

## Doctoral Program in Policy and Planning Sciences

Name of the degree to be conferred	Doctor of Philosophy in Policy and Planning Sciences
Educational purpose	<p>The Doctoral Program in Policy and Planning Sciences cultivates “problem identify-and-solve type human resources in engineering for future visions” (university faculty members, highly specialized professionals, researchers, etc.) who possess the knowledge about the entire three areas of assets/resources design (finance/optimization), spatial/environmental design (urban planning) and organizational/behavioral design (behavioral science) as well as the engineering skills worthy of being called those of an expert in at least one area and can complete the process of identifying and solving problems in their own right and produce research outcomes that are highly appraised internationally.</p>
Vision of human resources development	<p>He or she should have the “problem-solving ability” founded on social knowledge, logical thinking ability, and various kinds of engineering skills and the “problem-identifying ability” which can objectify more abstract events as a “problem identify-and-solve type human resource in engineering for future visions” and should be capable of being active as an engineering, economic or interdisciplinary university faculty member, governmental organization employee, international public employee, IT engineer, production planning/marketing engineer, government-funded bank, financial analyst, consultant, think tank researcher, urban planning or community development consultant, construction or real estate project/development planner, town architect, public employee in national or municipal planning departments, etc.</p>
Competencies specified in diploma policy	Evaluation perspectives
1. Knowledge creation competence: Ability to create new knowledge that can contribute to future society	<p>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?</p>
2. Management competence: Ability to plan and implement measures to identify and solve challenges from a higher perspective	<p>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?</p>
3. Communication competence: Ability to express the true nature of academic findings positively and clearly	<p>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?</p>
4. Leadership competence: Ability to have objectives get accomplished under your leadership	<p>① Can you set attractive and compelling goals? ② Are you capable of building systems to realize goals and accomplish objectives as the leader?</p>
5. Internationality competence: Possession of a high level of awareness and motivation to be internationally active and contribute to international society	<p>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?</p>
6. Research ability: Ability to set leading-edge research tasks based on up-to-date specialized knowledge and carry out a research plan independently in the areas of policy and planning sciences	<p>① If research tasks in the areas of policy and planning sciences are appropriately set up and the advanced skills for carrying out such research were gained ② If leading-edge research that produces ingenious outcomes in the areas of policy and planning sciences is carried out ③ If research outcomes are presented and debated in English in international conferences, etc.</p>
7. Specialized knowledge: Leading-edge and advanced specialized knowledge and command of the areas of policy and planning sciences	<p>① Understanding of social phenomena (Find): If social phenomena are deductively understood based on the advanced knowledge about basic theories and rules of thumb in the areas of policy and planning sciences ② Data analysis (Analyze): If social phenomena are inductively understood based on data analysis ③ Institution design (Plan): If institutions for social reforms are designed based on the understanding of social phenomena ④ Experiment and advocacy (Do): If concrete advocacy or social experiment is done based on a designed institution ⑤ Evaluation and measurement (See): If results of social experiment or advocacies are critically measured and evaluated in one’s own right to deepen the understanding of social phenomena</p>

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| 8. Ethical view: Ethical view and ethical knowledge appropriate for highly specialized professionals in the areas of policy and planning sciences | ①If researcher ethics and engineer ethics were understood and adhered by<br>②If human research ethics as well as formalities and/or procedures necessary for research were understood |
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#### Dissertation evaluation criteria

A thesis is accepted if all of the following evaluation items are proven to be met.

