Master's Program in Policy and Planning Sciences

Master of Science in Policy and Planning Sciences

Program Educational Objectives

The “Master's Program in Policy and Planning Sciences” cultivates international specialists “problem-solving type human resources (mode 1 type human resources) in engineering for future visions” who can do advocacy and contribute to social requirements from a technical point of view.

Graduate Profile	He or she should have the “problem-solving ability” founded on social knowledge, logical thinking ability, and various kinds of engineering skills as a “problem-solving type human resource (mode 1 type human resource) in engineering for future visions” and should be capable of being active as an IT engineer, production planning/marketing engineer, government-funded bank, financial analyst, consultant, think tank researcher, urban planning or community development consultant, managerial position at an organization, financial planner, construction or real estate project/development planner, town architect, public employee in national or municipal planning departments, etc.

Diploma Policy

The degree of Master of Science in Policy and Planning Sciences 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
Knowledge and Skills	1. Knowledge application competence: Ability to contribute to society with advanced knowledge	①Can you apply knowledge gained through research and other activities in society? ②Can 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	①Can you take on major tasks with systematic planning? ②Can you understand and solve problems from multiple perspectives?
	3. Communication competence: Ability to accurately and clearly communicate expert knowledge	①Are you capable of efficient communication for research purposes? ②Can 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	①Do you have experience cooperatively and actively working on challenges as part of a team? ②Have you helped promote projects and activities other than your own research?
	5. Internationality competence: Willingness to contribute to international society	①Are you aware of making contributions to international society and getting involved in international activities? ②Have you obtained the linguistic skills necessary for international information collection and action?
	6. Research ability: Basic knowledge and ability to set research tasks and carry out a research plan in the areas of policy and planning sciences	①If research tasks in the areas of policy and planning sciences are appropriately set up ②If the basic techniques for conducting research in the areas of policy and planning sciences were gained ③If research in the areas of policy and planning sciences is carried out with the accomplishment of significant results

	Competences	Evaluation perspectives
Knowledge and Skills	7. Specialized knowledge: Advanced specialized knowledge and command of the areas of policy and planning sciences	①Understanding 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 ②Data analysis (Analyze): If social phenomena are inductively understood based on data analysis ③Institution design (Plan): If institutions for social reforms are designed based on the understanding of social phenomena ④Experiment and advocacy (Do): If concrete advocacy or social experiment is done based on a designed institution ⑤Evaluation 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
	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 ②If human research ethics as well as formalities and/or procedures necessary for research were understood
Guidelines for Assessing Learning Outcomes	The evaluation of learning outcomes objectively confirms and assesses the acquisition status of competences based on the degree conferral policy at each stage, according to the achievement evaluation sheet. It is conducted four times in total each semester. The evaluation sheet is designed to help students evaluate themselves if their learning has maintained balance in gaining the abilities of “understanding of social phenomena” , “data analysis” , “institution design” , “experiment and advocacy” and “measurement and evaluation” and the knowledge and skills (competences) of the areas of “assets/resources design” , “organizational/ behavioral design” and “spatial/environmental design” . This evaluation sheet is every time completed with achievement checks by an interview between the supervisory faculty member and the student. Particularly in the fourth evaluation, which is made after the mid-term presentation, the evaluation includes checks as to whether the research reflects the past advice of AG faculty members, the student exchanged opinions with AG faculty members in the question-and-answer session at the mid-term presentation, and the research goes well on the whole toward the completion of the master’s thesis. – Basic Master's Seminar in Policy and Planning Sciences, Special Master's Seminar in Policy and Planning Sciences, and Special Master's Research Work in Policy and Planning Sciences are examined and evaluated at the three stages of the research plan presentation in the first year, the mid-term presentation and the final examination board in the second year.	

