

Doctoral Program in Geosciences

Name of the degree to be conferred	Doctor of Philosophy in Science
Educational purpose	The students who understand various global natural phenomena in the past and at present, have advanced expertise and research capabilities that can contribute to solution of various problems on a global scale, and can contribute to the scientific development of Japan as researchers who can internationally play an active role.
Vision of human resources development	<ul style="list-style-type: none"> •The person with both a wide basic knowledge and outstanding expertise. •The person with an outstanding ability for areawork or a high ability for experiments/data analysis. •A person with problem-solving skills concerning geoscientific issues. •The person with distinguished foreign language skills and communication skills. •The person with an ability to teach in higher educational institutions such as universities. •A person with a high ethical perspective for research activities.

Diploma Policy

The degree of Doctor of Philosophy in Science 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
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. Knowledge and comprehension ability: a highly specialized knowledge and comprehension ability related to geoscience.	① If capable of setting a specialized research tasks related to geoscience. ② If capable of planning and executing specialized research plan related to geoscience.
7. Planning ability: an outstanding planning ability to set a specialized research tasks and form a distinguished research program to execute.	① If having an advanced expertise related to geoscience. ② If having comprehensively understood the basic principle behind various events behind geoscience.

8. Problem-solving ability: an ability to confront various issues and solve the problems by exploring the basic principle behind them.	① If capable of recognizing various problems related to geoscience. ② If capable of solving various problems related to geoscience.
9. Expressiveness: an ability to express themselves based on outstanding foreign language skills and communication skills.	① If having outstanding language skills. ② If having communication skills to enable students to express the research outcomes relating to geoscience by themselves.
10. Creativity: a distinguished creativity to confront various issues in high demand for expertise with a fresh view, and apply results obtained from research.	① If capable of tackling various issues from a new viewpoint related to geoscience and achieving research outcomes. ② If having creativity to apply the research outcomes related to geoscience.

Dissertation evaluation criteria

The thesis that satisfies all the following evaluation items shall be a pass as the thesis for doctoral degree after going through the final examination. Additionally, the thesis shall be examined by the committee for master's thesis review (composed of one chief examiner and two or more sub examiners). While the instructor shall be the sub-examiner in charge of master's program in geoscience, the instructors in charge of other degree programs can participate in such examination.

1. If the submitted doctoral thesis is extremely high in degree of completion including descriptions, logic expansion and charts.
2. If the level of the contents of doctoral thesis is internationally high as the research in the area of geosciences.
3. If the references are appropriately cited for the doctoral thesis.
4. If contribution to the research contents of doctoral thesis by the applicant of master's degree has been sufficiently recognized.
5. If academic rank, contents and future developments of doctoral thesis are sufficiently understood.
6. If questions and answers are properly carried out in presentation.

Curriculum Policy

In this Degree Program, subject to the students who have the knowledge to complete the master's degree relating to geoscience, the curriculum shall be organized aiming at training the human resources that research the process and mechanism of various phenomena in global environment, or earth evolution from the birth of the Earth up to the present, have an ability to gain a comprehensive elucidation from various aspects including human environment and can internationally play an active role. For this purpose, this Degree Program is composed of area of expertise (including cooperated graduate school) necessary for this Degree Program. In all such areas, the curriculum has been organized in order to learn the specialized knowledge relating to specific area necessary to achieve the diploma policy mentioned above and acquire foreign language skills, communication skills, an ability to lead, a problem-solving ability, ethical view.

Curriculum organization policy	<ul style="list-style-type: none"> • Regarding setting of course classification, the curriculum shall be divided into "Foundation Subjects for Major" and "Major Subjects". "Foundation Subjects for Major" shall especially deal with the contents common to the area of earth evolution sciences, and the basic knowledge relating thereto shall be acquired. In "Major Subjects", thesis research/practical training in each area shall be provided, through whose completion high specialized knowledge in specific research areas can be acquired. • The students aiming at acquisition of doctoral degree can receive highly intensive tutorial in a series of curricula until completion of the degree, by the supervision group composed of the chief supervisor mainly in charge of research instruction and the sub supervisor(s) who cooperate(s) with such research supervision as advisor(s). • Through advanced studies and special lectures in the area of expertise, Communication competence, Leadership competence and an ability to solve problems shall be acquired. • Acquire the abilities of all 10 competencies through special exercises in each specialty
--------------------------------	---

	<ul style="list-style-type: none"> • Acquire communication skills, leadership skills, and problem-solving skills through internships. • By taking research planning fieldwork courses, Management competence, Communication competence, Leadership competence, research ability, problem-solving ability, ability to explore and presentation ability shall be acquired. • Through Graduate General Education Courses, communication skills and research ethics shall be acquired.
Learning methods • Processes	<ul style="list-style-type: none"> • In the 1st year, Foundation Subjects for Major and the Major Subjects related to each area of expertise (advanced studies/special lectures /exercises/research planning area courses etc.) shall be taken. • In the 2nd year onward, research for creation of the doctoral thesis shall be carried out. Additionally, the students who register in Early Completion Program shall work on creation of the doctoral thesis from the 1st year. • Upon commencing the 1st year, for all the students the advisory committee (research supervision team) composed of the team of a chief supervisor and several sub supervisors shall be established to organize validity and problems of research plan for each student. Additionally, instruction shall be provided to confirm registered courses and acquired credits etc. The advisory committee shall participate in other master' programs, as necessary.
Evaluation of learning outcomes	<ul style="list-style-type: none"> • The advisory committee shall periodically evaluate the students and examine their research progress. • Prior to the final examination for the doctoral degree review in the final year, the preliminary examination shall be performed. In the preliminary examination, public research presentation and questions and answers shall be set. Through the contents of research presentation, degree of acquisition of high expertise of geosciences and survey/analysis skills, presentation ability and ability to explore problems shall be evaluated. • The student who has passed the preliminary examination and is expected to acquire necessary credits for completion shall submit the doctoral thesis. The members of the examination committee for doctoral thesis shall minutely examine the thesis submitted. Subsequently, in the final examination committee for doctoral thesis composed of one chief examiner and three or more sub examiners, explanation relating to doctoral thesis as the final examination shall be requested and the questions and answers relating to relevant matters shall be conducted. Based on these results, through consultation by all the thesis committee members, the following shall be evaluated: if the thesis satisfies degree awarding policy (DP) of this Degree Program, the contents of the thesis is worth conferring the doctoral (Doctor of Science) degree as academic results, and if the author of the thesis can be approved as the one who has the quality to receive the doctoral (Doctor of Science) degree.
Admission Policy	
Desired students	<p>In any of the area of expertise of geosciences, the desired student shall have basic specialized have the knowledge to Graduate school master's course and above, motivation to deeply explore various natural phenomena on the earth both in the past and at present and have acquired interdisciplinary knowledge for their comprehensive settlement. Especially, the student who has a deep interest in scientifically observing and analyzing natural phenomena and lab tests/observation and field work such as area observation and survey shall be welcomed. It is required that the student shall be willing to study basic science steadily and endeavor to think logically from international vision.</p>
Selection policy	<ul style="list-style-type: none"> • The knowledge and academic skills motivation to research, ability for logical thinking and presentation ability shall be evaluated by document screening and oral examination. • Selection for working individuals (including “Early Completion Program” for working individuals) and entrance examination for overseas double degree program shall be implemented.