College of Biological Sciences

Bachelor of Science

Program Educational Objectives

We foster graduates who can bridge society and advanced sciences, with a well- developed mechanistic understanding of living organisms and biological systems, research methods for biology, and the significance of advanced research. Our graduates are equipped to become researchers, educators, engineers, and business people who are globally active in various academic fields related to biology.

Graduate Profile	We foster graduates who can understand issues related to biological sciences, acquire specialized knowledge and skills listed below with the liberal arts education, and pioneer new frontiers of human knowledge. We also cultivate graduates who can identify challenges facing future society, such as the preservation of the global environment and the sustainable development of humanity, and execute solutions to these challenges. – The ability to think critically and creatively based on a systematic understanding of general and specialized knowledge – The ability to appropriately analyze and process various phenomena and information using quantitative methods and computers – The ability to understand and respect different cultures, possessing a broad understanding of culture, society, nature, and matter beyond one's own specialty – The ability to maintain mental and physical health through understanding and engaging in arts and sports, and to recognize and demonstrate the responsibilities of a citizen with humanity and ethics – The ability to address various matters through teamwork and leadership, manage oneself, and continue learning and acting autonomously – The ability to collect and analyze data using bio-IT technologies to discover knowledge – The ability to acquire knowledge of natural sciences, scientific thinking methods, and communication skills, and to communicate information to society – The ability to communicate effectively using one's native language and foreign languages appropriately, including presentations utilizing various media
Career Paths after Graduation / Completion	Our program cultivates not only graduates who advance the field of biology, but also professionals who contribute to interdisciplinary fields across various sciences, based on a foundation in biology. Approximately 80% of our graduates continue to study in graduate schools such as the Degree Programs in Life and Earth Sciences. Subsequently, they thrive as researchers, educators, corporate professionals, science teachers, and individuals bridging cutting-edge science with society.

Diploma Policy

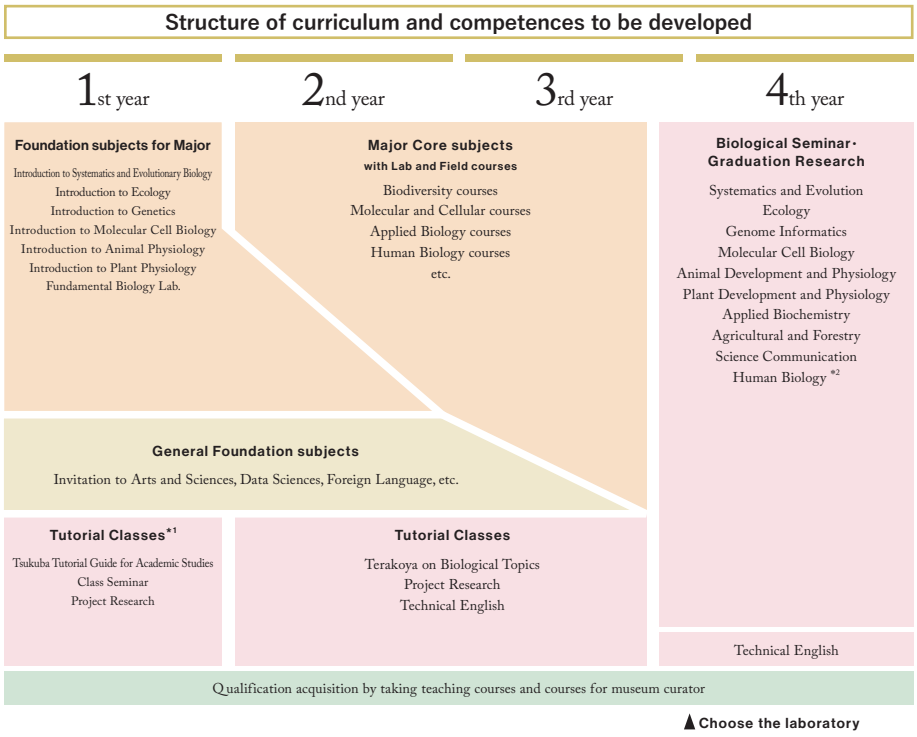
A Bachelor of Science degree will be awarded to students who have the following knowledge and skills: communication skills, critical and creative thinking, data and information literacy, broad perspectives and international awareness, physical and mental health, humanity and rationality, and who are recognized as having achieved the following learning outcomes based on the educational objectives of our program.

