



ROMANIA
MINISTRY OF EDUCATION AND RESEARCH
UNIVERSITY OF CRAIOVA
FACULTY OF HORTICULTURE



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PACKAGE OF COURSES

Bachelor study program: BIOLOGY

This is the package of course of bachelor study program of Biology from the University of Craiova/ the Faculty of Horticulture/The Department of Biology and Environmental Engineering.

FIELD: BIOLOGY
PROGRAMME TITLE: BIOLOGY
BACHELOR'S DEGREE

1ST YEAR, 1ST SEMESTER

COURSE TITLE: GENERAL CHEMISTRY

CODE: D30BIOL217

ECTS CREDITS: 2

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Acquisition of basic knowledge in the field of organic chemistry, relevant for the study of biological processes. Knowledge of basic concepts regarding the structure and properties of the main classes of organic compounds. Acquisition of basic notions and practical skills necessary for conducting experiments in chemistry laboratories and for the quantitative and qualitative determination of organic compounds in biological systems.

COURSE CONTENTS: Structure of organic compounds. Covalent bond. Types of isomerism; Saturated, unsaturated and aromatic hydrocarbons. Hydroxyl compounds. Alcohols and phenols. Properties, natural representatives. Organic nitrogen compounds. Carbonyl compounds. Aldehydes and ketones. Carboxylic acids and functional derivatives of carboxylic acids.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (exam answers 60%, continuous assessment during the semester 20%, laboratory portfolio development and presentation 20%).

COURSE TITLE: HUMAN ANATOMY AND HYGIENE

CODE: D30BIOL103

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The knowledge of the anatomical structures of the main systems of the human body, methods of contraception, sexual transmissible diseases and hygiene rules.

COURSE CONTENTS: The history of the discipline. The anatomical terminology. Axes, planes and spatial orientation elements. The skeletal system: parts of the skeleton. The bone tissues: compact and spongy bone. The joints and the body movements. The muscle: structure, clasifications, the major skeletal muscles. The nervous system. The sense organs. The respiratory system. The digestive system. The heart and the circulatory system. The excretory system. The male and female reproductive systems. The endocrine glands. The methods of contraception. The sexual transmissible diseases. The rules of hygiene and the prevention of different diseases.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (continuous evaluation during the semester 40%, final evaluation exam 40%, essay/ scientific report/ portfolio/scientific articles reviews 20%).

COURSE TITLE: BIOPHYSICS

CODE: D30BIOL209

ECTS CREDITS: 4

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S):

Knowledge of notions, concepts, laws and principles specific to physics. Knowledge of methods, techniques for investigating and exploring biological systems. Knowledge of the perspectives of physics, as well as the relationships of physical dimensions with the environment from the perspective of biology. Knowledge of organisms. The impact of physics on life. Knowledge of the branch and its importance in biology. Knowledge of the physical dimensions specific to the living organism, of measurement units and measurement systems. Knowledge of the global evolution of the living organism. Knowledge of the properties of substance and its association with life. Knowledge of how to measure physical parameters specific to the living organism.

COURSE CONTENTS:

Introduction to biophysics. Its importance. Branches and subbranches. Physical notions specific to biophysics. Organization of living matter. The constituent elements of living matter. Atomic and nuclear physics. Quantum theory, introduction and principles. Atomic structure and atomic spectra. Molecular structure and symmetry. Spectroscopy. Electron microscopy. Nuclear magnetic resonance. Molecular biophysics. Molecular phenomena. Surface tension. Diffusion. Osmosis. Biological thermodynamics. Thermodynamic quantities. Principles of thermodynamics. Entropy. Cellular biophysics. Notions specific to cellular biophysics. Cellular potential. Active transport. Bioelectricity.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): On-going evaluation is based on active "on-site" presence through debate and conversation. 10 %, answers to final exam 60 %, active presence, periodic answers to practical work and homework 30 %.

