CHAPTER	LESSON	DESCRIPTION
I. The Cell – the Basic Unit of Living Organisms	**Structure of Plant and Animal Cells**	At the end of this activity, students should be able to describe the basic organization of the cell and compare and contrast animal and plant cells.
	Microscopes and the Size of Cells	At the end of this activity, students should be able to describe a light microscope, describe the concept of electron microscope design, compare and contrast light and electron microscopes, define the basic units of measurement applicable to microscopic studies and prepare samples for examination under a light microscope.
	Chemical Composition of Cells	At the end of this activity, students should be able to have a basic understanding of the chemical composition of a cell, know the structure and function of proteins, lipids and carbohydrates, and be able to define the role that each of the molecules plays in the metabolic processes within a cell and a multicellular organism.
	The Nucleus as a Store of Genetic Material	At the end of this activity, students should be able to describe the structure of chromosomes, define haploid and diploid sets of chromosomes, define homologous chromosomes, and define changes in the amount of genetic material during cell cycle.
	Cell Division	At the end of this activity, students should be able to describe and compare mitosis and meiosis and define the importance of mitosis and meiosis.
	Cell Specialization	At the end of this activity, students should be able to define the levels of organization existing in the living world and associate the components of the cell with their function in particular cells.
	Transport Across Membranes	At the end of this activity, students should be able to define diffusion, osmosis and active transport, compare and contrast diffusion, osmosis and active transport, describe examples of diffusion, osmosis and active transport in animals and plants, and discuss the significance of each kind of transport in living organisms.
	Metabolic Transformations in a Cell	At the end of this activity, students should be able to define metabolism, explain the differences between anabolic and catabolic reactions, explain the role of ATP, define the role of enzymes, explain the term "active site" and present a diagram of a reaction with an enzyme, explain the terms "cofactor" and "inhibitor" and their influence on the progress of enzymatic reactions, and demonstrate the influence of temperature on the rate of enzymatic reactions.
	Plant Tissues	At the end of this activity, students should be able to distinguish meristems from true tissues, define the functions and distribution of meristems in plants, and define the structure and functions of true primary and true secondary tissues.
	Animal Tissues	At the end of this activity, students should be able to describe the features of the cells constituting basic animal tissues and define the functions of the main animal tissues.
II. The Diversity of Living Organisms	**Classification of Organisms**	At the end of this activity, students should be able to recognize the need for organizing information about species, understand the principles of classification of species according to their specific features, and understand the reasons for the differences between systems of classification of living creatures.
	Prokaryotes, Protists and Fungi	At the end of this activity, students should be able to name the basic features of prokaryotes and eukaryotes, name the basic features of protists and differentiate between the basic groups of protists, and name the basic features of fungi and lichens.

CHAPTER	LESSON	DESCRIPTION
	Plants	At the end of this activity, students should be able to name the basic characteristics of plants, distinguish the basic groups of plants, recognize how plants adapt to terrestrial conditions, and recognize the diversity of plant forms.
	Invertebrates	At the end of this activity, students should be able to recognize the variety of adaptations among the groups of invertebrates, indicate the features that are characteristic for each group of invertebrates, assign animals to a specific group of invertebrates, recognize similarities in structure and function in selected representatives of the groups of invertebrates, and recognize the differences in structure and function in selected representatives of the groups of invertebrates.
	Reproduction in Invertebrates	At the end of this activity, students should be able to describe the diversity of reproductive methods and adaptations in invertebrates and describe the similarities and the differences in the structure and function of the reproductive organs and systems of selected examples from given classes of invertebrates.
	Vertebrates	At the end of this activity, students should be able to describe the variety of adaptations among the classes of vertebrates, indicate the features of selected animals that are characteristic of the class of invertebrates to which they belong, and describe the similarities and differences in structure and function of selected examples of the classes of vertebrates.
