

1.	Field of study	Biology
2.	Faculty	Faculty of Natural Sciences
3.	Academic year of entry	2025/2026 (winter term)
4.	Level of qualifications/degree	first-cycle studies
5.	Degree profile	general academic
6.	Mode of study	full-time
7.	ISCED code	0511 (Biology)
8.	Number of semesters	6
9.	Degree	licencjat (Bachelor's Degree)
10.	General characteristics of the field of study and the assumed concept of education	<p>The study programme for the Biology major is by the PRK level: level 6 of the Polish Qualification Framework - first-degree studies. A person studying in the field of study realises and fulfils the directional learning outcomes related to the discipline of biological sciences and has advanced knowledge and competencies in natural sciences and science and technology. The selection of the critical obligatory learning contents is closely related to the directional learning outcomes. In the course of the Bachelor's degree programme, the student acquires advanced and required knowledge and skills as well as social competencies in the areas of natural sciences and sciences: mathematics, statistics, biophysics and computer tools, necessary for the analysis of given natural phenomena and biological processes; general and inorganic chemistry: learns about the structures of matter and the physicochemical laws governing the transformations of matter, performs chemical calculations and identifies simple chemical compounds; in organic chemistry learns about functional groups, vocabulary, structure, reactions for obtaining and properties of different classes of organic compounds, reaction mechanisms and methods of identifying organic compounds; ability to use instruments and analyse measurement results; adapts to laboratory work and cooperates in a group. From the academic year 2023/24 onwards, those studying this and other courses at the University will have the opportunity, unique in the country, to choose some subjects from all the disciplines represented at the University of Silesia. The study programme implements general effects of a supportive, auxiliary nature, which significantly supports or improves the directional education (e.g. knowledge of a foreign language, knowledge of intellectual property protection or numerous social competencies derived from the leading discipline), supports the top domain and can be assigned to it. The opportunity for students to enhance their humanities and social sciences competencies is realised through the subjects: Entrepreneurship and an elective module on Creative Expression and Critical Thinking. In addition, issues from the Open University Modules (OMU), have been introduced, which can be taught in Polish and English. The curriculum of the Biology degree programme has elements of areas that support directional education. These elective areas are Digital World, Health and Personal Development, Environment and Technology, Civil Society and Entrepreneurship. Notably, skills in the use of modern information and communication techniques, including licensed and free computer applications and online resources and communication, are crucial in the education of biology students. These techniques are essential tools for experimental research work to obtain, process, calculate, statistically estimate, and store research data, while teaching the principles of reliability, reproducibility of research data, the need to prove the results obtained during the work and the need to protect the security of research data.</p> <p>The offer of optional modules on the first-year biology degree course includes the following modules: Chemical Basis of Life Processes, Theories of Modern Biology, Introduction to Microscopy, Field Research Methods, and Fundamentals of Environmental Science. These modules are designed to repeat and supplement the knowledge of the fundamentals of life sciences and can be regarded as propaedeutic modules, as mentioned in the item description. The individualisation of education is also an essential aspect. In this respect, the diversity and flexibility of the programme are evident, allowing a wide choice of optional subjects and an undergraduate block from among the six offered in the undergraduate programme. At the end of the first semester, male and female students choose a specialty: specialty biology or specialty - teaching of biology, chemistry and nature and Those studying speciality biology</p> <p>At the end of semester 4 choose one of the six proposed undergraduate blocks, implemented during semesters 5 and 6, i.e., plant and microorganism biotechnology, ecology, monitoring and remediation, plant biology and biodiversity conservation, animal and human biology, nanobiology or structure and function of plant and animal cells and tissues. Each block comprises classes delivered in the form of</p>

	<p>lectures, conversation classes and laboratories, taught by members of the research teams whose scientific and teaching profile is related to the content area offered in the block. Academic teachers use modern activating methods—selecting a particular block requires passing all the subjects included in it. The partnership "Biotechnology of Plants and Microorganisms" is intended for students interested in learning and acquiring skills in the practical use of various methods in the biotechnology field of plants and microorganisms. Students will independently perform experiments in genetic engineering techniques and cytogenetics, conduct cultures of microorganisms and obtain simple biogenic substances of industrial importance with their participation, and carry out plant mutagenesis and plant regeneration and analysis in vitro cultures. Within the modules, Students will learn about biotechnological methods used in basic molecular biology and biotechnology research and their applications in industry, including food and pharmaceuticals, agriculture, plant breeding, medicine and environmental protection. The student will also gain an understanding of the benefits and risks resulting from the application of the biotechnological methods learned. The block "Ecology, monitoring and remediation" brings together and organises widely understood ecology-related topics.