

1. Structure of the Educational Program

The educational program for the specialty "050501 - Biology" should consist of 240 (4 years) ECTS credits. Credits are distributed as follows:

Number of subjects	The name of subject	ECTS credit
General subjects		
1	<p>The history of Azerbaijan</p> <p>During the teaching of this subject, the knowledge about the history of Azerbaijan should be summarized and grouped according to the historical space, historical time, state, personality, economy and culture content lines and conveyed to the young generation, to give students and young people deep knowledge about the historical past of our Motherland, to form their historical thinking, to understand the events happening in the society, special attention should be paid to imparting knowledge and skills such as inculcating the ability to evaluate objectively, the ideology of statehood, the formation of feelings of respect for the past, confidence in the future, and the upbringing of the spirit of patriotism in young people.</p>	5
2	<p>Business and academic communication in Azerbaijani language</p> <p>Within the framework of this subject, special attention should be paid to inculcating students' presentation, public speaking, academic and business writing skills in Azerbaijani language.</p>	4
3	<p>Business and academic communication in a foreign language</p> <p>Within the framework of this subject, special attention should be paid to giving students a presentation in one of the foreign languages of their major, oratory, academic and business writing, oral and written skills.</p>	15
<p>Elective subjects (Elective subjects are determined by the higher education institution. Depending on the specifics of the major, additions can be made to elective subjects)</p>		
	<p>Philosophy</p> <p>This subject is the main stages of the creation and development of philosophy, philosophical teaching about existence, concept of matter. Modern science about the structure of matter, movement. Space and time, the main laws and categories of dialectics, the problem of consciousness in philosophy, the philosophical meaning of man, nature and society, cognition and its structure, scientific cognition and its methods, creativity and intuition, ethics of science, specificity of social cognition. Society is a self-developing system, the main spheres of social life. Philosophical structure of economic life, social sphere of society, philosophical analysis of political life, spiritual life of society, subjects and driving forces of historical process, culture and civilization, personality and social values are analyzed and studied.</p>	

4.1

Sociology

This subject considers social events and processes in the context of society as a whole social system, analyzes and studies the structure, subject, methodology, characteristics of sociology, theoretical levels of modern sociological knowledge, as well as the variety of special sociological concepts. It studies possible perspectives of scientific research in this field.

Constitution of the Republic of Azerbaijan and fundamentals of law

Constitution of the Republic of Azerbaijan, constitutional status of the state of Azerbaijan, citizenship of the Republic of Azerbaijan, human and civil rights, freedoms and duties, state power, division of power based on the Constitution, legislative power, executive power and its bodies, judicial power, its structure and system, fundamentals of labor law , basics of civil law, basics of family law, basics of criminal law.

Logic

The subject of logic helps a person to objectively assess opportunities, make quick and correct decisions, express ideas clearly, convince the interlocutor using correct arguments, and stay away from uncertain situations. This subject evaluates the ability to think logically, measures the ability to perceive and apply logical patterns, and allows you to learn how rich the knowledge base is in various fields.

Ethics and aesthetics

Information about Ethical thought in this subject, the main stages of its evolution: ethical thought in ancient India and China, ethical thought in antiquity, medieval and new ethical thought. Information about ethical thought in Azerbaijan, Islamic ethics, the essence and main functions of morality, morality and other forms of social consciousness, moral consciousness and action, the main categories of ethics: good and evil, duty and conscience, honor and dignity, happiness and the meaning of life, applied ethics and profession ethics is provided.

Introduction to Multiculturalism

The essence and importance of the subject of multiculturalism, the traditions of various minority peoples living in Azerbaijan, the effects of multiculturalism on socio-economic development, the effects of multiculturalism on foreign policy, analyzing multiculturalism as a state policy of the Republic of Azerbaijan, comparative analysis of Azerbaijani multiculturalism and world examples of multiculturalism.