<Criteria for degree thesis review>

1. Significance of research theme: If the problems concerning social phenomena identified and argued in the thesis for their solutions are found as academically significant or significant enough to lead to social contributions
2. Understanding of preceding researches: If existing theories and researches associated with one's research theme are extensively and accurately grasped and objectively appraised. If, based on that understanding, the research deeply debates issues, including as to the unique contributions that the research could attain to the literatures or as to the contribution or value that the research could have toward the society, economy, urban environments, business organizations and the workers there.
3. Understanding and appropriateness of research methods: If the methods (demonstration, experiment, simulation, investigation, survey and other design and data analysis, etc.) used to pursue the research theme are deeply understood and the skills to use them well in order to pursue the research theme were sufficiently gained
4. Appropriateness of presentation and interpretation of research results: If the skill to academically present research results and the thinking ability to interpret them deductively or inductively are possessed
5. Research overall: If the research is academically contributory and if the research successfully has developed a significant debate toward future research trends as results of an overview of steps 1 to 4 above and the objective evaluation of strengths and weaknesses of the research
6. Originality: If the research is worthy of being called an original research that adds new knowledge to existing findings
7. Format of thesis: If the appropriate level as an academic paper is reached in terms of the appropriateness of sentence expressions, the presentation and citation of graphics and literatures and the creation of literature list in the thesis

<Criteria for final exam>

1. **[Research ability]** If leading-edge research tasks are set up and research plans are independently carried out based on the latest specialized knowledge in the areas of policy and planning sciences
2. **[Specialized knowledge]** If the leading-edge advanced specialized knowledge and command of the areas of policy and planning sciences were gained
3. **[Ethical view]** If the ethical view and ethical knowledge appropriate for highly specialized professionals in the areas of policy and planning sciences were gained

<Level standards required for the degree thesis, review board members, review method and review items, etc.>

A doctoral dissertation review board must be formed by one chief reviewer and three or more sub-reviewers.

The chief reviewer and two or more sub-reviewers must be applicable faculty members of the Degree Programs in Systems and Information Engineering of the Graduate School, and in addition, one or more of the sub-reviewers must be selected from those who do not belong to the Doctoral Program in Policy and Planning Sciences.

The chief reviewer opens a doctoral dissertation review board, and the board reviews the dissertation in accordance with the criteria for degree dissertation review to judge the acceptance of the dissertation.

The dissertation passes if approved to be on a doctoral dissertation level in all of the above evaluation items 1 to 7 with the final (oral) exam included in the judgment.

#### Curriculum Policy

To develop the "problem-identifying ability" that can identify problems and abstract and formulate them as a quality possessed by "problem identify-and-solve type human resources in engineering for future visions, the curriculum is organized on the three pillars of ① assets/resources design (finance/optimization), ② spatial/environmental design (urban planning) and ③ organizational/behavioral design (behavioral science). Thus, the Program provides students with the specialized knowledge and research abilities related to these pillars as well as a wide range of basic knowledge and ethical view in the areas of engineering and cultivates such highly specialized professionals who can identify and solve problems from a wide perspective extending over multiple areas in science and technology.

- A wide range of knowledge is gained with Graduate General Education Courses, Inter-disciplinary Foundation Courses and Degree Programs' Common Courses.
- Multifaceted research supervision with the use of research units, etc.
- A management ability development program, which helps students to develop the ability to set up research tasks in their own right and build a research method, is offered to support the gain of problem-identifying ability.

Besides the standard 3-year course of study, the Program includes various alternative plans such as the early completion course which permits finishing in 1 year, an extended 5-year course of studies, as well as the S Course (taking 3 years combined with the Master's Program), the A Course (the same but taking 4 years), and the standard 5-year course.