Knowledge and Skills (Specialized Competences)	1. Understanding of natural science	Students have acquired basic knowledge of natural science, and capacity for scientific thinking.
	2. Understanding of biology	Students have developed a broad understanding of biology, including fields in addition to their field of specialty, and have acquired understanding of various biology research methods.
	3. Ability to analyze biological phenomena	Students have acquired the ability to use appropriate methods to analyze data including “big data” obtained through experiments and observations of biological phenomena, and to accurately describe and critically evaluate them.
	4. International communication abilities	Students have gained sufficient English ability essential for international career growth, and the communication abilities to express their thoughts and opinions accurately and clearly.
	5. Logical expressive abilities	Students develop the ability to logically interpret international academic papers, think critically, and express their understanding through writing and presentations.
	6. Problem discovery and solution abilities	Students have acquired abilities to proactively discover and solve problems through the completion of their graduation research in their final year. Moreover, students have acquired the ability to communicate research findings and their significance through presentations and writings.
Guidelines for Assessing Learning Outcomes	The Biology Program discloses a curriculum map showing the relationship between required course clusters and the competences defined in the policy for awarding degree. The curriculum is designed to enable confirmation that competences are acquired upon fulfilling graduation requirements. Competences are directly assessed based on course grades for each subject corresponding to the respective competences.	

Curriculum Policy

Through the completion of the university's common and core general foundation subjects, primarily during the first and second years, students acquire competences including communication skills, critical and creative thinking, data and information literacy, a broad perspective and international awareness, physical and mental health along with humanity and rationality, and collaboration, initiative, and autonomy. Furthermore, to cultivate learning outcomes specific to the Bachelor of Science in our program, the curriculum is organized and implemented based on the following principles.

Curriculum Design Framework	**General Principles** **General foundation subjects:** Foundation courses other than the common and core general fundation subjects are categorized into three subject groups: Related Subjects A, B, and C. Related Subjects A promote the acquisition of competences necessary for understanding the natural sciences by studying physics, chemistry, earth science, mathematics, programming, statistics, and other subjects outside biology. Related Subjects B encourage learning that enriches the competences required for the award of Bachelor of Science degree, fostering awareness of the connections between human history, society, biology, and the natural sciences. Related Subjects C encourage learning to broaden the scope of international communication skills acquired in courses like Science Communication listed under the major subjects. **Foundation major subjects:** Students acquire fundamental knowledge and techniques across biology through introductory courses and foundational biology experiments. **Major subjects:** Through tutorial learning and other activities, students become aware of their own areas of high interest. They study diverse fields in biology primarly focusing on these areas. This enables them to acquire the specialized knowledge and skills necessary to undertake graduation research based on a broad understanding of biology. Furthermore, approximately 30 courses are conducted in English to cultivate the ability to thrive internationally. Building on this foundation, conducting graduation research in individual laboratories enables students to develop the ability to proactively identify and solve problems, as well as scientific communication skills, through practical application.
Teaching and Learning Methods	To cultivate the ability to understand biology and analyze biological phenomena, we have established a curriculum that includes not only lectures and seminars but also numerous laboratory courses. In order to further strengthen international communication abilities, Science Commnunication classes in the second and third years and Technical English classes in small groups in the third and fourth years are designated as compulsory courses. Moreover, we offer an exchange program with the University of Manchester, for students who wish to develop their international communication abilities, as a measure to foster graduates with particularly excellent international communication abilities.



*1 Faculty members, as tutors, provide an environment in which students' awareness of academic problems is fostered through discussion, encouraging self-motivated and interdisciplinary learning
*2 Students in Human Biology are required to take designated courses principally in their third year. There is also a limited number of students

Admission Policy

Desired Student Profile	The program is designed for creative people with a passion for living things and biology, who have basic academic skills in natural science and language, and a strong curiosity and inquisitiveness regarding a wide range of diverse life phenomena.