4.2	<p>Application of information technologies in biology</p> <p>Concepts of data, information and knowledge, their properties, characteristics, Alphabets, systems, languages, number systems, coding systems. Coding of information, organization and development of computing equipment, technical support of personal computers. Basic and peripheral devices, algorithms for automation of information processes, personal computer software. Operating systems. Windows OS, standard programs of Windows OS, application software. About MS Office package, processing of text type information. Ms Word text editor, computer graphics. Graphic editors, Ms Power Point graphic editor, numerical data processing. Ms Excel spreadsheet, Database. Base models. VBISs, information systems, Relational VBISs. Ms Access VBIS, network processing of information. Computer networks, Local networks. Network topologies, network architecture. OSI model. Protocols, addressing, global information infrastructure Internet, information security. Information protection</p>	3
	<p>Information management and database creation</p> <p>The subject of information management is taught as a continuation of the ICT basic computer knowledge subject. The main goal in teaching the subject is to get acquainted with the application of what is learned in the subject of ICT foundational computer knowledge, to learn the fields of application of modern information technologies in the era of information society and to be able to apply them correctly. Thus, information is given here about the role of information technologies in public administration, economy, banking and tourism sector, business, as well as cloud technologies, their applications and models.</p>	
	<p>Fundamentals of Entrepreneurship and Introduction to Business</p> <p>Entrepreneurial environment and competition, small and medium entrepreneurship, taxation in entrepreneurial activity, price policy, management and marketing system. Organizational-legal forms of business. SWOT analysis, external and internal environment of entrepreneurship. Commercial, financial, consulting, production entrepreneurship. Accounting, redistribution, stimulator, balancer and production placement.</p>	
	<p>Political science</p> <p>Political science is the science of politics. The main stages of the development of political thought. Development stages of Azerbaijan's political opinion. Politics is the regulatory, organizing and controlling function of society. Political power and its bearers. Political elite. Political system theory. Political regimes. Political parties and party systems. Democracy: basic institutions. Parliament is the main democratic institution. Electoral systems. The state is the main political institution. Political consciousness and political ideology. Political culture. Civil society. Theory of world politics and international political relations. The concept of modernization as a theoretical model of political development. Political technologies. Political studies and political analysis. Making political decisions. Political science of international relations. Global problems of international politics. Foreign policy activity of the</p>	

Total:		30
Specialization subjects		
5	<p>Mathematics and bio statistics for the biological sciences</p> <p>Within this subject, theoretical knowledge and practical exercises on fundamental sections of mathematics necessary for biologists should be organized (basic matrix and determinant operations, system of linear algebraic equations, limit of a numerical sequence, simple limits of a function at a point and infinity, derivative of a function, indefinite and calculation of definite integrals, differential equations, regularities of probability theory), mathematical and statistical processing of the data obtained as a result of research, determination of the integrity of the obtained results should be taught.</p>	5
6	<p>Physics</p> <p>In the framework of this subject, the basic laws and regularities of classical mechanics, relativity theory, molecular physics and thermodynamics, electrodynamics, optics, quantum physics, atomic and nuclear physics should be taught, theoretical knowledge of the nature of physical methods necessary for the study of biological objects, and the ability to apply them should be inculcated.</p>	5
7	<p>Chemistry</p> <p>In the framework of this subject, the basic principles and concepts of general chemistry should be taught, the preparation of solutions of different concentrations, the determination of the composition, structure and properties of chemical substances, the determination of the nature, composition and properties of solutions, the influence of various factors on chemical transformations should be explained, theoretical knowledge of the nature of chemical methods necessary for the study of biological objects should be given, and the ability to apply them should be inculcated.</p>	5
8	<p>Cytology and histology</p> <p>Within this subject, the structure, functions and ways of division of prokaryotic and eukaryotic cells, the morphology and functions of various tissues should be taught, preparation of preparations for cytological and histological studies should be taught, knowledge should be given about the origin, microscopic structure, chemical composition, topography, regeneration and functions of tissues, cytological and the ability to apply histological research methods should be inculcated</p>	6