	Reproduction in Vertebrates	At the end of this activity, students should be able to recognize the different reproductive adaptations among classes of vertebrates, recognize the differences in the structure and function of the egg among classes of vertebrates, recognize the adaptations that enable the embryos of reptiles, birds and mammals to become independent from the aquatic environment, recognize how parents participate in the postembryonic development of their offspring, especially in birds and mammals, and recognize the similarities between representatives of classes of vertebrates in regard to the development of the embryo inside the mother's body.
	Viruses	At the end of this activity, students should be able to describe the basic characteristics of viruses, describe the main differences between viruses and cell organisms, describe the structure of a virus, name the stages and events in the viral multiplication cycle, recognize human diseases caused by viruses, and understand how viruses affect a host cell.
III. Circulation	**Blood**	At the end of this activity, students should be able to describe the structure of blood, describe the chemical composition of plasma, describe the structure and function of blood cells, explain the process of blood clotting, and explain how the transport of respiratory gases occurs.
	Blood Vessels	At the end of this activity, students should be able to describe the structure of arteries, veins and capillaries, define the functions of arteries, veins and capillaries, and explain how components are exchanged between blood and tissue fluid.
	Blood Groups and the Rh Factor	At the end of this activity, students should be able to determine human blood groups, explain what Rh factor is, present the possibility of transfusion in the ABO and Rh systems, explain what serological incompatibility involves, and give examples of medical application of blood.
	The Circulatory System	At the end of this activity, students should be able to define the location of the heart in the human organism, describe cardiac muscle tissue, discuss the structure of the heart, describe the cardiac cycle, explain the importance of the coronary circulation, describe the pulmonary circulation, and describe the systemic circulation.

CHAPTER	LESSON	DESCRIPTION
	Effects of Physical Effort on the Functioning of the Circulatory System	At the end of this activity, students should be able to the influence of physical effort on blood, vessels and the heart, and the response of blood vessels and the heart to physical effort the most common ways of prevention of cardiovascular diseases.
	Risk Factors for Heart Attack	At the end of this activity, students should be able to define the process of atherosclerosis, arterial hypertension, and the related cardiovascular diseases, describe the most common ways of preventing cardiovascular diseases, and describe cardiopulmonary resuscitation.
IV. Nutrition	**Nutrients**	At the end of this activity, students should be able to describe the importance of the organic constituents of food: proteins, fats, carbohydrates, vitamins and fibre, describe the importance of water and mineral ions, indicate the sources of nutrients, explain the factors affecting nutritional requirements, describe the effects of nutrient deficiencies, and give examples of the use of preservatives and colourings in foods.
	The Human Digestive System	At the end of this activity, students should be able to present the structure of the human alimentary canal, show the relationship between the structure and functions of each section of the alimentary canal and explain the structural and functional connection between the liver and pancreas and the alimentary canal.
	Digestion	At the end of this activity, students should be able to define digestion, explain how digestive enzymes work, describe the digestion of carbohydrates, proteins, fats, define the site of the absorption of digestion products, describe the role of bile in lipids digestion, and define the role of symbiotic bacteria in vitamins production.
	Absorption	At the end of this activity, students should be able to describe the adaptations of the intestine for the absorption of the products of digestion, describe the absorption of the products of protein, carbohydrate and lipid digestion, indicate the association between the circulatory system and alimentary canal, describe the role of the liver in the regulation of glucose levels, and describe the role of the liver in detoxification.
V. Respiration	**Cellular Respiration and Energy Production**	At the end of this activity, students should be able to know the structure of the respiratory system, know the course of gas exchange in the lungs. explain that respiration involves the release of energy from organic compounds, differentiate between the two types of respiration: aerobic and anaerobic, indicate the type of respiration that releases the most energy, explain the circumstances in which anaerobic respiration occurs in human beings, and explain the meaning of the term "oxygen debt".
	The Respiratory System	At the end of this activity, students should be able to describe the structure of the respiratory system, explain the mechanism of breathing, compare the composition of inhaled and exhaled air, explain what is involved in gas exchange in the lungs, and name the adaptations of the lungs to gas exchange.