1ST YEAR, 2ND SEMESTER

COURSE TITLE: SYSTEMATIC BOTANY (CRYPTOGAMS)

CODE: D30BIOL210

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental discipline

COURSE OBJECTIVE(S): Knowledge of the main characters of lower spontaneous plants, their scientific names as well as ecology and scientific importance. Assimilation of the main

methods of plant investigation. Recognition of the main groups of studied organisms. Identifying the notions needed to classify the vegetable world. Differentiation between the main groups of the studied organisms. Knowing the ecology of the analyzed species. The presentation of the practical and scientific importance of the plants.

COURSE CONTENTS: General characters, classification, scientific and practical importance to Phyl representatives. Bacteria, and Phyl. Cyanobacteria. Phyl. Euglenophyta, Phyl. Chrysophyta, Phyl. Pyrrophyta, Phyl. Phaeophyta (brown algae), Phyl. Rhodophyta (red algae), Phyl. Chlorophyta, (green algae) Phyl. Bryophyta (vegetable Mushrooms) Phyl. Pteridophyta (ferns) - cellular organization of the talus, nutrition, highlighting the characters of inferiority and superiority to other related groups. Classification, representatives, scientific and practical importance.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 70%, final answers to practical laboratory work 30%.

COURSE TITLE: THE SYSTEMATICS OF INVERTEBRATES

COURSE TITLE:

CODE: D30BIOL212

ECTS CREDITS: 5

TYPE OF COURSE: fundamental discipline

COURSE OBJECTIVE(S): General knowledge of the taxonomic diversity of the Protozoa and Metazoa groups. Presentation of the phylogenetic relationships of invertebrate groups from a classical (morphological) and modern perspective (molecular markers). General knowledge of the diversity of invertebrates in Romania.

COURSE CONTENTS: 1. Basic notions of phylogenetic systematics. 2. Systematics and diversity of Protozoa. 3. Systematics, diversity and phylogeny of Porifera, Placozoa, Cnidaria, Ctenophora, Xenoturbellida, Platyhelminthes, Orthonectida, Dicyemida, Nemertea, Mollusca, Annelida, Echiura, Sipuncula, Onicophora, Tardigrada, Arthropoda, Cycloneuralia, Gnathifera, Kamptozoa, Cyclophora, Lophophorata, Chaetognatha. Systematics and diversity of lower deuterostomes. 4. Phylogenetic relationships between the major groups of invertebrates: Bilateralia, Spiralia, Protostomia, Deuterostomia, Nephrozoa, Ambulacraria, Ecdysozoa, Scalidophora, Panarthropoda, Platytrichochozoa, Lophotrochozoa, Rouphezoa, Brachiozoa.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (final assessment 70%, continuous assessment

throughout the semester and final assessment of the practical classes 30%).

COURSE TITLE: DEVELOPMENTAL BIOLOGY

CODE: D30BIOL213

ECTS CREDITS: 3

TYPE OF COURSE: optional, fundamental discipline

COURSE OBJECTIVE(S): Knowledge of the stages and processes at the macro level in the ontogenetic development of metazoans. Knowledge of the basic molecular mechanisms involved in morphogenesis and organogenesis. Understanding the complexity of the basic molecular mechanisms that govern the formation of an animal organism, capturing the universality of these mechanisms in the animal kingdom.

COURSE CONTENTS: 1. Introductory notions (purpose and object of the discipline, brief history, approaches). 2. Classical approach to ontogenetic development – gametogenesis, fertilization, egg types, segmentation types, early and advanced phases of embryonic development, gastrulation types. 3. Molecular basis of development. Cellular specification, determination and differentiation. Models of specification. 4. Mechanisms of cellular differentiation – differential gene expression. Ways of accessing genes. Levels of control of gene expression. 5. Morphogenesis and its mechanisms. Cellular communication and its components. Juxtacrine and paracrine communication. Paracrine factors and paracrine communication. FGF, Hedgehog, Wnt, TGF- β proteins and the transduction pathways. 6. Stem cells. 7. Genetic determination of sexes. 8. Metamorphosis in insects. 9. Regeneration. Types of regeneration. Regeneration in Hydra. Regeneration in free-living flatworms – Dugesiiidae. Regeneration of the caudal fin in Danio rerio (zebra fish). 10. Development and environment.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): colloquium (final evaluation 70%, continuous evaluation throughout the semester of practical work 30%).