Curriculum organization policy	<p>Students gain (generic knowledge and ability) as follows:</p> <ul style="list-style-type: none"> <li>• Generic knowledge is gained through Major Subjects (elective), Degree Programs' Common Courses (Master's Program), Graduate General Education Courses and Inter-disciplinary Foundation Courses.</li> <li>• Competence of knowledge creation is gained through "Special Doctoral Seminar in Policy and Planning Sciences I to IV" and "Special Doctoral Research Work in Policy and Planning Sciences I and II", in which students directly work on research.</li> <li>• Management competence, Communication competence and Teamwork competence are gained through "Internship in Policy and Planning Sciences" and "Facilitation Training Program in Policy and Planning Sciences" subjects.</li> <li>• Competence in Internationality is gained through "Facilitation Training Program in Policy and Planning Sciences" subjects, in which students learn with the active learning method as group work with international students, and "Special Doctoral Seminar in Policy and Planning Sciences I to IV" and "Special Doctoral Research Work in Policy and Planning Sciences I and II" in which students directly work on research on the premises of international research circumstances.</li> </ul> <p>Students gain (specialized knowledge and ability) as follows</p> <p>Research ability is gained through "Special Doctoral Seminar in Policy and Planning Sciences", "Special Doctoral Research Work in Policy and Planning Sciences", etc.</p> <ul style="list-style-type: none"> <li>• The specialized knowledge necessary for research is gained through Degree Programs' Common Courses such as "Special Lecture on Policy and Planning Sciences I to II" which pass on the latest, advanced specialized knowledge about policy and planning sciences.</li> <li>• The ethical view particularly necessary for the activities in the society is gained through "Internship in Policy and Planning Sciences" and "Facilitation Training Program in Policy and Planning Sciences" subjects, and the ethical view for research is gained through "Special Doctoral Seminar in Policy and Planning Sciences I to IV" and "Special Doctoral Research Work in Policy and Planning Sciences I and II" in which students directly work on research.</li> </ul>
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Learning methods · Processes	<ul style="list-style-type: none"> <li>• By reference to model ①: Graduate school faculty member and model ②: Think tank chief researcher, students take Major Subjects (6 credits or more) in mainly the first year.</li> <li>• Concurrently with the above, doctoral dissertations are supervised in a multifaceted way by supervisory faculty members and researcher groups such as a research unit, and under this system of supervision, students proceed with conducting research on their respective research tasks and take 12 credits of specialized subjects concerning the writing of dissertations.</li> </ul>
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Evaluation of learning outcomes	<ul style="list-style-type: none"> <li>• The progress of learning and of the writing of doctoral dissertation is examined and evaluated by the advisory group at the four stages: Special Doctoral Seminar in Policy and Planning Sciences I (typically in spring semester of the first year), Special Doctoral Seminar in Policy and Planning Sciences II (typically in fall semester of the first year), Special Doctoral Seminar in Policy and Planning Sciences III (typically in spring semester of the second year) and Special Doctoral Seminar in Policy and Planning Sciences IV (typically in fall semester of the second year).</li> <li>• Further, diploma examination is administered through two stages: preliminary review with Special Doctoral Research Work in Policy and Planning Sciences I by the dissertation review board, and the final exam with Special Doctoral Research Work in Policy and Planning Sciences II.</li> </ul>
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### Admission Policy

Desired students	<p>We seek candidates who possess engineering fundamental abilities (mathematical or logical thinking abilities), the knowledge of the entire three areas of assets/resources design (finance/optimization), spatial/environmental design (urban planning) and organizational/behavioral design (behavioral science), and the specialized knowledge about one of these areas as well as the problem-solving ability as equivalent to those who have completed a master's degree program.</p>
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Selection policy	<ul style="list-style-type: none"> <li>• To accept outstanding and diverse human resources inside and outside Tsukuba, candidates are solicited through multiple entrance exam means including internal assessment selection, general entrance exam and special entrance exam for adults at different timings and different numbers of students admitted.</li> <li>• Irrespective of the type of entrance exam, an oral exam is mandatorily required.</li> <li>• The internal assessment selection selects those who are expected to complete the Master's Program in Policy and Planning Sciences, who possess high fundamental abilities and research abilities.</li> <li>• In the general entrance exam, the potential students to be selected out must possess certain fundamental abilities and research abilities.</li> <li>• The special entrance exam for adults evaluates the achievements and experiences as an adult member of society in addition to fundamental abilities and research abilities.</li> </ul>
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