

## Master's Program in Informatics

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### ■ Master of Science in Informatics

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#### Program Educational Objectives

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 first 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.

<b>Graduate Profile</b>	<p>A person who understands human and information-related issues and has the expertise and skills to carry out tasks</p> <ul style="list-style-type: none"> <li>- The ability to use the latest information technology to analyze data, develop systems and produce media</li> <li>- A person who can propose the best information environment for the community based on the interaction between humans and information</li> <li>- A person who understands the diversity of history and culture, and is able to share and pass on knowledge and information resources</li> </ul>
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Diploma Policy

The degree of Master of Science in Informatics 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 competences.

	Competences	Evaluation perspectives
<b>Knowledge and Skills</b>	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. Qualitative research competence: the ability to analyze data semantically using appropriate methods.	① Can the student obtain data for research and select appropriate methods for semantic analysis ② Can the student get a reasonable interpretation from the results of the analysis, depending on the purpose?
	7. Quantitative research competence: The ability to analyze data mathematically using appropriate methods.	① Can the student obtain data for research and select appropriate methods for mathematical analysis ② Can the student get a reasonable interpretation from the results of the analysis, depending on the purpose?
	8. Media Expertise: Expertise in developing new media with an awareness of its application to social systems.	① Can the student explain the impact of media and network technologies on society? ② Can the student develop media based on information design and its impact on society?

	Competences	Evaluation perspectives
<b>Knowledge and Skills</b>	9. Systems Expertise: Expertise in designing systems that analyze multiple aspects of human-information interaction	① Can the student build a computational model of human information behavior ② Can the student propose a new service system based on human-information interaction?
	10. Resource Expertise: Expertise in understanding historical and cultural diversity through materials and building a knowledge resource base	① Can the student understand the diversity of history and culture and envision the future of information resources? ② Can the student understand the various issues of information distribution and evaluate information management and information services?
	11. Information Ethics: Ethics and normative awareness of information	① Does the student have accurate knowledge of intellectual property rights and the ability to make appropriate judgments? ② Can the student act in a normative manner when it comes to the handling of information?
<b>Guidelines for Assessing Learning Outcomes</b>	<p>The evaluation of learning outcomes is conducted by objectively confirming and assessing the acquisition status of competences based on the policy for degree conferral at each stage according to the achievement evaluation using the “Competence Evaluation Chart”.</p> <p>The stages and methods for achievement evaluation are indicated as follows.</p> <ul style="list-style-type: none"> <li>– The faculty member responsible for research guidance conducts the achievement assessment based on a rubric in response to the student's reflection.</li> <li>– Subsequently, a Master's Thesis Review Committee consisting of a primary examiner, secondary examiner, and reviewer totaling three members, a direct assessment of the attainment status of competences is conducted based on a rubric along with the dissertation review, and the steering committee conducts the final evaluation of the student's competence achievement.</li> </ul>	

<p><b>Evaluation Criteria for Degree Theses/ Dissertations</b></p>	<p>Dissertation submitted for a degree for which all of the following evaluation items are deemed appropriate or have been achieved will be accepted as a master's dissertation upon completion of the final examination.</p> <ol style="list-style-type: none"> <li>1. Significance of the research theme</li> <li>2. Grasping and understanding of prior research</li> <li>3. Validity of the research method</li> <li>4. Conclusions and the validity of the logic leading to them</li> <li>5. Adequacy of style and organization</li> <li>6. Appropriate citation of documents and materials</li> </ol> <p>The method of dissertation examination shall be as follows.</p> <p>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.</p> <ol style="list-style-type: none"> <li>1) The Dissertation review committee consists of one primary examiner and two or more secondary examiners.</li> <li>2) The public presentation will take about 30 minutes including questions and answers.</li> <li>3) Final examinations shall be conducted by oral or written means, mainly on the dissertation and related fields. However, an open dissertation presentation may be substituted for an oral examination, and if necessary further oral or written examinations will be given.</li> </ol>
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**Curriculum Policy**

To train individuals who will be involved in specialized work to utilize information for academic, educational, lifestyle and cultural activities through an interdisciplinary approach that integrates the humanities and sciences, students will acquire general and specialized knowledge and abilities as outlined in the diploma policy. General knowledge and ability will be acquired mainly through Graduate General Education Courses, Inter-disciplinary Foundation courses, degree programs' common courses and compulsory seminar subjects, and specialized knowledge will be acquired mainly through elective lecture subjects. Curricula in both Japanese and English for students who enrolled in either the spring semester (April) or the fall semester (October), and a curriculum at the Tokyo Campus will be created in an integrated manner.