COURSE TITLE: ANIMAL HISTOLOGY AND EMBRIOLOGY

CODE: D30BIOL215

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The knowledge of the procedures for using a microscope, the microscopic studies of various types of tissues and cells. Notions of embriology.

COURSE CONTENTS: The history of the discipline. The principles of microscopy: types of microscopes, units of measurement. The light

microscope: the procedures of using. Methods for making microscopic preparations. The epithelial tissues. Covering epithelial tissues: simple, stratified and pseudostratified. The exocrine glandular epithelia: serous, mucous and mixed acini. The endocrine glandular epithelia. The connective tissues: classifications, matrix, cells, fibers (collagenous, reticular, elastic). Special techniques for staining connective tissues. The ground substance. The adipose tissue. The reticular tissue. Dense fibrous tissue and loose fibrous tissue. Special connective tissues: hemopoietic, support connective tissue. The cartilage: hyaline, elastic, fibrocartilage. The bone tissue. The integument: the epidermis, the dermis, the sebaceous glands, the sweat glands. Histological study of the nervous tissue. The blood: method of performing a blood smear, description of the blood cells. Mitosis. Meiosis. Oogenesis. Spermatogenesis. The stages of the embryological development.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (final exam 40%, continuous evaluation during the semester 40%, essay/portfolio/scientific report/scientific articles reviews 20%).

COURSE TITLE: FRENCH LANGUAGE, II

CODE: D30BIOL216

ECTS CREDITS: 2

COURSE TYPE: DOB

COURSE OBJECTIVES: Students will be able to approach and apply specific French language concepts related to their specialization.

They will identify and specify scientific information and the framework of legislative regulations in the field of biology, based on specialized bibliography in French.

They will critically analyze scientific communications, articles, or reports of medium difficulty.

CONTENTS: Immunostimulant foods, Telling the time, Potatoes, sprouted seeds, Demonstrative pronouns, Natural organic resources, Possessive pronouns, Vegetables: artichoke, broccoli, white beans, carrot, watercress, mushrooms, Interrogative pronouns, Aromatic plants: fennel, bell pepper, onion, garlic, Indefinite pronouns, Vegetables: white cabbage, green beans, lamb's lettuce, tomato, Adverbial pronouns En and Y, Le Lys dans la Vallée, The verb.

LANGUAGE OF INSTRUCTION: French

ASSESSMENT METHODS: Recognition of all previously acquired morphological elements in excerpts from specialized texts (quoted in the course syllabus)

- Demonstration of translation skills based on selected texts, verifying linguistic acquisition and the ability to translate a specialized text from

French into Romanian (all 3 sentences), as well as from Romanian into French (all 3 sentences)

Final grade breakdown:

- Written exam: 70%

- Participation and conduct during activities: 20%

- Attendance credit: 10%

COURSE TITLE: GENERAL CHEMISTRY

CODE: D30BIOL217

ECTS CREDITS: 2

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Acquisition of basic knowledge in the field of organic chemistry, relevant for the study of biological processes. Knowledge of basic concepts regarding the structure and properties of the main classes of organic compounds. Acquisition of basic notions and practical skills necessary for conducting experiments in chemistry laboratories and for the quantitative and qualitative determination of organic compounds in biological systems.

COURSE CONTENTS: Structure of organic compounds. Covalent bond. Types of isomerism; Saturated, unsaturated and aromatic hydrocarbons. Hydroxyl compounds. Alcohols and phenols. Properties, natural representatives. Organic nitrogen compounds. Carbonyl compounds. Aldehydes and ketones. Carboxylic acids and functional derivatives of carboxylic acids.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Checking (exam answers 60%, continuous assessment during the semester 20%, laboratory portfolio development and presentation 20%).

