# Doctoral Program in Informatics

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| Name of the degree to be conferred | Doctor of Philosophy in Informatics |
| Educational purpose | Information has played an important role in human activities, but its importance has rapidly increased with recent technological advances. In order to respond to such situations, the Master's Program in Informatics (doctor late semester course) will train personnel engaged in specialized work to utilize information for academic purposes, education, daily life, culture, etc., through an interdisciplinary approach that combines humanities and sciences. |
| Vision of human resources development | Individuals who can see the big picture various problems related to human beings and information, set up research tasks based on their specialized knowledge and skills, and carry them out. |

## Diploma Policy

The degree of Doctor of Philosophy in Informatics 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 competencies.

| Competencies | Evaluation perspectives |
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| 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? <br> 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? <br> 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? <br> 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? <br> 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? <br> ② Have you obtained adequate linguistic skills for international information collection and action? |
| 6. Research competence in Informatics: Advanced research skills to be able to set up advanced research topics in the field of informatics and to independently formulate and carry out research plans. | ① Can the student establish essential research topics in the field of informatics that will contribute to the future, based on previous research in specialized fields related to human body, mind, and various activities? <br> ② Are the student's research methods appropriate for solving the set advanced problems and producing original research results? |
| 7. Expertise in Informatics: Latest advanced expertise and operational skills in informatics. | ① Has the student sufficiently acquired the ability to apply advanced and specialized knowledge in the field of informatics? <br> ② Has the student identified new and original problems supported by the latest expertise in the field of informatics? |

| 8. Ethics in Informatics: High ethical standards and normative awareness in the field of informatics | ① Does the student have sufficient knowledge of protecting intellectual property and information security related to research? <br> ② Can the student explain the sense of ethics essential to the field of informatics and the knowledge of protecting intellectual property and information security? |
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## Dissertation evaluation criteria

Dissertations for which all of the following evaluation items are deemed to be valid or achieved will be accepted as a doctoral dissertation upon final examination or confirmation of academic ability.

1. Novelty and significance of the research theme
2. Grasping and understanding of prior research
3. Validity of the research method
4. Conclusions and the validity of the logic leading to them
5. Novelty and originality of conclusions
6. Adequacy of style and organization
7. Appropriate citation of documents and materials
8. Academic contribution

The method of dissertation examination shall be as follows.

Dissertation reviews are conducted by the Dissertation review committee, which is established for each dissertation, after comprehensively judging the content of the dissertation, the presentation of the dissertation in public, and the final examination

1) In principle, the dissertation review committee shall consist of one primary examiner and four or more secondary examiners, including one expert outside the degree program (a faculty member of another degree program within the university, a faculty member in charge of a graduate school at another university, or a researcher at a research institution).
2) Doctoral dissertation defense will be approximately 60 minutes in length, including questions and answers.
3) The final examination will be oral or written, focusing on the dissertation and its related fields. The examination will be closed to the public and will be approximately 60 minutes in length.

## Curriculum Policy

The purpose of this program is to foster individuals who will be involved in research to utilize information in various human activities such as academics, education, daily life, and culture through an interdisciplinary approach that integrates the humanities and sciences, and to provide them with the general and specialized knowledge and abilities described in the Diploma Policy.

In addition to the curriculum in Japanese for students entering in the spring semester, the curriculum in English for students entering in the fall semester will be developed in an integrated manner.

| Curriculum organization policy | ・The curriculum consists of the Graduate General Education Courses, as well as Research Seminar Courses and Research Practice Courses unique to this degree program. <br> ・Through the Graduate General Education Courses, students will acquire general knowledge and abilities such as advanced knowledge creation, management skills, communication skills, teamwork skills, and internationality. <br> ・The Research Seminar Courses consist of Informatics Seminar, Synthetic Seminar on Informatics I, Synthetic Seminar on Informatics II and Synthetic Seminar on Informatics III taught by advisors. The Informatics Seminar provides interactive research guidance to help students acquire communication skills, internationality, and specialized knowledge in informatics. In the Synthetic Seminar on Informatics, students receive research guidance to acquire the Competence of knowledge creation, management skills, and research skills in informatics. <br> ・The Research Practice Courses group consists of Research Instruction, PBL, and Research Internship, MDA-related courses. In this course, students are expected to acquire leadership skills and ethics by supervising the graduation research of students under the supervision of their academic advisors, assuming that they will become university faculty members in the future. Internships allow students to acquire practical research methods and leadership skills by engaging in research activities at organizations other than the degree program to which they belong, such as international research institutions, national laboratories, corporate laboratories, and university laboratories. |
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| Learning methods・Processes | ・Graduate General Education Courses, Interdisciplinary Foundation Courses, Degree Programs' Common Courses and lecture courses of other graduate schools or degree programs of the University are selected and studied as necessary.<br>・In the Research Seminar Courses, students solidify the foundation of their research in Synthetic Seminar on Informatics I, come into contact with research from various fields in Informatics Seminar, and consolidate their research results in Synthetic Seminar on Informatics II and III.<br>・Two or more Research Practice Courses will be selected and studied as necessary.<br>・Regardless of the entrance examination category and the instructional language, the prescribed credits may be included in the completion requirements. |
| Evaluation of learning outcomes | ・Each subject is evaluated according to the evaluation method described in the syllabus.<br>・Possession of general and specialized knowledge and abilities will be confirmed by the expert committee each year based on course mastery and activities, including papers and conference presentations.<br>・The conditions for acceptance of a dissertation application are a midterm presentation and at least two peer-reviewed academic papers that form the core of the doctoral dissertation.<br>・Prior to the review of the dissertation, a preliminary dissertation review committee, including regular and secondary research advisors, will consider whether the dissertation is appropriate for review. A preliminary dissertation review committee is established for each dissertation submitted for the degree, and a decision on acceptance or rejection is made within one year after the committee is established.<br>・In principle, the dissertation will be reviewed for appropriateness by a dissertation review committee consisting of five members, including at least one expert outside the degree program (faculty members in charge of other degree programs within the university, graduate school faculty members at other universities, researchers at research institutes, etc.) and a regular research advisor. |

## Admission Policy

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| Desired students | ・Individuals who strive with a sense of purpose to take an interdisciplinary approach to the formulation and resolution of problems concerning the utilization of information.<br>・Individuals who have sufficient fundamental skills, communication skills, presentation skills, and language skills to be active internationally.<br>・Individuals who are capable of planning a research schedule, conducting the research, and finally, building on research outcomes. |
| Selection policy | Selection will be based on a comprehensive evaluation of the oral examination results. Apart from the General Selection Process, there are several other selection processes: the Special Selection Process for Recommended Applicants for those who have obtained a master's degree with research achievements or who are expected to obtain a master's degree with excellent grades, the Special Selection for Working Individuals for those work working experience, and the Special Selection Process of Global Individuals in English for those entering the program in October. Video conferencing tools will be used for the oral examination for applicants who are applying through the Special Selection Process of Global Individuals in English. |