Doctoral Program in Agricultural Sciences

Doctor of Philosophy in Agricultural Science

Program Educational Objectives

Highly specialized professionals/researchers who acquire a broad knowledge in agricultural sciences comprehensively, and issue-pursuing and problem-solving abilities, and the capability to independently conduct research, providing grounds for solving problems related to agriculture, food, environment on a global scale.

Graduate Profile	Through this program, the human resources who can propose/implement internationally consistent solutions for global issues, and the ones that guarantee the sustainability of local communities for domestic problems, in governmental organizations as well as industries. Furthermore, such human resources shall be the resources for research/education in universities.

Diploma Policy

The degree of Doctor of Philosophy in Agricultural Science is commenced to those who have fulfilled the requirements for the completion of the Doctoral 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 competences.

	Competences	Evaluation perspectives
Knowledge and Skills	1. Knowledge creation competence: Ability to create new knowledge that can contribute to future society	①Are there any research findings that can be considered new knowledge? ②Can we expect you to create knowledge that will contribute to future society?
	2. Management competence: Ability to plan and implement measures to identify and solve challenges from a higher perspective	①Can you make and implement long-term plans for critical challenges? ②Can you identify challenges, even in other areas of expertise, and solve them from a higher perspective?
	3. Communication competence: Ability to express the true nature of academic findings positively and clearly	①Can you explain the true nature of research content and specialized knowledge clearly and logically to researchers from different areas and to people other than researchers? ②Do you proactively share your findings with researchers and experts from your field of expertise and accurately answer questions?
	4. Leadership competence: Ability to have objectives get accomplished under your leadership	①Can you set attractive and compelling goals? ②Are you capable of building systems to realize goals and accomplish objectives as the leader?
	5. Internationality competence: Possession of a high level of awareness and motivation to be internationally active and contribute to international society	①Do you have strong awareness and motivation to contribute to international society and international activities? ②Have you obtained adequate linguistic skills for international information collection and action?
	6. Ability to execute research: an ability to be equipped with the latest expertise in agricultural sciences and set/carry out creative research tasks.	①If having the research outcomes that can be regarded as creativity of new knowledge based on accurate learning in the area of expertise. ②If capable of expecting creativity of knowledge that contributes to sustainable development of agricultural sciences

	Competences	Evaluation perspectives
Knowledge and Skills	7. Specialized knowledge and Operational power: Leading-edge and advanced specialized knowledge and command of the agricultural sciences	①If being equipped with a broad expertise in the area of agricultural sciences. ②If capable of acquiring leading edge and advanced specialized knowledge in the area of expertise and utilizing it for research and problem solving.
	8. Ability to implement research outcomes in society: ethical view and ethical knowledge appropriate for researchers in agricultural sciences and deep ethical knowledge in the area of expertise.	①If sufficiently understanding and complying with the procedure necessary for ethics for researchers and ethics for engineers and research. ②If having deep interest and knowledge for ethical issues relating to the area of expertise
Guidelines for Assessing Learning Outcomes	The evaluation of learning outcomes will be conducted using a “competence sheet” to objectively confirm and evaluate the acquisition of competences based on the Diploma Policy at each of the following stages. The stages and methods of assessment of achievement are shown below. At the end of the first and second year, the evaluation of attainment is confirmed by the supervisor and by the all members at the Preliminary Examination Committee to confirm that all the competences stipulated in the degree program have been met. At the doctoral dissertation review, the dissertation is confirmed by the all members of the commitee and reported at the degree program meeting.	
Evaluation Criteria for Degree Theses/ Dissertations	The dissertation that satisfies all the following items shall be a pass as the thesis for doctoral degree after going through final examination in doctoral thesis examination committee composed of four or more members. 1. If The research tasks of the dissertation is clearly indicated and has academic or social significance in the related area of agriculture sciences doctoral program. 2. If the literature and data used shall be appropriately presented and evaluated upon exploring research tasks and appropriately referred for development of points of argument. 3. If the research methods such as theories, experiments, surveys, simulation and trial production/ preliminary trail etc. adopted in order to explore research tasks are appropriate. 4. If the points of argument from problem setting to conclusion are unfolded demonstratively and logically. Additionally, if the conclusions derived have novelty and social utility in the relevant area of agricultural sciences degree program. 5. If the dissertation is presentable as a thesis for master's degree.	

Curriculum Policy

In each area of expertise relating to agricultural science as a comprehensive science, the curriculum shall be organized in order to systematically acquire an ability to independently plan and promote research/practices, an ability to integrate and an ability to announce the plans/drafts/doctoral thesis that can receive internationally high evaluation.