VI. Nervous System	**The Nervous System as a Receptor of Environmental Stimuli**	At the end of this activity, students should be able to specify the main types of stimuli received by the nervous system, describe a neurone and the basic types of neurons, define the basic elements of the nervous system involved in producing the appropriate response to a stimulus, characterize the structure and function of a synapse, and define a neurotransmitter.
	Nervous System	At the end of this activity, students should be able to name the parts of the nervous system and their structures, describe the basic functions of particular parts of the nervous system, define the terms "nerve centre" and "nerve", and name the most important structures protecting the nervous system.

CHAPTER	LESSON	DESCRIPTION
	The Peripheral Nervous System	At the end of this activity, students should be able to describe the hierarchy in the peripheral nervous system (PNS), define and describe the divisions of the autonomic nervous system (ANS), and explain the opposing (antagonistic) actions within the PNS, its motor system and the ANS.
	Reflex Responses of the Nervous System	At the end of this activity, students should be able to differentiate between voluntary and involuntary responses, define conditioned and unconditioned reflexes, and describe Pavlov's experiments.
	Sensory Organs	At the end of this activity, students should be able to describe the three types of receptors, define the role of receptors in the body, and describe the structure and function of the organs of taste and smell.
	The Eye and the Ear	At the end of this activity, students should be able to know the tissue structure, know the mechanisms of the generation of nerve impulses and the principles of their operation, know the structure and function of receptors in the nervous system, describe the structure of the eye and ear the sensory organs of hearing and balance, and define the functions of the eye and ear.
VII. Hormones	**Hormones and Endocrine Glands**	At the end of this activity, students should be able to define a hormone, name the endocrine glands and define their location in the human organism, name the hormones released by certain glands, present examples of hormone activity in the human organism, explain what is involved in the regulation of hormone secretion, and define the dominant role of the pituitary gland in the endocrine system.
	Hormonal Regulation of Metabolic Processes	At the end of this activity, students should be able to explain how blood sugar level is regulated, describe the action of adrenaline, present the action of growth hormone, and explain the role of thyroid hormones.
	Sex Hormones	At the end of this activity, students should be able to define the effects of sex hormones on the development of the secondary sex characteristics, explain how hormones regulate the menstrual cycle, and give examples of the applications of hormones.
VIII. Human Locomotion System	**Skeletal Muscles**	At the end of this activity, students should be able to describe the external structure of skeletal muscles, describe the structure of the skeletal muscle cell, explain the terms: muscle fiber, myofibril, myofilament, sarcomere and neuromuscular junction, explain the sliding filament theory, and explain the antagonistic activity of muscles.
	The Skeletal System	At the end of this activity, students should be able to explain what is involved in the process of bone remodelling, describe the morphological structure of a long bone, name the components of the axial and appendicular skeletons, define joint, explain its role and name its main components, and name the functions of the human skeletal system.
IX. Homeostasis	**Homeostasis**	At the end of this activity, students should be able to explain the terms relating to the internal environment of the organism and homeostasis, explain the roles of the nervous and endocrine systems in homeostasis and the interdependence of these systems, explain the mechanisms of negative and positive feedback, and present an example of a homeostatic mechanism (regulation of glucose concentration in the blood).
	The Role of the Kidneys	At the end of this activity, students should be able to define excretion, discuss the structure of the nephron, describe the stages of urine formation – glomerular filtration, and tubular secretion, explain the role of ADH in the regulation of water excretion, and explain how an artificial kidney works and the importance of kidney transplantation to people with renal failure.

CHAPTER	LESSON	DESCRIPTION
	Thermoregulation	At the end of this activity, students should be able to distinguish between endothermic and exothermic organisms, define homoiothermy, explain the importance of homoiothermy for the human organism, describe the basic methods used by the organism thermoregulation process, present elements of the thermoregulatory system and indicate the role of the nervous system in thermoregulation, and present the mechanism of negative feedback in thermoregulation.
X. Human Reproduction	**Development of the Human Embryo**	At the end of this activity, students should be able to explain how fertilization occurs, name the initial stages of embryo development: cleavage and gastrulation, define the role of the placenta, describe the gradual development of the embryo and fetus, and present the stages of labor.