<p><b>Curriculum Design Framework</b></p>	<ul style="list-style-type: none"> <li>- The curriculum consists of Graduate General Education Courses, Inter-disciplinary Foundation Courses, and the Degree Programs' Common Courses, as well as Media Science Specialized Courses, Information Interaction Specialized Courses, Library and Information Science Specialized Courses, and the Methodological Foundation Courses, the Research Practice Courses, and the Research Seminar Courses all of which are unique to this degree program.</li> <li>- Students will acquire general knowledge and abilities such as knowledge utilization, Management competence, Communication competence, Teamwork competence, and Competence in Internationality through the Graduate General Education Courses, the Inter-disciplinary Foundation Courses, and the Degree Programs' Common Courses.</li> </ul>
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<p><b>Curriculum Design Framework</b></p>	<ul style="list-style-type: none"> <li>- The Specialized Courses in Media Science (lecture subject) provide students with the ability to read the nature of data, select appropriate methods for their purposes, and analyze the data. They also acquire media expertise that includes the ability to develop new media with an awareness of its application to information and social systems.</li> <li>- The Special Courses on Information Interaction (lecture subject) teaches students system expertise that includes the ability to analyze multifaceted interactions between human intellect and computer input/output and the ability to design information services and various Web services.</li> <li>- The Special Courses in Library and Information Science (lecture subject) provide students resource expertise that includes the ability to understand the meaning of historical and cultural materials, foster an understanding of society, foster a new society, and design information services for libraries, archives, museums, and a variety of Web services.</li> <li>- The Methodological Foundation Courses group (seminar courses) consists of Research Foundation, Literature Survey, Surveys and Data Analysis, aiming to develop fundamental research skills. The Research Practice Courses group (seminar, practical training courses) consists of Research Design, Job Design, Content Production and Development, Records and Information Management, MDA-related courses, aiming to develop practical research skills.</li> <li>- The Group of Research Seminar Courses (seminar courses) consists of the Special Seminar in Informatics. Students will acquire research ability through the practice of research in semantic research skills, mathematical research skills, and information ethics, as well as theories and applications of data usage leveraging the characteristics of media, theories and applications of information usage centered on communication, and theories and applications of knowledge resource management as social infrastructure.</li> <li>- Each subject is evaluated according to the evaluation method described in the syllabus.</li> </ul>
<p><b>Teaching and Learning Methods</b></p>	<ul style="list-style-type: none"> <li>- 12 credits or more from Major subject groups (lecture subjects).</li> <li>- Seminar, Practical Training courses 6 credits or more from Methodological Foundation Courses and Research Practice Courses and 4 credits from Research Seminar Courses. In principle, students will solidify their basic research skills by taking basic methodological subjects in their first year, and acquire research execution skills based on their basic research skills by taking Research Seminar Courses in their first and second year.</li> <li>- Up to 8 credits from Graduate General Education Courses, Inter-disciplinary Foundation Courses, Degree Programs' Common Courses, and lecture courses of other graduate schools or degree programs of the University.</li> <li>- Regardless of the entrance examination category and the instructional language, the prescribed credits may be included in the completion requirements.</li> </ul>

### Admission Policy

<b>Desired Student Profile</b>	<ul style="list-style-type: none"> <li>- Individuals who have a deep interest in the use of information and strive to take an interdisciplinary approach to the formulation and resolution of problems.</li> <li>- Individuals who have basic knowledge of informatics or related fields and who have communication skills, presentation skills, and language skills.</li> </ul>
<b>Student Selection Process</b>	<p>Selection will be based on a comprehensive evaluation that includes the English language scores, the oral examination results and the application review. The English language test may be waived for applicants who are applying through the Special Selection Process for Recommended Applicants and the Special Selection Process for Working Individuals.</p>

### Learning Support Framework

<b>Academic Support</b>	<ul style="list-style-type: none"> <li>- Methodological Foundation Courses in Master's Program (Seminar courses) - "Research Foundation in Informatics", "Literature Survey", and "Survey and Data Analysis" - provide students with the basic skills they need to learn.</li> </ul>
<b>Opportunities for Peer Interaction</b>	<ul style="list-style-type: none"> <li>- Master's course (Seminar courses) "Research Design" is aimed at students who have specific motivations for writing a research plan, such as applying for external funding or scholarships, or aspiring to a research career. Students learn the basics of writing a research plan using their own individual research themes, and are then asked to evaluate each other's plans to enhance the peer effect among students.</li> <li>- Upper-level students provide academic advice to under-level students at the Kasuga Learning Commons (KLC) in Library on Library and Information Science.</li> <li>- Student tutors are assigned to international students.</li> </ul>
<b>Opportunities for Student-Faculty Interaction</b>	<ul style="list-style-type: none"> <li>- Student meetings are held jointly for master's and doctoral students, allowing them to freely exchange opinions about Informatics degree program.</li> <li>- Multiple faculty members provide group guidance with the aim of discussing each other's research progress and receiving advice from different perspectives.</li> <li>- Students can participate in a lunch colloquium held approximately once a month to promote interdisciplinary research, providing an opportunity for them to discuss the latest research topics with faculty members.</li> </ul>

### Approaches to Assuring and Enhancing Educational Quality

As part of the degree program, a PDCA cycle has been established that refers to direct assessment data of competences from the previous year and leads to educational improvements in the following years.

Specifically, under the degree program leader, the Curriculum Design Group, Research Advisory Group, and Diploma Assessment Group are formed, with regular information sharing within the steering committee ensuring coordination between the groups. As a result, a system has been established that consistently works on improving the content of curricula and research guidance based on the results of competence evaluation. Decisions and discussions within each group are first reviewed and coordinated by the steering committee, and then shared and discussed among all the faculty members at the degree program faculty meeting held once a month. Through this process, a common understanding of the educational policies and areas for improvement is formed across the entire program.

Furthermore, alongside these efforts, faculty members regularly participate in faculty development programs at the Graduate School of Comprehensive Human Sciences, strict implementation of syllabus reviews using checklists based on categories independently established by the Curriculum Design Group, and feedback is provided to the instructors of each course based on class evaluation results.

Through these processes, continuous improvement in the quality of educational practices by individual faculty members is also pursued.