

College of Geoscience

■ Bachelor of Science

Program Educational Objectives

We foster personnel who vigorously play active parts from an international standpoint in fields pertaining to society. Such personnel are required to have comprehensive knowledge and ways of thinking concerning the Earth's evolution from its birth to the present time, and various phenomena and processes occurring in the atmosphere, hydrosphere, and lithosphere.

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| <p>Graduate Profile</p> | <p>We cultivate individuals with the following abilities: Generic competences: communication skills; critical and creative thinking; data and information literacy; broad perspectives and international awareness; physical and mental well-being, humanity, and ethical awareness; and cooperativeness, initiative, and self-management. Specialized competences: understanding of the natural sciences; specialized Foundation in Earth Science; scientific Thinking Ability; laboratory experimentation and analytical skills; fieldwork skills; research Planning, Execution, and Synthesis Skills. Through the development of these competences, we foster individuals who can apply their scientific knowledge and global perspective to contribute to society across a wide range of fields, including meteorology, environmental science, geology, disaster mitigation, energy, construction, information and communication, tourism, and finance.</p> |
| <p>Career Paths after Graduation / Completion</p> | <p>Approximately 70% of graduates pursue advanced studies in graduate school. For those entering the workforce, career opportunities extend across a wide range of industries, including meteorology, environment, geology, disaster prevention, energy, construction, information and communication, travel, and finance. In addition, many graduates contribute to society in diverse sectors such as disaster prevention and environmental administration in government ministries, local governments, and independent administrative agencies, as well as educational and outreach activities in schools, museums, and related institutions.</p> |

Diploma Policy

We confer the Bachelor of Science degree upon students who have acquired the knowledge and skills defined as the University of Tsukuba's undergraduate educational goals (generic competences) as well as those defined as the objectives of this program (specialized competences).

Understanding of Natural Sciences: Possesses a broad understanding of natural sciences that extends beyond their own disciplinary specialty.

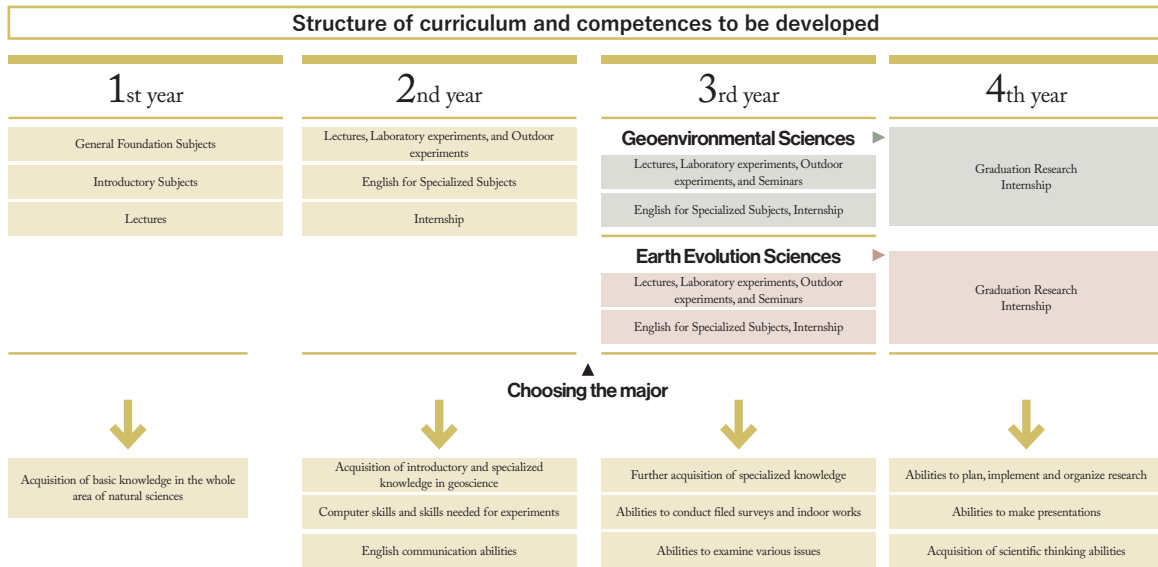
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| Knowledge and Skills (Specialized Competences) | 1. Specialized Foundation in Earth Science | Understands advanced disciplinary knowledge and diverse research methods in the Earth sciences. |
| | 2. Scientific Thinking Ability | Has acquired the ability to analyze scientific data and information using appropriate methods and to draw logical inferences. |
| | 3. Laboratory Experimentation and Analysis Skills | Has learned how to use laboratory instruments and analytical equipment while taking into account safety requirements. |
| | 4. Fieldwork Skills | Has acquired the ability to conduct observations, measurements, and data collection in the field while ensuring safety and protecting personal information. |
| | 5. Research Planning, Execution, and Synthesis Skills | Has acquired the ability to plan and conduct research or surveys, and to accurately summarize and present the outcomes in a senior thesis or report. |
| Guidelines for Assessing Learning Outcomes | <p>We specify, in each course syllabus, the correspondence between courses and the competences stated in the Degree Conferment Policy, as well as the criteria and methods used for assessing student performance. The attainment of these competences is evaluated based on students' completion of the relevant course requirements.</p> <p>In awarding the degree, particular emphasis is placed on the graduation research as the culmination of students' academic achievement. A committee of multiple faculty members, including the academic advisor, evaluates whether students have acquired the knowledge and skills stipulated in the Degree Conferment Policy through the review of the graduation thesis, the final presentation, and the subsequent question-and-answer session.</p> | |