	The Reproductive System	At the end of this activity, students should be able to present the structure of the male reproductive system, define the functions of specific organs of the male reproductive system, present the structure of the female reproductive system, define the functions of specific organs of the female reproductive system, describe spermatogenesis, present the structure of sperm cells, describe oogenesis, and present the structure of egg cells.
XI. Health and Diseases	**The Human Immune System**	At the end of this activity, students should be able to define antigen, antibody, immunity, specific and non-specific immunity, cellular and humoral immunity, name the components of the immune system, describe the role of phagocytes and lymphocytes in the immune response, and describe an inflammatory response – characterize primary and secondary immune responses.
	Vaccinations	At the end of this activity, students should be able to define the terms "epidemic" and "pandemic", give examples of epidemic chains and methods of breaking them, describe the significance of the discoveries by Jenner and Pasteur in the development of vaccinations, explain how active immunity is produced by vaccination, state the difference between preventive vaccination and therapeutic vaccination, explain the significance of vaccinations in the fight against infectious diseases, and justify the need for the administration of preventive vaccinations.
	Bacterial Diseases	At the end of this activity, students should be able to describe the most important concepts of medical microbiology, describe how people become infected with the Mycobacterium tuberculosis Salmonella typhi, Vibrio cholerae, Yersinia pestis and Treponema pallidum, describe the most important risks associated with the diseases caused by these bacteria, present the most important methods for avoiding infections with these bacteria, and give reasons for the introduction of public health regulations in order to combat infectious diseases.
	Viral Diseases	At the end of this activity, students should be able to name several viral diseases (influenza, poliomyelitis, rubella, measles, mumps, chickenpox), explain why one person can contract influenza several times, explain why bird flu viruses are so dangerous to human beings, briefly describe the characteristics of childhood diseases (rubella, measles, mumps, chickenpox) and their complications, describe the possible complications of viral hepatitis B and C, and describe the role of vaccinations in the prevention of viral diseases, including poliomyelitis.
	Human Immunodeficiency Virus (HIV)	At the end of this activity, students should be able to explain the abbreviations HIV and AIDS, describe the structure of HIV, describe the life cycle of HIV, explain how HIV affects the functioning of the immune system, describe the process of HIV infection, give examples of high-risk behaviors, explain how HIV can be easily destroyed by means of common disinfectants and high temperature, and comprehend that people infected with HIV can lead a normal life in society.
	Antiseptics and Antibiotics	At the end of this activity, students should be able to give the definitions of antibiotics, antiseptics, antisepsis, describe the action of penicillin, and describe the idea and importance of antibiotic resistance in bacteria.

CHAPTER	LESSON	DESCRIPTION
	Parasitic Diseases	At the end of this activity, students should be able to explain what parasitism involves, present the life cycles of selected human parasites, explain the pathological effect of parasites, and present ways to prevent parasitic infections.
	Effects of Drugs, Cigarettes and Alcohol	At the end of this activity, students should be able to define dependence and present its examples, describe the effects of basic drug types on the nervous system, define addiction, give examples of addictions, describe the effects of cigarettes on the organism and name diseases caused by smoking, and describe the effects of alcohol on the organism and name diseases caused by drinking.
XII. Plant Nutrition	**Photosynthesis**	At the end of this activity, students should be able to write the equation for photosynthesis, describe the course of the light phase and the dark phase of photosynthesis, describe how temperature, light and carbon dioxide levels affect the rate of photosynthesis, describe the relationship between photosynthesis and respiration, and explain the importance of photosynthesis.
	Mineral Nutrition in Plants	At the end of this activity, students should be able to define macro-elements, trace elements and ultra-trace elements, describe the importance of macro-elements for optimum plant growth and development, and present the importance of inorganic fertilizers.
	Crop Production	At the end of this activity, students should be able to explain how soil pH affects the growth of plants, name the types of fertilizers, name the methods for combating weeds, describe methods for protecting plants from diseases, present the advantages of greenhouses for plant cultivation, and describe the principle of hydroponic cultivation.