9	<p>Personal development and evolution</p> <p>In the framework of this subject, the characteristics of the microscopic structure of cells, tissues and organs should be taught, the ability to study the microscopic structure, functional and topographical features of the embryo, the ability to experimentally determine the various stages of ontogenesis should be taught, the laws of evolution, directions, evidence, driving forces should be taught, information about the mechanisms of formation of new species and superior taxa should be given, the ability to make predictions based on them should be taught, the characteristics of the embryonic and post embryonic stages of development should be discussed from the point of view of evolution.</p>	5
10	<p>Morphology and anatomy of plants</p> <p>Within the framework of this subject, the internal and external structural laws of plants should be taught, the morphological and anatomical structures at the level of cells, tissues, and organs should be studied, practical skills should be taught to distinguish the main organs of plants and their metamorphoses, prepare samples from plants, conduct observations on preparations, and study the effects of external environmental factors, the ability to explain the influence of external environmental factors on the structure of plants, to determine the adaptation of plants to external environmental conditions, and to justify the formation of structural elements in the process of plant evolution and ontogenesis should be inculcated.</p>	5
11	<p>Primitive plants and fungi</p> <p>Within this subject, theoretical knowledge should be given about the role of primitive plants and fungi in nature and human life, the anatomical structure and classification of benthos and plankton algae, lichens, the identification of species, the determination of the genus and species of fungi, the application of cultivation and preservation methods of mushroom cultures, the application of fungi and the study of the characteristics of primitive plants should be taught.</p>	5
12	<p>Higher plants</p> <p>In the framework of this subject, information should be given on the principles of modern systematics based on the phylogenetic and ontogenetic characteristics of higher plants, the identification of plants up to the category of species should be taught, information should be given on the number of species of plants distributed in the world and in the territory of our republic, floristic analysis, distribution area, phylogeny, the analysis of plant formations should be taught, information should be given about the ways of protection and protection of plant species in a certain area, the ability to prepare samples for research from higher plants should be taught, special attention should be paid to the distribution area and resources of useful and industrially important plants of Azerbaijan.</p>	5

13	<p>Invertebrates</p> <p>In the framework of this subject, morphological and anatomical features, biology, and classification of invertebrates should be taught, information should be given about the effect of environmental factors on the main characteristics of life activity - the internal and external structure and behavior of animals, the ability to analyze the geographical distribution of different systematic groups, identifying species should be inculcated, Methods of collecting and studying invertebrates should be taught, and information on their economic and economic importance should be given.</p>	5
14	<p>Vertebrate animals</p> <p>Within this subject, the morphological and anatomical features, biology, and classification of vertebrate animals should be taught, the evolutionary path of development should be followed, information should be given about the effect of environmental factors on the main characteristics of life activity - the internal and external structure and behavior of animals, the geographical distribution of various systematic groups should be analyzed, and by working with collection materials kept in nature and in the scientific fund, the skills of identifying species, the use of animals in scientific research and research, information about the economic and economic importance of vertebrate animals, applying methods of collecting research material, researching zoological material in laboratory conditions, biological properties the ability to determine, camera processing, drawing pictures and schemes based on dissected and studied material should be</p>	5
15	<p>Human anatomy and physiology</p> <p>Within the scope of this subject, information on the structure and Latin names of various parts of the human body should be provided, knowledge of the structure, organization, physiology, and regulation mechanisms of organ systems should be provided, the essence of the main physiological processes occurring in the human body should be explained, the functional characteristics of various organs of the human body and its anatomical structure the ability to explain, to apply physiological research methods, to provide first aid, and to provide information about hygiene rules.</p>	7
16	<p>Biochemistry</p> <p>Within the framework of this subject, the structure, properties, diversity, functional properties, chemical transformations, interaction and regulation of the exchange pathways of the chemical components of the living world (amino acids, proteins, nucleic acids, carbohydrates, lipids, biologically active substances, etc.) should be taught, the ability to determine the existence of the main groups of substances, to apply biochemical research methods should be inculcated.</p>	5