Curriculum Policy

“We organize and implement curricula based on the following policies for programs that allow students to acquire learning outcomes related to Bachelor of Science.

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| <p>Curriculum Design Framework</p> | <p>General policy In the College of Geoscience, we offer two major courses in Geoenvironmental Sciences for handling the current global environment and in Earth Evolution Science for handling global history. In major courses, students learn Human Geography, Regional Geography, Atmospheric Sciences, Hydrological Sciences, Geomorphology, and Analysis of Environmental Dynamics. (The above subjects are major courses in Geoenvironmental Sciences.) Students also learn Historical Geology – Paleontologybiology, Stratigraphy, Geodynamics, Petrology, Mineralogy, and Resource Geoscience. (The above subjects are major courses in Earth Evolution Science.)</p> <p>Course sequence policy During the first year, students obtain basic knowledge related to overall studies including humanities and social science studies with a central focus on natural science. Students also acquire basic abilities necessary after the second year through study in the Introductory Subjects for geoscience. During the second year, students learn Major Subjects intended for an introduction to geoscience as well as mathematics, physics, chemistry, English, etc. necessary for geoscience and improve their ability to use computers and laboratory equipment for calculations, organization of materials, and presentations. Moreover, students take specialized English so as to acquire reading and communication abilities in English. During the third year, courses are divided into major courses and students mainly learn Major Subjects. By taking Major Subjects comprising lectures, seminars, laboratory experiments, and outdoor experiments, students deepen their specialized knowledge. Moreover, through onsite observation, measurement, and material collection, we provide many outdoor experiments observing various assignments in the field and students acquire abilities for outdoor investigation and indoor operations. Moreover, in addition to major courses, student can choose minors including major courses in the Interdisciplinary Program in Life and Environmental Sciences (a course for foreign students). During the fourth year, students mainly work on their graduation theses. While discussing matters with the faculty members and graduate school students, students proceed to investigations and experiments. In this way, students enhance abilities for research planning, performing, and overall controlling as well as accurately conveying research outcomes to a third party.</p> <p>Implementation policy In order to urge students' subjective learning, we prepare textbooks by the faculty members in charge in the college and make use of e-learning systems. We offer internship subjects as a part of collaboration with industrial circles and local communities as well as career path education. Moreover, we arrange supporting environments for learning, such as laboratories and computers, independently by our college and jointly with schools and associated colleges. Furthermore, in order to promote internationalization, we offer small-size specialized language classes and international outdoor experiments and recommend that students take English lectures in major courses in the Interdisciplinary Program in Life and Environmental Sciences.”</p> |
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| Teaching and Learning Methods | Field experiments, the special features of the College of Geoscience, are conducted in collaboration/cooperation with the university's affiliated research centers and training facilities, where large waterways and heat and water balance observation plots are installed to support the achievement of research and educational goals. By cooperating in activities for the Geology and Geography Olympics and the establishment of geoparks, we provide the students with opportunities to have contact with society through the studies of geoscience. |
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Admission Policy