	Carnivorous Plants	At the end of this activity, students should be able to define the significance of carnivorousness, describe how plants capture animals, give named examples of carnivorous plants, and indicate the distribution of selected carnivorous plants.
XIII. Plant Reproduction	**Plant Reproduction**	At the end of this activity, students should be able to describe the mode of reproduction in spore-bearing plants, compare the life cycles of mosses and ferns, describe the life cycle of gymnosperms, and describe the reproductive organs and life cycle of angiosperms.
	Seed Germination and Plant Growth	At the end of this activity, students should be able to describe the structural components of a seed and their roles, describe the chemical composition of different seeds, describe the process of germination, and define the environmental factors necessary for germination.
XIV. Transport in Plants and Plant Movements	**Water Transport in Plants**	At the end of this activity, students should be able to discuss the structure of xylem, describe the mechanisms of water transport in plants, define transpiration, its types and importance, describe the modes of intake and transport of inorganic ions, and define water balance in plants.
	Transport and Accumulation of Organic Substances in Plants	At the end of this activity, students should be able to discuss the structure of phloem and indicate its location in a plant, name the organic compounds produced during photosynthesis and stored in plants, describe the transport of organic compounds from the leaves to other plant organs, and name examples of storage organs in plants.
	Responsiveness and Plant Movements	At the end of this activity, students should be able to define tropisms, nastic movements and taxis, present examples of plant movements, and explain mechanisms of tropisms and nastic movements.

CHAPTER	LESSON	DESCRIPTION
XV. Variation in Organisms	Variation of Organisms	At the end of this activity, students should be able to explain what the nature of variation consists in, distinguish between genetic and environmental variation, define phenotype, describe the differences between continuous and discontinuous variation, and present examples of both types of variation;
	Reproduction and Variation	At the end of this activity, students should be able to define a clone, explain why simple and mitotic divisions lead to the formation of clones, explain how genetic recombination occurs during meiosis, and explain the significance of genetic variation within a species.
	Mutations as a Source of Variation in Organisms	At the end of this activity, students should be able to define mutation, present the significance of mutations in somatic and reproductive cells, and define mutagens and present examples.
XVI. Heredity	Heredity According to Mendel	At the end of this activity, students should be able to define genotype, phenotype, gene, allele, discuss Mendel's first and second laws, and use a Punnett square.
	The Principles of Sex Inheritance in Humans	At the end of this activity, students should be able to discuss sex inheritance, define sex-linked and sex-influenced traits, name the disorders related to abnormalities in the number of sex chromosomes, and define karyotype and describe the human karyotype.
	The Chromosomal Theory of Inheritance	At the end of this activity, students should be able to discuss chromosomal inheritance and define linked genes – construct a chromosome map.
	Genetic Diseases	At the end of this activity, students should be able to define mutation and discuss the causes of selected genetic diseases – construct a pedigree chart.
	Inheritance of Blood Groups in Humans	At the end of this activity, students should be able to discuss the systems of blood grouping and describe the principles of blood group inheritance.
	Nucleic Acids	At the end of this activity, students should be able to discuss the structures of DNA and RNA and describe the structure and function of mRNA, tRNA and rRNA.
	The Gene as a Structural and Functional Unit of DNA	At the end of this activity, students should be able to discuss the processes of transcription and translation and describe the regulation of transcription.
	Mutations as Changes in DNA	At the end of this activity, students should be able to define point mutations and divide them into different categories, differentiate between point mutations and chromosomal aberrations, present examples of the effects of mutations and the methods by which the organism protects itself against them, and describe the mutation occurring in the case of sickle-cell disease and its effects.
XVII. Evolution	The Origin of Life on Earth	At the end of this activity, students should be able to recognize the organic compounds that may arise in an abiotic environment, describe an experiment to confirm the synthesis of organic compounds in an abiotic environment, list the characteristics that distinguish living organisms from inanimate matter, and describe the differences between the environmental conditions prevailing on Earth 4 billion years ago and now.