COURSE TITLE: SPORTS

CODE: D30BIOL218

ECTS CREDITS: 3

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Discipline aims at forming the theoretical, practical and methodical skills for individual or group practice for a healthy lifestyle; Awareness of students about the role and importance of practicing physical exercise; Developing students' physical, mental and social skills.

COURSE CONTENTS: Gymnastics: Front and Band Exercises; Gymnastics Aerobics/Fitness; Application trails combined with treadmills; Application paths combined with equilibrium, escalation, climbing exercises; Sports games: volleyball, football, basketball; Bilateral games under similar competition conditions.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Assessment through practical tests 80%, continuous assessment throughout semester 20%.

2ND YEAR, 1ST SEMESTER

COURSE TITLE: THE BIOLOGY OF VERTEBRATES

CODE: D30BIOL320

ECTS CREDITS: 5

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): This discipline offers information about Phylum Chordata, the last phylum of the Animalia kingdom. The aim of the discipline is to acquire knowledge of the main morphological and anatomical characteristics of the main groups of protochordates (tunicates, cephalochordates) and vertebrates (agnathans, fishes, amphibians, reptiles, birds, mammals) in relation to their adaptation to different types of habitats specific to each group, as well as ecological and ethological aspects. Developing the skills to recognize, identify, and describe the component elements of the studied systems, and to perceive the differences present between animals.

COURSE CONTENTS: Introduction to the study of the discipline. Phylum Chordata. Subphylum Urochordata. Subphylum Cephalochordata and Vertebrata. General characteristics (external morphology and internal organization). Superclass Agnatha – general characteristics. Infraphylum Gnathostomata. Fish group: Class Chondrichthyes. Superclass Osteichthyes. External morphology, internal organization (the systems: integumentary, skeletal, muscular, nervous and sense organs; the systems: digestive, respiratory, circulatory, excretory and reproductive); ecology and ethology notions (ecological groups, feeding, defensive, reproductive, and migratory behaviour) of fish. Tetrapod Group. Class Amphibia: External morphology, internal organization, ecology and ethology notions in amphibians (Anura, Urodela, Gymnophiona). Class Reptilia: External morphology, internal organization, ecology and ethology notions of reptiles (turtles/tortoises, rhynchocephalians, snakes and lizards, crocodiles). Class Aves: External morphology, internal organization. Class Mammalia: General characteristics. External morphology, internal organization, ecology and ethology notions in mammals.

LANGUAGE OF INSTRUCTION: Romanian.

ASSESSMENT METHOD(S): Exam: 70% based on course content, 20% based on practical work, and 10% based on overall assessment of the student's activity throughout the semester.

COURSE TITLE: PALEOBIOLOGY

CODE: D30BIOL321

ECTS CREDITS: 3

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S):

This course aims to present to the biologist student essential data about the history of life on Earth, highlighting the diversity, evolution and geological succession of different groups of plants and animals, the emergence of major evolutionary developments (anatomical, physiological, ecological, systematic) and study methods of the past life.

COURSE CONTENTS:

Introductory notions on paleobiology; brief history of the development of knowledge about the living things of the past; specializations in paleobiology. Elements of plant and animal paleobiology: highlighting the main systematic and evolutionary groups that have succeeded each other over geological time. Major evolutionary innovations, adaptations associated with: aerobic life, the origin of eukaryotes, the origin of terrestrial plants, the origin of spermatophytes, the origin of vertebrates, the origin of tetrapods, the origin of amniotes, the origin of flight in the animal world, adaptations of aquatic organisms to terrestrial life and adaptations are discussed. terrestrial organisms in aquatic life, the origin of mammals, the origin of man, etc. Definition of fossils. The main ways of fossilization. The importance of fossils. Geochronological scale - Life during geological times: paleobiological characteristics of geological periods and eras, in connection with paleogeographic changes - Great extinctions of flora and fauna: causes, evolutionary consequences - Practical observations on fossils in collections.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (60% answers from course notions + 10% answers during the semester + 30% elaboration of reports/projects).