</p> <p>Students will be introduced in a practical and theoretical way to the practice of environmental quality assessment using various biological and chemical methods. The modules offered will also familiarise the student with the current knowledge of ecological indicators used in the study of degraded habitats. In this course, the student will learn about the types of environmental hazards related, among other things, to human activities and, simultaneously, acquire the knowledge and practical skills necessary to restore the usable and natural values of areas damaged by human activities. The block "Plant Biology and Biodiversity Protection" enables students to broaden their knowledge on selected issues of plant biology, biodiversity and its protection. The student is introduced to the basics of dendrology and selected adaptations and life strategies that characterise plant species occurring in different habitats, particularly emphasising the local specificity of the Upper Silesian region - post-industrial habitats. They acquire skills in using primary research methods to identify selected plant species. The "Animal and Human Biology" block enables students to develop essential knowledge regarding the structure, function and evolution of animal and human organs and systems. Those interested will acquire the skills to analyse comparative material, apply advanced histological and microscopic techniques in an animal study, and correctly interpret the results of observations. Students will also develop the skills and competence to work with animals based on an in-depth knowledge of specific legislation concerning animal welfare. The 'Nanobiology' block is designed to introduce students to the latest issues in the emerging science of nanobiology. The main aim of this block is to give the student an initial introduction to nanobiology, i.e. to realise the importance of 'nano-sized' structures in the functioning of the cell and the whole organism, both animal and plant, in health and disease. Interested parties can learn about current biological knowledge regarding the structure and occurrence of natural 'nano-sized' systems in the living world. The combination of physics, chemistry and biology knowledge thus plays a not insignificant role in the proposed block, making it possible to learn about nanoparticles used in biology and medicine, various techniques for visualising nanoparticles or nanostructures and their multidirectional effects on cellular structures in plants and animals. In addition, the student has the opportunity to hone their competence in the independent preparation of source materials, form their views, and discuss and express opinions on the development of nanobiology, including nanoethics, nano biomimetics, the fundamentals of nanotoxicology and the practical use of nanobiostructures, nanoparticles and nanomaterials in everyday human life. The block 'Structure and function of plant and animal cells and tissues' are designed to enable students to acquire the necessary knowledge regarding the possibilities of analysing cells and tissues, both plant and animal, at different levels of organisation: from tissue to molecular. The proposed thematic block will provide students with knowledge on the practical detection of the components of individual tissues and cells and the analysis of the processes regulating plant and animal development. It will familiarise them with contemporary advanced imaging methods for plant and animal cells, including 3D imaging. An essential aspect of the undergraduate blocks presented is to prepare the student for research, correct inference and implementation while at the same time providing an introduction to the analysis of more advanced problems at degree II.</p>
11.	<p>Information on the relationship between the studies and the university's strategy as well as the socio-economic needs that determine the conduct of studies and the compliance of learning outcomes with</p> <p>The scope and assumptions of education at the Biology major are in line with the objectives adopted in the latest "Development Strategy of the University of Silesia in Katowice" by 1. modification of the programmes for the first level of studies taking into account the forecasts for the development of higher education contained in the Agenda for Modernisation of Higher Education. The first-level Biology major enables students to participate in all areas of scientific research the staff conducts and prepares students to undertake and solve research problems. This assumption is realised through the modern study of subjects from biological sciences and other fields such as chemical, physical and mathematical sciences or computer science. Furthermore, the domain of the premise mentioned above also</p>

these needs	<p>includes improving the educational process due to the direct implementation of students into research projects in individual research teams, including interdisciplinary teams. Currently, the most critical areas of our Institute's research activities, significantly influencing the education of the biology faculty, include: 1. studies of the structure, function and evolution of the genomes of model and cultivated plants and the generation and analysis of genetic variation, 2. studies of the life processes of organisms at different levels of the organisation and their use in biotechnology, environmental protection and health, 3. analysis of the structure, functioning and evolution of organisms and their systems about endogenous and environmental factors, 4. Studies of processes determining the functioning of ecosystems in the context of contemporary threats to biodiversity and human quality of life, including climate change, 5. Studies using biomonitoring of the effects of production and introducing nano- and micromaterials into ecosystems. The areas mentioned above of discipline development at the Institute closely coincide with the Priority Research Areas indicated in the UŚ Development Strategy. 