	Charles Darwin and the Theory of Evolution	At the end of this activity, students should be able to explain the consequences of the discovery of evolution and its mechanisms, explain how Darwin formulated his theory, and explain the significance of Darwin's scientific discoveries.
	Laws of Evolution and Speciation	At the end of this activity, students should be able to describe the basic mechanisms and principles of evolution and describe the process of species formation.

CHAPTER	LESSON	DESCRIPTION
	The History of Life on Earth	At the end of this activity, students should be able to the evolution of living organisms occurred in changing conditions, usually different from those of the present day, present-day groups of organisms have been evolving for hundreds of millions of years, and present-day species have developed over several millions of years.
	Human Evolution	At the end of this activity, students should be able to: indicate the major events in human evolution – indicate the most important achievements of human evolution – understand that human evolution from pre-human forms was a long and complex process – understand that the course of human evolution from pre-human forms has not been fully clarified to date – understand that the present evolution of the Homo sapiens is a cultural evolution.
XVIII. How We Combat Microorganisms and How We Use Them	**Bacterial Growth**	At the end of this activity, students should be able to explain the concept of doubling time, indicate the factors affecting bacterial growth, define bacterial colony and explain how to estimate the number of bacteria in a culture on the basis of the number of colonies, present a bacterial growth curve for a batch culture, and explain the principles of the chemostat.
	Protecting Food from Spoilage	At the end of this activity, students should be able to describe Pasteur's experiment to show the presence of bacteria in the air, name the factors that cause food spoilage, explain what pasteurization involves and give examples of pasteurized products, define sterilization and describe the methods of food sterilization, and present some traditional methods for inhibiting the development of bacteria in food.
	Biotechnology Past and Present	At the end of this activity, students should be able to define biotechnology and present examples of past and present biotechnological processes, explain the significance of fermentation as a key biological process in biotechnology, present the main stages in the production of beer, yogurt and hard cheeses, explain the importance of pasteurization in these processes, present generic names of the microorganisms taking part in these processes, describe single-celled protein and the substrates used in its production, and describe the structure of a biofermenter and the differences between batch and continuous cultures.
	Industrial Uses of Bacteria	At the end of this activity, students should be able to explain the principle of the biological treatment of municipal wastewater, explain how wastewater is purified by the activated sludge method and the biofiltration method, define eutrophication and explain the biological method for the removal of nitrogen and phosphorus compounds, explain how biogas is produced, discuss the role of enzymes in biological washing powders, and present the main stages of the industrial production of enzymes.
XIX. Genetic Engineering	**Genetic Engineering and its Applications in Biotechnology**	At the end of this activity, students should be able to: explain the artificial recombination of DNA – demonstrate the significance of restriction enzymes in manipulating DNA – explain the term "vector", give examples and describe its properties from the perspective of genetic engineering – demonstrate the stages of obtaining the product of a given gene in the bacterial cell – give examples of biologically active proteins obtained by genetic engineering techniques – explain the basics of the polymerase chain reaction (PCR).
	Other Applications of Genetic Engineering	At the end of this activity, students should be able to: explain what the Southern blot technique involves – present the principles of operation of genetic probes and examples of their application – explain the term "genetic fingerprint" – explain the goal of the Human Genome Project.
	Genetic Modification of Organisms	At the end of this activity, students should be able to: explain what selection involves – give examples of methods for the modification of crops – explain the terms genetically modified organisms, gene therapy, reproductive cloning and therapeutic cloning – describe the principal stages of organism cloning – give examples of the ethical problems arising from genetic modification of organisms.

CHAPTER	LESSON	DESCRIPTION
XX. Living Organisms and Their Environment	**The Individual and the Population**	At the end of this activity, students should be able to define species, individual and population, population size, range and density, reproduction rate and death rate, interpret a survivorship curve, and distinguish between abiotic and biotic factors.
	Competition and Predation	At the end of this activity, students should be able to use the term competition, recognize the various results of competition, recognize the variety of relationships possible between competing species, use the term predation, recognize the various results of predation, and recognize the variety of predator-prey relationships.