COURSE TITLE: BIOCHEMISTRY

CODE: D30BIOL323

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The course aims to provide students with fundamental theoretical and practical knowledge of biochemistry. After completing the course, students will be able to: understand basic principles and concepts on the structure, classification and nomenclature of different classes of biological molecules; understand the relationship between molecular structure and biochemical function; use appropriate scientific language to communicate biochemical information; perform biochemical analyses and basic calculations with experimental data; apply basic biochemical knowledge for specific problems solving.

COURSE CONTENTS: Cellular organization and chemical composition of living matter. General characteristics of biomolecules: directionality,

informational content, hierarchy, three-dimensional architecture. Forces involved in interactions between biomolecules and the importance of conformational complementarity. Amino acids, peptides, proteins; levels of protein structure; protein functions. Enzymes. Vitamins. Carbohydrates: structure, properties, biological roles. Lipids. Nucleotides and nucleic acids - DNA and RNA structure and functions. Metabolic aspects.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Colloquy (70% course knowledge, 30% laboratory activity and reports).

COURSE TITLE: TAXONOMY

CODE: D30BIOL324

ECTS CREDITS: 4

TYPE OF COURSE: Specialized discipline.

COURSE OBJECTIVE(S):

Knowledge of the elements of taxonomy, ontogeny and phylogeny. Knowledge and understanding of the concept of taxon and systematic unit. Understanding the degree of relatedness between different systematic categories. Explanation and interpretation of the levels of classification of living organisms. Realization of the interdisciplinary implications of the discipline towards other related disciplines (physiology, phytopathology, ecology, etc.). Analysis of living organisms from a taxonomic point of view.

COURSE CONTENTS: The importance of taxonomy. Its place within the biological sciences. Contributions of taxonomy in theoretical biology. Contributions of taxonomy in applied biology. Hierarchical organization of biological systems. Categories of hierarchies in the living world. Levels and ranks in the taxonomic hierarchy: the concept and category of species; categories lower than the species. Taxonomic nomenclature: binomial nomenclature; taxonomic nomenclature codes. Species and species attributes, chorology and distribution area of species, causes of species distribution. Fauna, flora and their genesis. Taxonomy and biodiversity.

LANGUAGE OF INSTRUCTION: romanian.

ASSESSMENT METHOD(S): Exam answers 70%, final answers to practical laboratory work 30%.

COURSE TITLE: ENTOMOLOGY

CODE: D30BIOL325

ECTS CREDITS: 3

COURSE TYPE: Optional Specialty Discipline

COURSE OBJECTIVE(S): Knowledge and understanding of general morphological, anatomical and physiological characteristics of insects, biology, ecology and theoretical and practical importance of insects. Knowledge of morphoanatomic characters of the insect type, reproduction and insect development; Knowledge of distinctive characters

for all orders and families of insects, of the more important groups, with the retention and description of more common species or those of particular practical or scientific importance; Knowledge of aspects of insect biology and ecology.

COURSE CONTENTS: Insect general characters. External insect morphology. Anatomy and physiology of insects. Insect biology. Insect development. Ecology of insects. Insects systematic. Entognatha Class. Protura Order. Collembola Order. Diplura Order. Insecta Class. Zygentoma Order. Microcoryphia Order. Ephemeroptera Order. Plecoptera Order. Odonata Order. Orthoptera Order. Dictyoptera Order. Dermaptera Order. Phthiraptera Order. Thysanoptera Order. Hemiptera Order. Hymenoptera Order. Coleoptera Order.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Colloquium /Final evaluation - Conversation, debate (examination 80%; Check during the semester 20%).

COURSE TITLE: CELLULAR BIOLOGY

CODE: D30BIOL327

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The knowledge of the basic cell structure and function.

COURSE CONTENTS: Cellular anatomy. Molecular organization and membrane function. Cytoplasmic matrix. Description and roles of organelles: mitochondria, ribosomes, endoplasmic reticulum, Golgi apparatus, lysosomes, centrosome. Cytoskeletal elements: microtubules, microfilaments. Nucleus. Secretion and excretion. Osmosis and cell membrane integrity. Cellular differentiation: cilia, flagella, microvilli. Cell cycles. Mitosis and meiosis. Blood cells. Immunity (humoral and cell-mediated, active, adoptive, artificial). Immunization.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Final theoretical exam 60%, practical exam 20%, continuous evaluation 20%.

