

Doctoral Program in Life and Agricultural Sciences

■ Doctor of Philosophy in Life and Agricultural Sciences

Program Educational Objectives

The researchers and faculty members that can achieve a molecular-level understanding of biological phenomena controlled in cells and living organisms, acquire specialized ability to be able to implement technology development for the purpose of utilization of such functions and to be able to contribute to stabilize living foundation and sustainable development of human beings.

Graduate Profile	In the area of life and agricultural sciences, the persons that have a broad knowledge and interdiscipline relating to elucidating the biological functions and their utilization and that can play an internationally active role by creative research.
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Diploma Policy

The degree of Doctor of Philosophy in Life and Agricultural Sciences 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	① Are there any research findings that can be considered new knowledge? ② Can 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	① Can you make and implement long-term plans for critical challenges? ② Can 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	① Can 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? ② Do 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	① Can you set attractive and compelling goals? ② Are 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	① Do you have strong awareness and motivation to contribute to international society and international activities? ② Have you obtained adequate linguistic skills for international information collection and action?
	6. Competence to execute research: an ability to independently set research tasks and to plan/carry out the research in the area of life and agricultural sciences.	① If capable of setting leading-edge research tasks based on the latest expertise in the area of life and agricultural sciences. ② If capable of drafting research plan to solve the research tasks and carry out the research along them.

	Competences	Evaluation perspectives
Knowledge and Skills	7. Specialized knowledge and ethical view: sufficient specialized knowledge in the area of life and agricultural sciences and high ethical view in research activities.	① If having acquired leading edge and advanced specialized knowledge in the area of life and agricultural sciences. ② If having acquired ethical view and ethical knowledge suitable for the human resources that have basic research ability in the area of life and agricultural sciences.
	8. Competence to publicize research outcomes: an ability to publicize the research outcomes that can receive internationally recognition.	If having compiled and published, original, cutting-edge research in an international peer-reviewed academic journal as the first-author.
	9. Adaptability to conduct research: adaptability to societal needs in the area of life and agricultural sciences.	① If capable of broadly understanding social needs in the area of life and agricultural sciences. ② If capable of providing proposals to solve other research tasks in the area of life and agricultural sciences.
Guidelines for Assessing Learning Outcomes	<p>The evaluation of learning outcomes is conducted objectively based on the “Competence Sheet”, which assesses the level of attainment corresponding to each stage and verifies the student's competence acquisition as defined in the diploma policy. The stages and methods of the achievement evaluation are outlined below.</p> <p>At the end of the fall semesters of the first and second year, the Advisory Committee conducts interim evaluations, comprehensively assessing whether the student meets competence standards regarding research progress, related knowledge, and presentation skills.</p> <p>At the mid of the fall semester of the third year, a preliminary doctoral dissertation review (closed) and a public presentation are conducted. The second achievement evaluation is undertaken by a Preliminary Review Committee composed of the Advisory Committee plus one additional faculty member appointed by the Degree Program. The committee also provides guidance toward the final achievement evaluation.</p> <p>Following successful completion of the preliminary review, the doctoral dissertation submitted for the final examination is evaluated by a Dissertation Review Committee consisting of the principal examiner and at least three co-examiners. Concurrently with the final dissertation review, the final achievement evaluation is conducted.</p> <p>Furthermore, the research activity report collected in the final year (covering international collaborative research and domestic/international conference presentation experience), along with the doctoral dissertation report, will be used to actively evaluate independent learning and research activities outside of coursework.</p>	

<p>Evaluation Criteria for Degree Theses/ Dissertations</p>	<p>The thesis that satisfies all the following items shall pass as a thesis for a doctoral degree after going through a preliminary examination, thesis examination, and final examination. The preliminary examination shall be performed by a committee composed of the candidates of members of the thesis examination committee (one chief examiner and three or more sub examiners). The thesis examination and the final examination shall be performed by the thesis examination committee (one chief examiner and three or more sub examiners).</p> <ol style="list-style-type: none"> 1. If the research was independently carried out by the applicant and a logical and new scientific academic thesis written solely by the applicant. 2. If the thesis contains research outcomes with creativity, novelty, and high academic values in an academic area relating to life and agricultural sciences. <ul style="list-style-type: none"> - Preliminary examination: the preliminary examination committee composed of the candidates of members of the thesis examination committee (one chief examiner and three or more sub examiners) shall examine the content and style of the dissertation thesis and provide instruction for its modification etc., as necessary. Additionally, the contents of the thesis shall be presented and the questions and answers relating to relevant matters shall be conducted. The instructors in other doctoral programs shall participate in the preliminary examination committee, as necessary. - Final examination: Public presentation shall be performed in the presence of the thesis examination committee members to have the students present the contents of the doctoral thesis and the questions and answers shall be conducted. Subsequently, the final examination shall be conducted by oral examination, not to open to the public. <p>The examination standard shall be as follows:</p> <ol style="list-style-type: none"> 1) If having an ability to independently plan/carry out the research, and to publicize research outcomes which can acquire internationally high evaluation, using sufficient knowledge and high ethical view relating to academic area of the doctoral thesis. 2) If having research/education ability to solve the issues of high needs in society in the academic area relating to life and agricultural sciences and communication skills to have a perfect command for negotiation in international society.
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Curriculum Policy

The curriculum shall be organized for the students to systematically acquire the ability necessary to independently conduct research with a view that anticipates its applications in each respective research area of life and agricultural sciences.