Evaluation Criteria for Degree Theses/ Dissertations	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 accurately understood and objectively appraised. If then, the research deeply debates issues, including as to the theoretical contributions that the research could add to the literatures or as to the practical significance that the research could attain to 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 capable of doing advocacy that could be contributable to the society or 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. 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 the basic knowledge and ability to set research tasks and carry out a research plan in the areas of policy and planning sciences were gained 2. 【Specialized knowledge】 If the 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 master's thesis review board must be organized with one chief reviewer and two or more sub-reviewers who are applicable faculty members of the Degree Programs in Systems and Information Engineering of the Graduate School. The chief reviewer opens a master's thesis review board, and the board reviews the thesis in accordance with the criteria for degree thesis review to judge the acceptance of the thesis. The thesis passes if approved to be on a master's thesis level in all of the above evaluation items 1 to 6 with the final (oral) exam included in the judgment.

Curriculum Policy

To develop the “problem-solving ability” founded on social knowledge, logical thinking ability and various kinds of engineering skills, 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), so that students gain 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 that the Program cultivates such human resources who can identify and solve problems from a wide perspective over multiple areas in science and technology.

Curriculum Design Framework	The curriculum is designed to help students gain the “problem-solving ability” for social problems. To cultivate the fundamental abilities in policy and planning sciences, the Foundation Subjects for Major in Degree Programs' Common Courses are organized as core subjects. Moreover, to develop the specialized knowledge and abilities ranging from the understanding of phenomena to model build and data analysis, the specialized subjects in Degree Programs' Common Courses are organized for the three areas of ① assets/resources design (finance/optimization), ② spatial/environmental design (urban planning) and ③ organizational/behavioral design (behavioral science) and the shared area involving each of these areas. Furthermore, Foundation Subjects for Major and Major Subjects are organized in Program subjects, and while using the “Division of Policy and Planning Sciences Commons” , which is physical and virtual resources shared by students and faculty members, students have both the fundamental and specialized abilities established in them by creating a master's thesis under a system of research that supervises students in a multifaceted way through a researcher group such as research units. Note that the Course in Strategic Frontiers for Regional Revitalization for working individuals, which is opened in the Program and positions “Introduction to Strategic Frontiers for Regional Revitalization” as required subjects, places a special emphasis on the cultivation of human resources who will be engaged in community development in the future. Students gain (generic knowledge and ability) through Graduate General Education Courses, Inter-disciplinary Foundation Courses, and specialized foundation subjects. Particularly, the following knowledge and abilities are expected to be gained through core subjects, and Facilitation Training subjects: – Students gain Competence of knowledge application through “Mathematics for Policy and Planning Sciences” , “Microeconomics” , “Social Simulation” , “Statistical Analysis” , “Spatial Information Science” and other core subjects and “Internship in Policy and Planning Sciences” .

Curriculum Design Framework	– Students gain Management competence, Communication competence and Teamwork competence through “Workshop in Policy and Planning Sciences I and II” in which active learning is done as group work, “Internship in Policy and Planning Sciences”, “Facilitation Training Program in Policy and Planning Sciences” subjects, and “Active Learning in Strategic Frontiers for Regional Revitalization” subjects. – Students gain Competence in Internationality through core subjects, which use plain teaching methods on the basis of international research circumstances, and “Workshop in Policy and Planning Sciences I and II”, “Internship in Policy and Planning Sciences”, “Facilitation Training Program in Policy and Planning Sciences” subjects, and “Active Learning in Strategic Frontiers for Regional Revitalization” subjects, in which students learn with the active learning method as group work with international students. (Specialized knowledge and abilities) are gained as follows: – Students gain the basic knowledge in research through Graduate General Education Courses, Inter-disciplinary Foundation Courses, and core subjects and then gain research ability through “Basic Master's Seminar in Policy and Planning Sciences I and II”, “Special Master's Seminar in Policy and Planning Sciences I and II” and “Research in Policy and Planning Sciences I and II” . – Students learn with the following subjects to develop the abilities to acquire the specialized knowledge necessary for the “problem-solving ability”, which is required for the entire areas of policy and planning sciences: “Game Theory”, “Urban and Environmental Planning”, etc. to develop the ability to understand social phenomena, “Mathematics for Policy and Planning Sciences”, “Statistical Analysis”, etc. to develop the ability to perform data analysis, “Microeconomics”, “Institutions, Policy Decision”, etc. to develop the ability to design institutions, “Social Simulation”, “Spatial Information Science”, etc. to develop the ability to do experiment and advocacy, and “Corporate Valuation”, etc. to develop the ability to make evaluation and measurement. – Through “Internship in Policy and Planning Sciences” and “Facilitation Training Program in Policy and Planning Sciences” subjects, students gain the particular ethical view that is required for functioning well in the society, and through “Basic Master's Seminar in Policy and Planning Sciences I and II”, “Special Master's Seminar in Policy and Planning Sciences I and II” and “Research in Policy and Planning Sciences I and II”, students gain the ethical view related to research.