17	<p>Biodiversity</p> <p>Within the framework of this subject, the adaptation of living things to various environmental conditions, ecological-geographical environments should be described, to determine the areas of distribution in nature, to evaluate the role of living things in a certain ecosystem, nature, biosphere and human life, to describe unstudied or little-studied species and determine their evolutionary status, the ability to assess the species composition of the fauna and flora of Azerbaijan should be inculcated, information should be provided about rare, little-studied and disappearing species, the current status of the Red Book, and ways to protect biodiversity.</p>	5
18	<p>Microbiology</p> <p>Within the scope of this subject, knowledge should be given on the principles of diversity and classification of microorganisms, the general regularities of their life activity, physiological and biochemical characteristics, the effects of various environmental factors on microorganisms, the application of microorganisms in various fields of industry, their role in metabolism and the circulation of elements, and the ability to apply the methods of separation and preservation of fungal and bacterial cultures from nature in the form of pure culture, to use the methods of studying their cultural, physiological and biochemical properties should be inculcated.</p>	5
19	<p>Plant physiology</p> <p>In the framework of this subject, knowledge should be given about the basic regularities of the life activity of plants, the characteristics and regulation of physiological processes, adaptation to the external environment, ways of increasing the productivity of plants under different conditions, and the ability to apply the methods of physiological analysis of plants in experiments should be inculcated.</p>	5
20	<p>Genetics</p> <p>In the framework of this subject, the basic concepts of genetics, linked and non-linked heredity laws, principles of heredity, the structure and organization of prokaryotic and eukaryotic genomes, the possibilities of applying the laws of heredity and variability in various fields of the agricultural industry, medicine, the mechanisms of realization and regulation of genetic information should be given, the ability to distinguish the types of variability, to analyze the causes, mechanisms, importance in selection and evolution, to apply the research methods of genetics, to use modern molecular-genetic technologies is inculcated.</p>	7

21	<p>Enzymology</p> <p>Within this subject, the chemical structure of enzymes, their properties as biocatalysts, their classification and nomenclature, regulation of their activity, kinetics of enzymatic reactions, intracellular localization, knowledge about the application of enzymes, applying the methods of obtaining and partial purification of enzyme preparation from biological objects, determining the activity of enzymes and units of activity should be given and the ability to express through activity units, to determine the purity of an enzyme preparation, to study the effect of various factors on the speed of an enzymatic reaction, to calculate the main catalytic indicators (K_m, K_s, V_o, V_{max}), to explain the effect of inhibitors on the activity of enzymes, and to determine the type of inhibition should be inculcated.</p>	5
22	<p>Immunology</p> <p>In the framework of this subject, knowledge of the organization and functional characteristics of the immune system, molecular and cellular bases of its activity, research methods should be provided, the mechanisms of immunopathologies arising as a result of immune system dysfunction, the ability to propose potential ways to prevent them, and the ability to interpret the mechanisms of antibacterial and antiviral immunity should be inculcated.</p>	5
23	<p>Molecular biology</p> <p>Within this subject, knowledge about the essence of the main research methods of molecular biology, the molecular mechanisms of DNA replication and repair in prokaryotes and eukaryotes, the organization of prokaryotic and eukaryotic genomes, molecular mechanisms of transcription and translation processes, modern problems, achievements and perspectives of molecular biology should be given.</p>	7
24	<p>Bio informatics</p> <p>Within the framework of this subject, to solve tasks in the fields of molecular biology and biotechnology with the help of a computer, to work with modern programming methods and bio information resources, to apply the methods of obtaining, organizing and analyzing biological data, to build a phylogenetic tree with the aim of identifying suitable sequences and revealing evolutionary relationships, the ability to determine relative sequences, to build a model, to work with experimentally obtained results through appropriate programs should be inculcated.</p>	5