	Symbiosis	At the end of this activity, students should be able to use the term "symbiosis" correctly, recognize the different types of symbiotic associations, differentiate between the types of symbiotic associations, and recognize the effects of symbiosis and their significance.
	Life on Land	At the end of this activity, students should be able to notice the many adaptations to terrestrial life and identify the features that enable plants and animals to use the resources of the terrestrial environment.
	Life in Water	At the end of this activity, students should be able to recognize the many adaptations necessary for life in water, identify features that enable animals to use the resources of the aquatic environment, and recognize the similarities and differences in the adaptations of fish and whales to life in water.
	Adaptations of Organisms to the Environment	At the end of this activity, students should be able to describe the dynamic influence of environmental factors on adaptation, describe the range of adaptations and their categories, understand the causes of similar adaptations in unrelated groups of organisms, understand the significance of energy-saving adaptations, and understand the adaptational significance of gathering and processing information.
	Different Modes of Feeding in Mammals	At the end of this activity, students should be able to recognize the relationships between environmental factors and feeding-related adaptations in mammals, recognize the reasons for the development of different feeding-related adaptations in mammals, recognize the effects of different feeding-related adaptations in mammals, and understand the value of feeding-related adaptations in mammals.
	Humans and the Environment	At the end of this activity, students should be able to describe the nature, range and uniqueness of the adaptations of humans to the environment, describe the relationship between the level of human existence and the state of natural resources, describe the effects of human activities on the natural environment, understand the dependency of humans on environmental resources and factors, understand that macroeconomic plans and calculations should take into consideration the effects of human activities on nature, and understand the necessity to minimize the negative effects of human activities on nature.
	Environmental Pollution	At the end of this activity, students should be able to understand the relationship between the introduction of substances, energy and species into the environment by man and the changes that they cause in the environment, understand the adverse effects of pollution on the standard of living of humankind, understand the adverse effects of pollution on all the components of the natural environment and the relationships that exist in it, understand the dependency of humankind on environmental resources and factors, understand why it is necessary to include the effects of human activity on nature in macroeconomic planning and accounting, and understand why it is necessary to minimise the adverse effects of human activity on the environment.

CHAPTER	LESSON	DESCRIPTION
	The Greenhouse Effect and the Ozone Hole	At the end of this activity, students should be able to describe how human activities cause global changes in the natural environment, describe the dependency of humans on environmental resources and factors, explain the necessity of taking into account the effects of human activities on the natural environment in macroeconomic plans and calculations, describe the necessity to minimize the adverse effects of humans on the natural environment, and explain the difficulties in assessing the proportional effects of human activities and natural processes on the natural environment.
	Conservation of Natural Resources	At the end of this activity, students should be able to determine the range and pace of changes in the natural environment caused by humans, describe the importance of the conservation of natural resources for the continued existence of the natural environment and humankind, describe the measures for nature conservation, understand the relationship between the quality of human life and the degree of conservation of natural resources, understand the principle behind the conservation of natural resources by the protection of entire ecosystems, and understand the need for long-term planning in the exploitation and economical use of natural resources.
XXI. The Flow of Energy and Matter, Information Exchange	**Ecosystem**	At the end of this activity, students should be able to use the concepts of: ecosystem, biocenosis, biotope, recognize the abundance of connections between species inhabiting an ecosystem and their connections with the abiotic environment, and recognize the mechanisms functioning within an ecosystem.
	Food Chains	At the end of this activity, students should be able to use the terms: food chain, trophic level and food web, notice the abundance of potential interdependencies between species inhabiting one ecosystem, and notice the abundance of pathways of energy flow and matter circulation in an ecosystem.
	Information in Nature	At the end of this activity, students should be able to describe the different types of information about the environment that are vital for life, describe the modes of communication between individuals of the same species and different species, understand the significance of information about the environment for the survival and development of individuals (populations, species), understand the significance of communication for the survival and development of an individual (population, species), and understand the significance of genetic information in nature.
	Biogeochemical Cycles	At the end of this activity, students should be able to understand the inter-relationships between the elements of the ecosystem that take part in the natural cycles of matter.