurately convey his/her opinion, and who desires to enter the doctoral course and to become a researcher to carry out highly specialized research, or the student who aims at contributing to society by taking advantage of broad expertise by acquiring master's degree and playing an active part on a global stage.

### Selection policy

By adopting various kinds of selection methods, such as general entrance examination, special selection of working individuals etc. and special selection of international students and working individuals as well as the students who enter immediately after graduation of universities shall be broadly accepted.

Through the document submitted and oral examination, the following abilities shall be evaluated

- Through the document submitted and oral examination, the basic knowledge relating to agro-biological resource sciences and basic academic skills shall be evaluated.
- Through the scores of English proficiency examination (TOEFL, TOEIC, IELTS) included in the document submitted, English ability shall be evaluated.
- Through the research plan included in the document submitted or oral examination, logical thinking ability and accurate ability of expression shall be evaluated.
- Through oral examination, interest in agro-biological resource sciences area and motivation toward research and independence shall be evaluated.

In order to enter "Global Food Security" course of double degree program, it is also necessary to pass the selective examination implemented by the partner institution after entering this master's degree program.