25	<p>Biotechnology</p> <p>Within the framework of this subject, information about the biochemical, molecular and genetic bases of biotechnology, methods of gene and cell engineering should be taught, knowledge should be given about the methods of selection, cultivation, purification and modification of bio objects in culture, about the nature, importance, types, application areas, application areas and prospects of biotechnology should be given.</p>	5
26	<p>Biophysics</p> <p>In the framework of this subject, the theoretical foundations of biophysical processes occurring in a living system, the physico-chemical characteristics of photobiological and radiobiological processes should be taught, the regularities of changes in a number of physical-chemical indicators of the cellular system should be studied, the processes occurring in living systems should be explained from the point of view of biophysics, the laws of thermodynamics in biology should be taught, the ability to justify the application of the laws of thermodynamics in biology, to apply basic biophysical research methods should</p>	5
27	<p>Civil defense</p> <p>Within the framework of this subject, information should be provided on the basics, forces and means of civil defense, emergency situations and their characteristics, protection of the population in emergency situations, education of the population on civil defense, ways to eliminate the consequences of emergency situations, use of individual and collective means of protection, in case of emergencies, information should be provided on the basis and assessment of the stability of the work of industrial facilities</p>	3
Total:		120

	Subjects determined by the institution of higher education
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28	<p>Psychology Psychology (from ancient Greek soul, mental world) means "science of the psyche". The term psychology, from a heuristic point of view, accurately expresses the subject of science: psychology is the science of the psyche. The subject of psychology is complex and multifaceted. The science of psychology also studies the psychological problems of action and communication. Psyche manifests itself in various forms in the process of activity and communication. Psychology is the science of the facts, regularities and mechanisms of the psyche, which are formed in the brain as a subjective copy of the objective world.</p> <p>Genomics Genomics - about the structural and functional organization of the genetic apparatus of cells and the mechanism of implementation of hereditary information; - the sequencing of genomes (that is, the determination of the nucleotide sequence of the total set of DNA molecules of the cell of any organism), their mapping (that is, the identification of genes and the localization of their location on the chromosome) and the comparative analysis of genome structures are studied.</p>	4
29	<p>Molecular basis of ontogeny During the teaching of this subject, detailed information is provided about the description of the structures of organs and systems in the organism at various stages of individual development (ontogeny) with the help of modern methods (microscope, slides). In addition, detailed information is provided on dermatoglyphics, genetics, embryology, parasitology, transmissible and naturally occurring diseases, human ecology, regeneration, transplantation and explantation, poisonous animals and their medical importance. During the teaching of this subject, students should acquire the skills of cells, dermatoglyphics, genetics, embryology, parasitology, transmissible and naturally occurring diseases, human ecology, regeneration, transplantation and explantation, poisonous animals and their medical importance.</p> <p>Biometrics Biometrics is the study of subconscious processes related to attention, cognition, emotion and physiological arousal. Special research tools are needed to measure biometrics. Biometric research tools are gradually finding their way into many fields that study human behavior, including psychology, educational research, game research, user experience research or neuromarketing. Each biometric sensor provides different insights into human behavior, and together they contribute to better understanding (and predicting!) human behavior.</p>	3
30	<p>Geobotany In the course of this subject, students are taught Geobotany - the close connection of phytocenosis with the environment, i.e. soil, climate, and the role of humans, animals, microorganisms, etc. factors in the formation of phytocenosis. Recently, biochemistry, biophysics, geochemistry and a number of auxiliary sciences have appeared, which bring the science of geobotany closer to other fields of science and connect them</p>	3