Teaching and Learning Methods	– Students take specialized foundation subjects in Degree Programs' Common Courses in mainly the spring semester of the first year by reference to the following models: Curriculum model ① (Business) consultant or managerial position at an organization, financial planner; Curriculum model ② System engineer at an IT consulting company; Curriculum model ③ Think tank researcher. Being positioned as part of these subjects, Graduate General Education Courses and Inter-disciplinary Foundation Courses are encouraged to be taken. – By reference to the three types of curriculum models, students take in mainly the fall semester of the first year from the Major Subjects in Degree Programs' Common Courses organized as the three areas of ① assets/resources design (finance/optimization), ② spatial/environmental design (urban planning) and ③ organizational/behavioral design (behavioral science) and the shared area involving each of these areas. – Concurrently with the above, master's theses are supervised in a multifaceted way by supervisory faculty members and researcher groups such as an advisory group (AG) and 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 in Program subjects concerning the writing of theses.

Admission Policy

Desired Student Profile	We seek candidates who possess engineering fundamental abilities (mathematical or logical thinking abilities) and the basic knowledge about one of the three areas of assets/resources design (finance/optimization), spatial/environmental design (urban planning) and organizational/behavioral design (behavioral science).
Student Selection Process	– To accept outstanding and diverse human resources inside and outside Tsukuba, candidates are solicited through multiple entrance exam means including recommendation entrance exam, general entrance exam and special entrance exam for adults at different timings and different numbers of students admitted. – Irrespective of the type of entrance exam, an oral exam is mandatorily required. – To prove foreign language proficiency, candidates are required to submit the score sheet of English language test (e.g. TOEIC, TOEFL). – In the recommendation entrance exam, the potential students to be selected out must excel academically, especially in the abilities necessary for the research in the areas of policy and planning sciences. – In the general entrance exam, the potential students to be selected out must possess certain fundamental abilities and research abilities. – 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.

Learning Support Framework

Academic Support	Achievements are evaluated using an achievement evaluation sheet. Students use the sheet to document their progress in acquiring the necessary competences, which they confirm with their supervisors. "Special Master's Seminar in Policy and Planning Sciences III", as well as "Research work in Policy and Planning Sciences I and II" encourage students to manage their research progress and improve their presentation skills.
Opportunities for Peer Interaction	Opportunities for student interaction are promoted through “Facilitation Training Program in Policy and Planning Sciences” and “Workshop in Policy and Planning Sciences” , which implements active learning through group work, and interdisciplinary research activities utilizing research units.
Opportunities for Student–Faculty Interaction	Opportunities for interaction between students and faculty members are promoted through the seminars involving multiple faculty members using sub-advisors and research units, as well as supporting a seminar for multiple faculty members and graduate students as part of degree programs. Meetings for graduate students and faculty members holds every year as opportunities for interaction.

Approaches to Assuring and Enhancing Educational Quality

- The degree program leader and the curriculum committee analyze and review the assessment results of learning outcomes, striving for the continuous improvement of educational quality.
- The academic management committee continuously reviews and enhances educational activities, ensures the quality of education through initiatives such as workshops, and strengthens the system for achieving the objectives of the degree program.
- External evaluations—such as directly gathering opinions from stakeholders and conducting questionnaire surveys—are conducted to confirm whether the education being offered aligns with the qualities and competences expected of graduates of the Policy and Planning Sciences degree program.