2. adaptation of the educational programme to the labour market needs. The educational offer is systematically modified and developed in response to the needs of the local labour market, which is specified by the active cooperation of the Faculty of Natural Sciences and the University with the region, and at the same time, adapted to the expectations of the global labour market. This is realised through introducing content related to innovation and entrepreneurship, intellectual property and more practical classes into the curriculum, as well as students' acquisition of soft competencies during their multi-faceted education. An essential practical manifestation of the cooperation with employers is the programme of compulsory work placements for undergraduate students and the participation of the socio-economic environment in creating a base of issues to be realised in diploma theses, also during meetings of members of the Council of Socio-Economic Partners. 3 Internationalisation of education.</p> <p>In the Biology major, to achieve greater exchange and international mobility of students, the didactic offer is adjusted by creating bilingual subjects (in Polish and English), which influences the possibility for foreigners to choose this major within the framework of Erasmus + and others programmes. In addition, one of the priorities is also to enable our students to realise part of their study programmes in foreign universities in EU countries, mainly in the Erasmus + programme. As part of the activities of other programmes supporting the area of internationalisation, student exchanges are carried out with countries outside the European Union. Recognised foreign lecturers, often from leading academic institutions, are also invited to enrich the didactic programme of the course and establish scientific cooperation with staff and students Internationalisation and mobility in the educational process refer to outgoing and incoming students and academics to/from many European and non-European universities. 4 Individualisation of education. In the Biology major, the main strength of education is the diversity and flexibility of the programme, allowing a wide choice of optional subjects and the Bachelor's block. The individualised form of teaching is realised through small exercise groups. In addition, during training, the student can pursue an individual study programme, available especially to outstanding students. During the study, it is possible to realise tutoring. The personal development path is also connected with the realisation of some optional subjects in the form of project work, where, individually or in small groups, under the supervision of a tutor, the student(s) struggle with challenging problem-project tasks. The participation of students in this type of class influences their activity and creativity, as well as triggers attitudes related to responsibility and cooperation in a group. For the most part, the activities dedicated to the students are mainly practical laboratory activities, during which the students acquire the competence to work in modern laboratories. 5 Improving the quality of education and developing the teaching competencies of academic staff. The didactic goal of the faculty is the continuous dissemination of current and interactive methods of education and the implementation of subjects implemented with the use of new technologies in the didactic offer.</p> <p>The use of modern techniques in teaching, the selection of specialised software used in the natural sciences and the modernisation of laboratories and labs lead to an increase in the quality of education, which is achieved through the continuous development of the didactic competencies of academic teachers and an internal system of educational quality assurance. These activities are fostered by the work of projects implemented at the University. In connection with the mission of the University of Silesia, education in the field of biology assumes comprehensive development of the student, creating a solid theoretical and practical basis for both professional activity and continuing education. The State Accreditation Committee positively evaluates the field of study.</p>
12. Specializations	Biology Biology, Chemistry and Nature Teacher Training Programme
13. General description of the specialization	<u>Biology</u>

		<p>During the course of study, the student acquires a comprehensive knowledge of various fields of biology, with particular emphasis on issues concerning the structure, functioning and development of organisms, their diversity and evolution, as well as molecular biology, the basics of biotechnology and environmental biology in the context of sustainable development and conservation ethics. The curriculum also includes science subjects such as mathematics, biophysics and chemistry (both general and organic), as well as classes in entrepreneurship.</p> <p>In addition to compulsory subjects, students can choose from a wide range of optional subjects and undergraduate modules, allowing them to tailor their course of study to individual interests. As of the 2023/2024 academic year, the educational offer has been expanded to include interdisciplinary and university-wide modules covering various disciplines represented at the University of Silesia, including classes taught in foreign languages, which enriches directional education and is a distinctive feature of the program nationwide.</p> <p>In addition, biology students can independently shape their curriculum by choosing optional subjects in subsequent semesters. At the end of the fourth semester of their undergraduate studies, they choose one of six specialized undergraduate blocks, implemented in the fifth and sixth semesters. Choices include plant and microbial biotechnology, ecology, monitoring and remediation, plant biology and biodiversity conservation, animal and human biology, nanobiology, and plant and animal cell and tissue structure and function.