	<p>Ornithology Ornithology infuses information related to zoology, the methodological study and knowledge of birds with everything related to them. Several aspects of ornithology differ from related disciplines, in part because of the high visibility and aesthetic appeal of birds. Research on birds has contributed to the development of key concepts in biology including evolution, behavior and ecology, species definition, the process of speciation, instinct, and learning. Ornithology focuses on the study of global bird populations—how they behave, mate, and reproduce—as well as habitat, human, and climate impacts.</p>	
<p>31</p>	<p>Soil science In this subject outline, students are introduced to soil composition, properties and regimes, mineralogical and granulometric composition of soil and soil-producing rocks, soil organic matter, chemical composition of soil and soil-producing rocks, soil colloids and soil absorption capacity, structure and physical properties, soil water, soil water properties and knowledge about water regime, soil weather and soil weather regime, soil thermal properties and thermal regime, soil solution and soil oxidation-reduction processes, soil fertility should be</p> <hr/> <p>Bioethics Bioethics is a field of interdisciplinary research, open debate, and political decision-making related to the understanding, discussion, and resolution of various ethical issues raised by the latest advances in biological and medical science and health care practice. Bioethics as a whole does not exist as a scientific discipline with a rigorous and generally accepted conceptual apparatus, but as a rule, as an ever-expanding and complex field of ethical and legal problems that do not have simple and unequivocal solutions. There are many variations of bioethics, which differ in principle from each other in the most important points. In bioethics, both the doctor and the patient participate in making morally important and life-important decisions, so the burden of responsibility is shared between both parties. In many cases, the interaction between the patient (the subject) and the doctor (or the researcher) involves the involvement of an ethics commission (committee) as a third party.</p>	<p>6</p>
<p>32</p>	<p>Medical biology To convey to students the purpose of "Medical biology" to improve human health in this course. To convey to students the structure, role, development and aging of the cell, which is the basis of the human, plant and animal world. To provide students with scientific knowledge about the role of heredity, protozoa, worms and bacteria in human health by covering various fields of biology in general. To convey the importance of diagnosis during metabolic processes and their disorders. To convey the role of plant and animal cells in human health diagnostics. In order to increase the academic potential of students, to support their activity and to help them realize it. During the course, to develop personal skills of students such as observation, comparison, measurement, quantitative and qualitative methods, such as determining, hypothesizing, hypothesizing, drawing conclusions, and working effectively.</p>	<p>4</p>

	<p>Embryology Embryology (from the Greek embryo-embryo in the sheath) studies the development of the embryo. Medical embryology studies the development patterns of the human embryo. Along with embryology, the histology course focuses on the mechanism and source of tissue development, metabolic and functional features of the mother-pair-fetus system. This system allows determining the causes of deviation from the norm, which is of great importance in medical practice. Embryology studies the causes of disruption of normal embryological development in pathological cases, the occurrence of disfigurement and the treatment or cessation of disfigurement, the causes of disruption of normal development and vital processes of organs and tissues, the influence of environmental factors on embryogenesis, as well as the mechanisms of regulation of embryogenesis.</p>	
33	<p>Photosynthesis The main goal of this course is carbon nutrition of plants, the history of photosynthesis research, the works of Van Helmont and Halsey, the studies of Sos and Sensbyen, the reasons for the emergence of the teaching of photosynthesis, the energy of photosynthesis in 1850-1900, the study of pigments (R. Wilstetter, M. Tsvet, Y. Mayer, K. A. Timiryazev), study of the physiology of photosynthesis in 1900-1940, study of biosynthetic productivity of biophysics, photochemistry, biochemistry processes in photosynthesis (Calvin, R. Emerson, E. Rabinovich in 1940-1980), biophysics, biochemistry , tries to explain at the level of ecology, molecular biology, cytology. Students should study the process of photosynthesis in depth.</p> <p>Parasitology Parasitology studies parasites, their hosts and the relationship between them. As a biological discipline, the scope of parasitology is not determined by the organism or environment in question, but by their way of life. This means that it is a synthesis of other disciplines and uses techniques from fields such as cell biology, bioinformatics, biochemistry, molecular biology, immunology, genetics, evolution and ecology.</p>	4
34	<p>Flora of Azerbaijan The purpose of studying the flora of Azerbaijan in this subject is to create an idea of the basic regularity of the ecosystem and biosphere activity, to correctly assess the state of the environment and the use of natural resources, and to create an idea of the methods of controlling the state of the environment. The soil and climatic conditions of the Republic of Azerbaijan create a great opportunity for the cultivation of all agricultural plants and obtaining high yields from them.</p> <p>Comparative histology This subject studies the morphological and functional characteristics of the tissues that make up the body. Special histology or microscopic anatomy studies the microscopic structure of individual organs. At the same time, it studies the structure and function of cells and tissues, the regularities of cyto and histogenesis. It determines the patterns of tissue differentiation and regeneration. It clarifies the role of nervous, endocrine and immune systems in the morphogenesis of cells, tissues and organs. It studies age-related changes in cells, tissues and organs. It determines the adaptation of cells, tissues and organs to various biological, physical and chemical factors. It studies the processes of morphogenesis in the maternal fetal system, the features of embryogenesis.</p>	4