Student Evaluation and Selection	The following is a quotation from the admission policy stated in the admission guidelines. – Entrance examination of Interdisciplinary Program of Life and Environmental Sciences The university will make a comprehensive evaluation of applicants based on each student's English proficiency and basic academic ability to acquire knowledge in their major fields of study. In addition, their own unique perspective and analytical ability to resolve various problems in life and environmental sciences, based on the submitted documents and individual interviews, will be considered. The following entrance examinations are conducted in Japanese. Please note that these are machine-translated English versions of the admission policies from examination application guidelines and should be considered only as a guide.	
	Individual Achievement Test First Round	The university will make a comprehensive evaluation of applicants based on each student's overall foundational academic abilities across the liberal arts and sciences, English proficiency, advanced understanding of natural science subjects, critical thinking skills, and ability to apply such knowledge.
	Individual Achievement Test Second Round	The university will make a comprehensive evaluation of applicants based on each student's overall foundational academic abilities across both liberal arts and sciences, English proficiency, broad interest in the biological world and the mechanisms of living organisms coupled with strong motivation to learn, critical thinking skills and comprehension abilities.
	Entrance Examination by School Recommendation	The university will make a comprehensive evaluation of applicants based on each student's achievements in academic studies and extracurricular activities at the high school, the broad interest and understanding of the biological world and the mechanisms of living things cultivated through these activities, their motivation to learn about these subjects, and their humanity.
	Entrance Examination by Admissions Center	The university will make a comprehensive evaluation of applicants based on each student's ability to possess a strong interest in the biological world and the mechanisms of living things, conduct unique research on self-selected themes, analyze the results, and organize them into a scientific and logical report without falling into self-righteous thinking, and then present it comprehensively.
	Entrance Examination for IB Students	The university will make a comprehensive evaluation of applicants who have obtained the International Baccalaureate qualification, placing emphasis on their broad interest in and understanding of the biological world and the mechanisms of living organisms, their knowledge and critical thinking skills for proactively studying, their motivation to learn with clear goals, and their communication skills, including English proficiency.
	Entrance Examination for Foreign School Students	Category 1) The university will make a comprehensive evaluation of applicants based on each student's perspectives and ability of thinking obtained through studying at foreign schools, broad interest in and motivation to learn about the biological world and the mechanisms of living things, foundational academic skills necessary to understand biology courses, and Japanese language proficiency. Category 2) The university will make a comprehensive evaluation of applicants based on each student's ability to understand life phenomena from a worldwide perspective through experience overseas, demonstrating excellent critical thinking and comprehension skills based on broad interest in the diversity of living things and the mechanisms of life. The university will comprehensively evaluate the foundational academic skills necessary to understand courses in the Collge of Biological Sciences.
	Transfer examination	The university will make a comprehensive evaluation of applicants based on their broad interest in the biological world and the mechanisms of living organisms, strong motivation to learn, English proficiency, foundational academic ability sufficient to undertake specialized biological education, and advanced critical thinking and comprehension skills.

Learning Support Framework

Academic Support	In addition to the common courses and learning support services in our university, we provides learning support integrated with classes, including guidance on report writing, presentation skills, and honing critical thinking methods. Furthermore, tutorial classes such as the Biology Terakoya Project and the Research Mind Support Program are implemented to stimulate students' motivation for learning and research.
Opportunities for Peer Interaction	Through group work in Class seminars and laboratories and practical courses, as well as student presentations and discussions in Technical English courses and Biology Terakoya Projects, we provide opportunities for students to stimulate each other and enhance their motivation to learn. In particular, several laboratories and practical courses held as camp in such as the Shimoda Marine Research Center and the Sugadaira Research Station will be highly effective for students. Furthermore, in laboratories and practical courses, we employ graduate student teaching assistants. Observing graduate students actively engaged in these roles are encouraged to consider graduate school as a future career path.
Opportunities for Student–Faculty Interaction	We have established an environment where students and faculty can communicate each others at any time using online communication tools. This facilitates the exchange of opinions regarding classes, research, obtaining qualifications such as teaching licenses or curator certifications, study abroad, career paths and further education, and general student life. Additionally, we hold annual class meetings to provide opportunities for students and faculty to interact directly. Many faculty members voluntarily participate in these meetings. To enhance students' motivation for learning and research, we offer tutorial classes such as Biology Terakoya Projects and the Research Mind Support Program. We also provide an opportunity for all final-year students to present the outcome of their graduation research and discuss with faculty and students in our program.

Approaches to Assuring and Enhancing Educational Quality

- By making all students aware of the grading criteria guidelines and syllabus in advance, we aim to motivate students to learn while improving the standards to be achieved. The guidelines assign a grade of B to students who achieve their goals, and an A or A+ to those who are particularly outstanding.
- Grade distributions for each course are used as a direct indicator for evaluating learning outcomes achieved through instruction. Therefore, keeping the grading criteria guidelines in mind, we periodically review course content and assignment design. Furthermore, for courses not aligned with the guidelines, we establish an appropriate grading system across the entire department by hearing reasons and opinions from the responsible instructors.
- For all courses offered by the College of Biological Sciences, we conduct student evaluations using open-ended comments in addition to university-wide and department-specific multiple-choice questions, ensuring student feedback is reflected in course improvements.