</p> <p><u>Biology, Chemistry and Nature Teacher Training Programme</u></p> <p>The teaching specialty - teaching biology, chemistry and nature - prepares those studying to work as a teacher of natural sciences at school. Graduates of this specialty have a solid background in biology, chemistry and nature, as well as extensive pedagogical, psychological and didactic competencies necessary in working with children and adolescents. As part of the thesis prepared by students of the teaching specialty, it is necessary to include a teaching component. Completion of a teaching specialty as part of a first-degree program allows you to continue your education at the master's level. In accordance with current regulations, full qualification to teach biology, chemistry and nature at all stages of education is obtained only after completing a second degree with the same specialty.</p> <p>The study program emphasizes the practical application of acquired knowledge - both in teaching and educational work. Students learn how to effectively convey natural science content using modern teaching methods, information technology and multimedia tools. Classes include lectures, exercises, laboratories, field classes and pedagogical practice under the supervision of experienced teachers, educators and psychologists. The teaching specialty - teaching biology, chemistry and nature is chosen after the first semester of study. During the course of study, students acquire skills in describing and explaining natural phenomena, designing and conducting laboratory and field experiments, as well as using modern research apparatus. Great emphasis is placed on developing the ability to adapt to changing educational conditions and using professional literature and modern technologies in teaching work.</p>
14.	The semester from which the specializations starts	2
15.	Percentage of the ECTS credits for each of the scientific or artistic disciplines to which the learning outcomes are related to the total number of ECTS credits (along with the indication of the leading discipline)	<p>Biology, Chemistry and Nature Teacher Training Programme:</p> <ul style="list-style-type: none"> • <i>[leading discipline]</i> biological sciences (natural sciences): 100% <p>Biology:</p> <ul style="list-style-type: none"> • <i>[leading discipline]</i> biological sciences (natural sciences): 100%
16.	Number of ECTS credits required to achieve the qualification equivalent to the level of study	180
17.	Percentage of the ECTS credits for optional modules in relation to the total number of ECTS credits	<p>Biology: 32%, Biology, Chemistry and Nature Teacher Training Programme: 37%</p>
18.	Total number of ECTS credits that a student must obtain in the modules	<p>Biology: 138, Biology, Chemistry and Nature Teacher Training Programme: 137</p>

	taught	
19.	Number of ECTS credits that a student must obtain in modules assigned to disciplines within the humanities or social sciences (not less than 5 ECTS) - in the case of fields of study assigned to disciplines within the fields other than, respectively, humanities or social sciences	Biology: 6, Biology, Chemistry and Nature Teacher Training Programme: 19
20.	Number of ECTS credits - higher than 50% of the total number of credits - that a student must obtain: <ul style="list-style-type: none"> in general university programmes within a module connected with research carried out in the scientific or artistic disciplines to develop his/her knowledge and research skills; in practical programmes within a module to develop practical skills 	Biology: 135, Biology, Chemistry and Nature Teacher Training Programme: 143
21.	Total number of ECTS credits that a student must obtain in internships	Biology: 4, Biology, Chemistry and Nature Teacher Training Programme: 2
22.	Internships (hours and conditions) in the case of practical programmes and in general university programme - if such requires internship	<p>Internships are an integral part of the study program, carried out by students in individual fields, levels, profiles and forms of study. Internships are to help in confronting the knowledge acquired during studies with the requirements of the labour market, acquiring skills useful in the profession, learning about practical issues related to working in positions for which the student is prepared during the course of studies. The internship is to familiarize the student with professional language relevant to a specific industry and work culture. The rules for the organization of internships are set out in the Rector's ordinance. Detailed rules of apprenticeship taking into account the specifics of particular fields of study are set out in the field's of study apprenticeship regulations, in particular: learning outcomes assumed to be achieved by the student during the apprenticeship, framework apprenticeship program including a description of issues, dimension of apprenticeship (number of weeks of practice); form of internship (continuous, mid-year), criteria for choosing the place of internship, obligations of the student staying in the internship, obligations of the academic tutor, conditions for completing the internship by the student and conditions for exemption from the internship obligation in whole or in part. The number of ECTS and the number of hours are specified in the course structure.</p>
23.	Graduation requirements	<p>The condition for admission to the diploma examination is to achieve the learning outcomes provided for in the study program, to obtain a certificate of an appropriate level of language proficiency in a foreign language and to obtain positive grades for the diploma dissertation. The condition for graduation is to pass the diploma examination with at least a satisfactory result. A graduate receives a higher education diploma confirming obtaining the qualifications of the appropriate degree. Detailed rules of the diploma process and the requirements for the diploma thesis are set out in the Rules and Regulations of Studies at the University of Silesia and the diploma regulations.</p>