35	<p>Industrial microbiology and biotechnology It consists of studying innovations in the fields of technical microbiology (industry), engineering enzymology, genetic engineering and cell engineering, which make up the composition of biotechnology, and explaining their various aspects. Biotechnology and industrial microbiology play an important role in obtaining products, medicinal substances, enzyme preparations, antibiotics and other biologically active substances that meet the needs of society based on biological processes in modern times. Today's society and its existence cannot be imagined without the use of microorganisms. Technical microbiology, engineering enzymology, cell engineering and gene engineering methods as components of biotechnology and industrial microbiology are of particular importance in solving problems important in people's life. Biotechnology and industrial microbiology consists of studying innovations based on their constituents and achieving new products by determining their application areas.</p> <p>Ichthyology The purpose of the ichthyology course is to introduce fish, to teach its development, its main characteristics, and to show its importance for humans. By comparing the classes of animals from the primitive to the higher, it reveals not only their diversity and the characteristic features of each group, but also their origin, kinship, evolution, and the factors that lead to it.</p>	4
36	<p>Biogeography The main goal of this subject is to explain the relationship between biogeography, ecology and biology on scientific grounds. In science, there are barrier disciplines that connect biochemistry-biology with chemistry, biophysics-biology with physics. Since biogeography mainly studies the groups and geographical distribution of organisms, it is formed by the union of two main branches of science - geography (geographical distribution) and biology</p> <p>Kinetics of biological processes Biophysics is a field of science that clarifies the physical-chemical nature of the transformations and phenomena occurring in the living world. The provisions decided in this field of science would not be possible without the application of general physics, general chemistry, mathematics and its other fields, mathematical statistics and spectral analysis. Biophysics consists of two parts. The first of these is called theoretical biophysics, presenting the kinetics of biological processes (kinetics of biological processes) and their molecular nature (molecular biophysics). The second part, called cellular biophysics, studies the representation of biological processes at the cellular and subcellular level. These processes are also called biophysics of membrane processes because they mainly involve the activity of biological membranes. The teaching of this subject sometimes led to the emergence of new areas of the above-mentioned subjects (mathematical modeling in biology, theoretical biology, bioinformatics, etc.) and explains the understanding of evolutionary processes occurring in nature.</p>	5