<p>Curriculum Design Framework</p>	<p>By providing advanced education in the area of life and agricultural sciences through Dissertations I to III in each research area as compulsory courses and providing instruction on conducting research by setting research tasks related to life and agricultural sciences by plurality of instructors (the chief supervisor of other degree programs shall participate as necessary), the expertise and its research methods shall be learned. Additionally, through completion of Seminar in Life and Agricultural Sciences, beyond the research area for each student, the ability to solve problems in broader areas of life and agricultural sciences shall be trained. Furthermore, through completion of Graduate General Education Courses etc., enhancement of communication skills, an ability to respond to ethical issues, management ability, educational ability and leadership ability etc. shall be promoted.</p>
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<p>Curriculum Design Framework</p>	<p>< Major Subjects ></p> <ul style="list-style-type: none"> - Dissertation I : An ability to understand/grasp the problems in each research area and an ability to set research tasks and plan/carry out research shall be acquired. - Dissertation II : An ability to carry out research and to logically think shall be enhanced. Additionally, through presentation of research outcomes in international conferences etc., English ability and presentation ability shall be acquired.
<p>Curriculum Design Framework</p>	<ul style="list-style-type: none"> - Dissertation III : An ability to publicize research outcomes to international academic journals by compiling them. - By working on research through Dissertations I to III, knowledge of each research area and high ethical view in research activities shall be acquired. - Practical Training for Life and Agricultural Sciences: An ability to be able to contribute to sustainable development of the world with a broad view. <p>< Education/Research supervision ></p> <ul style="list-style-type: none"> - From enrollment to completion, through education/research supervision received by the advisory committee composed of a plurality of instructors (the chief supervisor of other degree programs shall participate as necessary), specialized knowledge/abilities in general required for degree awarding shall be acquired.
<p>Teaching and Learning Methods</p>	<ul style="list-style-type: none"> - The standard registration year of Dissertations I, II and III shall be the 1st year, the 2nd year and the 3rd year, respectively. By having students register systematically, the specialized knowledge/ability required for degree awarding shall be acquired in order. - The standard registration year of Seminar in Life and Agricultural Sciences shall be the 2nd year, in which an ability to solve various issues in the area of life and agricultural sciences shall be trained and each research issue and its meaning shall be understood from a higher perspective. - The advisory committee composed of three or more instructors shall be established upon enrollment and continuously provide education/research instructions for the students until completion of the degree course. - The advisory committee shall have the students register Graduate General Education Courses etc., as necessary. - The advisory committee shall have the students carry out the interim presentation at the end of the 2nd year in principle, and provide advice toward confirmation of progress status of research and compilation of dissertation thesis etc.

Admission Policy

<p>Desired Student Profile</p>	<p>The desired students shall have an interest in and knowledge of various life-science phenomena in animals, plants, and microorganisms, motivation in the exploration of basic sciences that are useful in solving problems in the area of life and agricultural sciences and its application, and be able to logically, accurately, and clearly explain the research outcomes etc.</p>
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Student Selection Process	<ul style="list-style-type: none"> - Selection by oral examination shall be carried out. - In oral examination, the applicants shall present their master's thesis and the contents of their research so far, and research plan etc. after enrollment. By conducting questions and answers, basic/application ability, and research ability etc. shall be evaluated. Through these, the human resources suitable for this Degree Program shall be selected. - Working individuals and foreign students who aim at acquiring the doctoral degree as well as the students who enter immediately after completion of the master's degree shall be broadly accepted.
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Learning Support Framework

Academic Support	<p>In addition to guidance from the Advisory Committee, active participation in the Japan-China-Korea International Postgraduate Academic Forum and the Tsukuba Global Science Week is strongly encouraged, with Faculty members provided to enhance English presentation skills. Students will also present posters at information sessions of graduate school to foster awareness of the importance of research.</p>
Opportunities for Peer Interaction	<p>Students are expected to collaborate with peers in the Seminar of Life and Agricultural Sciences to design and plan projects. Institutional support will be provided for implementation in order to promote interaction among students with diverse academic interests and to cultivate broad, interdisciplinary perspectives.</p> <p>Doctoral thesis presentations will be held publicly, encouraging active participation from students and faculty outside the degree program.</p> <p>Students independently plan and manage the Japan-China-Korea International Postgraduate Academic Forum.</p>
Opportunities for Student-Faculty Interaction	<p>Orientation for incoming students and doctoral thesis briefings for final-year students are held to create networking opportunities. Beyond regular interactions facilitated by the Advisory Committee, participation in Seminars of Life and Agricultural Sciences from other laboratories is encouraged to foster exchanges with faculty from different research groups.</p>

Approaches to Assuring and Enhancing Educational Quality

At the end-of-year educational meeting, share the research activities of graduating students (including international collaborative research and presentation experiences at domestic/international conferences), along with student surveys, course evaluation questionnaires, graduation rates, and employment status, and discuss challenges and improvement measures. Additionally, encourage faculty participation in the public doctoral thesis presentation sessions to stimulate lively discussion.