< Subprogram in Advanced Agricultural Technology and Science cooperated with NARO >

The scientists who actively work in the front lines of agricultural sciences of National Agriculture and Food Research Organization (NARO) as national research and development agency who are teachers of the Cooperative Graduate school. The students can acquire advanced agricultural technology such as establishment of comprehensive technology system to support basic structure of industry of agriculture in Japan and vitalization of local communications to realize sustainable food supply.

Curriculum Design Framework	– The curriculum shall be organized for the students in order to acquire professional ability relating to bioresources such as food and environment/resources/energy etc. and to cultivate an ability to conclude for problem solving on a global scale, research conducted from a global vision and an ability for localization to connect between the sites that have individually different situations. – The curriculum shall have students acquire communication skills, response capabilities to ethical issues, management ability and a quality of leadership by acquiring two or more credits of Graduate General Education Courses other than the Dissertation as compulsory courses. – The curriculum shall have students enhance international communication skills through area observation and surveys in foreign countries by overseas area practical training and motivation to the world through agricultural sciences.
Teaching and Learning Methods	– The students shall acquire deep understanding of specialized knowledge and presentation ability/communication skills, high ethical view in research activities and an ability to solve the issues of high needs in society by setting the Dissertation as compulsory courses, and conducting lectures of bidirectional and interactive lectures between small number of supervisors/graduated students. – By encouraging students to participate in lectures and submit thesis to international journals, the instruction to acquire international communication skills with English ability shall be provided.

Admission Policy

Desired Student Profile	The desired student shall have basic and applied research grounds with both creativity and specialization that leads various areas in agro-biological resource sciences, and both global vision to be able to deal with current/international issues regarding food, population and environment and ability to flexibly think from bird's eye to the future, and motivation to contribute to human society.

Student Selection Process	– Various kinds of selection methods, such as general entrance examination (International Agricultural Research Program), special selection of working individuals and, special selection of international students etc., shall be adopted. – Based on evaluation of foreign language skills necessary for international activities and evaluation of an ability for self-expression by oral examination, research ability relating to the area of expertise, appropriateness of research plan, the human resources suitable for this Degree Program shall be selected. – For educational program in English and working people, Early Completion Program which students can complete learning in one year is ongoing.

Learning Support Framework

Academic Support	The supervisors provide writing support for refereed academic papers and presentation guidance for presentations at domestic and international conferences. They also provide guidance related to the improvement of research skills through various seminars and other means, and support related to student life to improve the academic environment. An advisory committee consisting of at least three faculty members, including the supervisor is organized to provide guidance and advice on course planning, check the progress of research, and provide advice on research content from a professional standpoint.
Opportunities for Peer Interaction	With regard to the motivation to study and the quality of research, small-group interactive seminars are held within research groups, where graduate students give presentations and discuss, deepen mutual understanding, and learn about each other's research progress, research achievements, and results, which motivates them to study. Orientation at the time of admission and doctoral dissertation briefing sessions for final year students are held to provide opportunities for students to discuss with each other.
Opportunities for Student–Faculty Interaction	The Advisory Committee, consisting of at least three faculty members, meets regularly to provide opportunities for students and faculty members to discuss the progress and direction of their research. In addition, students and faculty members give small-group interactive lectures and students present their research in the compulsory classed, Dissertatoin I-III, and students have opportunities to interact with faculty members on a regular basis. Students have opportunities to interact with other faculty members in the program at the orientation at the time of admission and at the doctoral dissertation presentation for final-year students.

Approaches to Assuring and Enhancing Educational Quality

The program steering committee discusses the draft annual FD plan prepared by the FD committee members and discusses issues and policies for improvement regarding the assurance and improvement of the quality of education. At the beginning of the academic year, an FD seminar organized by the program is held to review the three policies in the Tsukuba Standards of the Dgree program of Agricultural Science with all Faculty members and discuss issues. In addition, the draft of the syllabus is discussed and approved by the degree program meeting and posted on the official website. The grading standards for the compulsory classes, Dissertaion I-III, will be reviewed and evaluated annually at the program meeting. Publicatoins in the international journals, presentation at dometic or international conferences and thesis presentations, which are the basis for grading, will be submitted by each student to the degree program as a list of achievements at the time of the thesis submission, and the degree program will compile the results for each academic year. At the program meeting, the establishment or modification of the Advisory Committee will be discussed and the research support system will be confirmed. In addition, the quality of education and the support system will be verified by having the supervisor report on the implementation of the Advisory Committee at the degree program meeting and having the supervisor explain the progress of each student. In addition, the quality and improvement of education will be discussed at the degree program meeting by reviewing the graduate student questionnaires, class questionnaires, etc. At the educational conference, student learning outcomes are assessed to verify the appropriateness of the curriculum and the adequacy of instruction.