37	<p>Virology Within the framework of this subject, the main goal of teaching the subject "Virusology" to students studying "Biology" is the formation of ideas about the mechanism of effect of viruses on the host cell and the possible methods of reducing this effect. Also, another important goal in the teaching of this subject is for students to know the pathogenesis of diseases caused by specific types of viruses.</p>	5
	<p>Bioenergetics Bioenergetics (biological energetics) is a set of processes of conversion of incoming energy into biologically useful work of living systems, as well as a branch that studies biological processes. It studies the energy exchange of living things. In biology, bioenergy studies the processes of conversion of external energy resources into useful work by living organisms. The goals of studying bioenergetics: to acquaint students with modern theoretical knowledge and the latest scientific achievements, the molecular basis of energy conversion in living systems, the organization of structural and functional cell membranes, energy storage and energy consumption, processes and reactions that occur inside cells and are related to life, the formation of an idea about the possibilities of application is an integral stage in the development of professional skills and competences of students by learning about the science of bioenergetics.</p>	
38	<p>Fauna of Azerbaijan The purpose of the course on the fauna of Azerbaijan is to create an idea about the basic regularity of the ecosystem and the biosphere, to convey to students the mutual relationship between the environment and animals, to define the main principles of the strategy of protecting the environment from pollution, to create an idea about the methods of monitoring the state of the environment and the responsibility of citizens for environmental violations.</p>	4
	<p>Biology and economics The science that arose at the intersection of biology and economics is called modern bionomics. This is related to the discovery of the similarity of economic and biological processes and phenomena. In fact, it is the biology of the social organism. This science studies the economic forms of biology, the relationship between living organisms and their environment, it is the direction of evolution in economic science, the economy is a self-organizing and developing system that has all the qualities characteristic of a living being, and a new direction in economic theory. Therefore, biological models and methods of economics are</p>	
39	<p>Radiobiology Radiobiology (also known as radiation biology and rarely as actinobiology) is a field of clinical and basic medical science that studies the effects of ionizing radiation on living organisms, particularly the health effects of radiation. Ionizing radiation is generally harmful and potentially lethal to living things, but radiation therapy for the treatment of cancer and thyrotoxicosis may have health benefits. Its most common effect is the induction of cancer with a latent period of years or decades after exposure. High doses can cause visually dramatic radiation burns or rapid death from acute radiation syndrome. Controlled doses are used for medical imaging and radiotherapy.</p>	5

	<p>Chronobiology Chronobiology studies the mechanisms that underlie chronomes and structures over time in organisms, populations, and the environment. The development of chronomics from chronobiology is comparable to the genomics of genetics. A genetic focus on underlying factors inter-organism diversity in space needs a complementary chronobiological realization of intra-individual and intra-population diversity over time. Genetics led to genomics, the mapping of genomes; chronobiology elucidates the mapping of chronomes found to be close to chronomics, the correspondence of near and distant environmental chronomes.</p>	
40	<p>General ecology Within the framework of this subject, students should be instilled with the environmental protection problems of our independent republic based on the latest scientific sources in various areas of sustainable development of ecology, which can reflect the modern era, and special attention should be paid to the issues of biological diversity and environmental education.</p>	5
	<p>Cell biology The field of biology that studies the structure and activity of cells is called cell biology (cytology). Cell theory is the basic law of the structure of living organisms. The services of local biologists in defense of the basic propositions of the cell theory, by studying the basic structure of the light and electron microscope, the positions of the cell theory, the characteristics of prokaryotic and eukaryotic cells; similarities and differences between animal and plant cells; main components and organelles of cells: membrane and transmembrane complex, cytoplasm and organelles, mitochondria and chloroplasts, ribosomes; the main stages of protein synthesis in eukaryotic cells - transcription (synthesis and maturation of RNA) and translation (protein chain synthesis); characteristics of the nuclear apparatus and cell reproduction; the structure of viruses and their types, the life cycle of viruses, the current state of the problem of combating viral infections; the reaction of cells to the influence of harmful environmental factors; definition and classification of tissues in the evolution of multicellular organisms, origin of tissues; the structure of the main types of cells and tissues of multicellular animals; an understanding of the molecular biological basis of a number of important processes occurring in the cells and tissues of our body must be present.</p>	