COURSE TITLE: GENERAL PARASITOLOGY

CODE: D30BIOL328

ECTS CREDITS: 5

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): The knowledge of the main species of animal parasites and the pathogenesis, epidemiology, clinical symptoms, diagnosis and prevention of the parasitological diseases.

COURSE CONTENTS: Specific terminology. Symbiosis. Commensalism. Parasitism. Parasitological relations. Parasitological specificity. The action mode of the parasites. Biological way of transmission. Protective reaction of the body. The extermination of the parasites. Parasitological protozoa. Phylum

Mastigophora. Phylum Opalinata. Trichomonas vaginalis and Trichomoniasis. Giardia intestinalis and Giardiasis. Phylum Rhizopoda. Intestinal Amebiasis. Phylum Apicomplexa. Toxoplasma gondii and Toxoplasmosis. Plasmodium and Paludism. Pneumocystis carinii. Patogene fungus. Major animal and human helminthiasis. Helminths – evolution, infestation, diagnosis, prevention. Phylum Plathelminthes and Nematelminthes.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Checking (final exam 40%, continuous evaluation during the semester 40%, essay / scientific report / scientific articles reviews 20%).

COURSE TITLE: SPORTS

CODE: D30BIOL329

ECTS CREDITS: 3

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Discipline aims at forming the theoretical, practical and methodical skills for individual or group practice for a healthy lifestyle; Awareness of students about the role and importance of practicing physical exercise; Developing students' physical, mental and social skills.

COURSE CONTENTS: Athletics: Long jump technique; Utilitarian-applicative skills; Exercises for the development of general strength; Exercises for speed development; Exercises for the development of coordination capacity; Sports games: handball, table tennis; Bilateral games under similar competitions conditions.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Assessment through practical tests 80%, continuous assessment throughout semester 20%.

2ND YEAR, 2ND SEMESTER

COURSE TITLE: VEGETAL PHYSIOLOGY

CODE: D30BIOL430

ECTS CREDITS: 3

TYPE OF COURSE: Fundamental discipline

COURSE OBJECTIVE(S): Knowledge and interpretation of the physiological processes of plant organisms; deepening knowledge regarding the structure and physiological functions of the plant cell, as well as highlighting the exchange of water between the plant cell and the external environment (diffusion, osmosis, imbibition, plasmolysis, turgescence, suction force of the plant cell); knowledge and explanation of the way in which the physiological processes of plants (absorption, transport, elimination of water and mineral substances), making connections between them and environmental factors; knowledge and understanding of the physiological role of mineral elements in the growth and development processes of plants.

COURSE CONTENTS: Introduction to plant physiology. Definition, object and tasks of plant physiology. Research methods used in plant physiology. Evolution of knowledge in the field of plant physiology. Physiology of the plant cell. Structure and physiological functions of cytoplasmic organelles in the cell. Cytoplasm and plasmatic membranes. Nucleus, vacuoles and pectocellulose membrane. Physical and physiological properties of cellular matter. Water exchange between the plant cell and the external environment. Diffusion, osmosis and imbibition. Plasmolysis and cellular turgescence. Suction force of the plant cell. Water and its physiological role in plants. Water content of plants. The role of water in plant life. Water regime of plants. Absorption and transport of water in plants. Water in the soil and its accessibility for plants. Root and extra-root absorption of water by plants. Transport of water in the plant body. External and internal factors influencing water absorption. Elimination of water by plants through transpiration and guttation. Influence of external and internal factors on transpiration. Methods of studying transpiration and the water balance of plants. Intensity of transpiration and the “economic” coefficient of transpiration. Mineral nutrition. Methods of studying mineral nutrition in plants. Absorption of mineral elements by plants. Factors influencing the absorption of mineral elements. Transport, accumulation and excretion of substances by plants. The role of roots in the solubilization of insoluble complexes in the soil. The physiological role of mineral macroelements and microelements in plants.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 70% course and 30% practical course).