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| Desired Student Profile | Personnel with strong interest in and a spirit of inquiry into the earth environment and earth evolution who can voluntarily and proactively engage in problem solution and analyze phenomena from a broad viewpoint are desired. |
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| Student Evaluation and Selection | Individual Achievement Test First Round | Candidates are selected through a comprehensive evaluation based on the Common Test for University Admissions and written examinations. The evaluation assesses broad foundational academic ability across the humanities and sciences, high foreign-language proficiency, advanced understanding in the natural sciences, strong analytical thinking skills, and the ability to apply such skills. |
| | Individual Achievement Test Second Round | Candidates are selected through the Common Test for University Admissions and an oral examination. The selection targets individuals who possess broad foundational academic ability across the humanities and sciences, high foreign-language proficiency, wide-ranging interest and strong motivation to study Earth environment and Earth evolution, and the ability to think and express themselves logically. |
| | Entrance Examination by School Recommendation | From among applicants who have acquired advanced foundational academic ability at the senior high school level, individuals who demonstrate clear motivation and purpose for studying Earth environment and Earth evolution, as well as the ability to think and express themselves logically, are selected through a document-based screening. |
| | Entrance Examination for IB Students | Candidates who possess broad foundational academic ability across the humanities and sciences, high foreign-language proficiency, and clear motivation and purpose for studying Earth environment and Earth evolution, along with strong willingness to learn, are selected through written and oral examinations. |
| | Entrance Examination for Foreign School Students | Candidates are evaluated comprehensively through written and oral examinations for their ability to apply a global perspective cultivated through overseas experience, to demonstrate strong thinking and comprehension skills based on broad interest in the Earth environment and Earth history, and to show the foundational academic ability necessary to understand coursework in the Earth Science Program. |
| | Transfer examination | From among applicants who have acquired advanced foundational academic ability in fields related to the natural or social sciences, individuals with clear motivation and purpose for studying Earth environment and Earth evolution, and who possess logical thinking and communication skills, are selected through written and oral examinations. |

Learning Support Framework

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| Academic Support | We implement a class advisor system to provide detailed academic support. Class advisors respond to students' concerns regarding their studies and future career paths, and they offer guidance on study methods to support the continual development of each student. After enrollment, an orientation is held to assist students in creating their course plans. In addition, an information session for second-year students is organized so that they can make appropriate choices regarding their specialized field of study. |
| Opportunities for Peer Interaction | We provide multiple class-based activities that enable students to take the initiative in planning and participating in various events. In addition, opportunities for collaborative field investigations, such as field excursions, are offered to encourage students to work together in conducting surveys. |
| Opportunities for Student-Faculty Interaction | We hold class meetings (Kurasu-renrakukai) to provide a forum through which students' opinions can be communicated to faculty members and to jointly improve the educational environment. Opportunities for interaction between faculty and students are also arranged as needed to promote communication and engagement. |

Approaches to Assuring and Enhancing Educational Quality

Enhanced teaching systems

We provide appropriate course-taking and career guidance at the time when students start their college life and promote to the next level studies. In addition, we improve the syllabus description to better support students in their studies. The Program Committee reviews the results of learning outcome assessments to examine whether educational quality is being appropriately maintained, and when areas for improvement are identified, the Curriculum Committee takes the lead in revising the curriculum and related matters.

Small-class system

Specialized language courses, seminars, and exercise-oriented courses are provided in small class sizes. Each student is given one-on-one attention by a faculty member, who provides detailed and kind instruction.

Assurance of research and teaching abilities of faculty

We assign faculty members with highly specialized abilities by conducting peer review by other faculty members to develop finely tuned education and research activities that meet the different needs of students. In addition, the university evaluates and verifies the education and research achievements of the faculty members from a variety of perspectives, using class evaluations by students and faculty evaluations of the University of Tsukuba. We are committed to continuously providing high-quality education.

Measures to improve classes

Faculty development activities are carried out systematically, and individual and groups of faculty members independently develop class contents and methods to improve classes.