COURSE TITLE: THE SYSTEMATICS OF VERTEBRATES

CODE: D30BIOL431

ECTS CREDITS: 3

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Phylogenetic classification of extant vertebrates according to recent research. Acquiring knowledge of the distinctive biological characteristics of representative vertebrate species from both our country and around the world. Establishing the phylogenetic origins and relationships among different taxonomic groups, as well as their evolution in the context of changing environmental conditions (the transition from an aquatic to a terrestrial environment). Gaining knowledge about the role of vertebrates in nature and in human life, their conservation status, and the main protection measures. Training and developing skills to observe, recognize, and accurately identify the main vertebrate species in Romania (fish, amphibians,

reptiles, birds, mammals) based on the knowledge acquired.

COURSE CONTENTS: Phylum Chordata. Vertebrates. Superclass Agnatha: Class Myxini, Class Cephalaspidomorphi (Hyperoartia). Infraphylum Gnathostomata. Group Pisces. Systematics of actual fish. Class Chondrichthyes: Subclass Elasmobranchii- Group Selachimorpha, Group Batoidea. Subclass Holocephali. Superclass Osteichthyes. Class Actinopterygii: Subclass Chondrostei; Subclass Neopterygii: Infraclass Holosteii, Infraclass Teleostei; Class Sarcopterygii: Subclass Actinistia, Subclass Dipnoi. Class Amphibia. Systematics of actual amphibians. Orders: Gymnophiona, Urodela, Anura. Class Reptilia. Systematics of actual reptiles. Order Testudines, Order Rhynchocephalia, Order Squamata with Suborder Lacertilia and Serpentes, Order Crocodylia. Class Aves. Systematics of actual birds: Subclass Neornithes: Infraclass Palaeognathae, Infraclass Neognathae. Class Mammalia. Classification of actual mammals. Subclass Prototheria: Order Monotremata. Subclass Theria: Infraclass Marsupialia. Infraclass Eutheria (placental). The importance of vertebrates. Protection measures. Origin and evolution of vertebrates.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (50% answers based on course knowledge + 40% answers based on practical work + 10% overall assessment of the student's activity during the semester)

COURSE TITLE: COMPARATIVE ANATOMY
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CODE: D30BIOL432

ECTS CREDITS: 4

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S):

Knowledge and understanding of structures (tissues, organs, systems) and phylogenetic meanings. Acquiring information on the structure of the animal body to understand the composition and functioning of living organisms and how organ systems evolved into different classes of vertebrates in the context of changing environmental conditions (shifting from the aquatic environment to the terrestrial environment) and way of life in their long phylogenetic history. Understanding the general organization and structure of vertebrates. Understanding evolutionary meanings of changes in structures in vertebrates.

COURSE CONTENTS:

Vertebrate series analyzers: skin receptors, visual analyzer, stato-acoustic analyzer, tasteful, olfactory and kinesthetic analyzer. The digestive system in the vertebrate series. Supplementary glands in the vertebrate series. The respiratory system in the vertebrate series. The circulatory

system in the vertebrate series. Blood. The lymphatic system. Excretory system in the vertebrate series. Kidney types and nephron types in vertebrates. The genital system in the vertebrate series.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (Final theoretical exam 60%, final practical exam 40%)

COURSE TITLE: PHYSIOLOGY OF PLANT NUTRITION AND DEVELOPMENT
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CODE: D30BIOL433

ECTS CREDITS: 4

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVES: This discipline offers students informational support for studying the processes of nutrition and development in different groups of plants, but also for knowing and understanding the complexity of physiological mechanisms, the normal functioning of plant organisms and how these adapt to changes in internal and external environments. After studying this discipline, students will be able to: highlight the structural and functional interdependence of different tissues and organs; to use correctly notions, concepts and principles specific to the discipline; to integrate the knowledge acquired in basic concepts, to interpret the theoretical and practical contents of the discipline in an interdisciplinary approach.

COURSE CONTENTS:

Peculiarities of plant metabolism

Carbon nutrition: Autotrophic nutrition - Photosynthesis, definition and importance. The organs involved in this process. Assimilation pigments - classification, structure, properties.

Biosynthesis of assimilation pigments

The mechanism of photosynthesis: The light phase and the dark phase. Peculiarities of C3, C4 and CAM photosynthetic plants. The influence of external and internal factors on the photosynthesis process. Productivity of plant populations. The role of organic substances and their circulation in plants

Chemosynthesis. Heterotrophic nutrition.

Mixotrophic nutrition

Catabolic reactions- degradation reactions of organic compounds. Substrate and respiratory coefficient.

The mechanism of aerobic respiration. The influence of internal and external factors on the process of aerobic respiration. Anaerobic respiration

Plant growth: Stages of cell growth. Organ growth. The influence of environmental factors on plant growth. Growth correlations. Growth regulating substances: stimulants, inhibitors, retardants

Plant development. Development cycle characteristics. The physiology of flowering. The influence of external factors on the flowering process. Physiology of fruiting. Seed germination.

Polarity and regeneration in plants. Growth and plant orientation movements

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (70% answers from course notions + 30% answers from practical work notions and global appreciation of the student's activity at the practical works).

COURSE TITLE: SYSTEMATIC BOTANY (PHANEROGAMS)

CODE: D30BIOL435

ECTS CREDITS: 3

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Knowledge and recognition of the major spontaneous species in Romania's flora. Highlighting the transition from the lower to the higher (evolution) and the progeny of some groups of others (phylogeny). Among the specific objectives of this discipline are: the assimilation of the main methods of plant investigation; Recognition of the main groups of the studied organisms; Differentiation between the main groups of the studied organisms; Knowing the ecology of the analyzed species; The presentation of the practical and scientific importance of plants.

COURSE CONTENTS: The general characters of the vegetative and reproductive apparatus in the upper vascular plants, on the biochemical novelties (lignin and cutin) as well as the histological ones: the vascular bundles and the central cylinder (the stella); Epidermis with stomata and trichomes. Fenerogamous framing of Spermatophyta with two Subphylums: Pinophytina (Gymnospermae) and Magnoliophytina (Angiospermae). The two subphylum present: general characters, classification, representatives, scientific and practical importance.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S):

Exam answers 70%, final answers to practical laboratory work 30%.

COURSE TITLE: ORNITHOLOGY

CODE: D30BIOL438

ECTS CREDITS: 3

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): Deepening knowledge of birds from morphological, anatomical, physiological, systematic, and ecological point of view. Assimilation of information about bird behavior, emphasizing locomotion, feeding, communication, reproduction, and migration. Acquiring knowledge about the taxonomy, origin, and evolution of birds. Understanding the role of birds in nature and human life, as well as national and global conservation measures. Acquiring the main methods and tools used in the study of birds. Developing observation, recognition, identification, and characterization skills of the main bird species (with emphasis on those from Romania) based on the theoretical knowledge acquired.

COURSE CONTENTS: Introduction to ornithology. Origin and evolution of birds.

Ecological categories of birds. Ecological categories of birds: aquatic birds (marine and freshwater), forest birds (temperate and tropical), birds of the plains, savannah, and steppe. Birds of prey. Ethology concepts: locomotion and flight of birds; bird feeding, communication in birds; reproduction (nuptial display, mating, nesting, nest construction, egg laying, chick care, parasitism in birds). Migration and orientation in birds. The role of birds in nature and human life. Rare, endangered, and vulnerable birds. Measures for bird conservation.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Colloquium (50% answers based on course knowledge and 50% based on practical work: completion of practical tasks, active participation in discussions, engagement, and attendance)

COURSE TITLE: SPORTS

CODE: D30BIOL440

ECTS CREDITS: 3

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Discipline aims at forming the theoretical, practical and methodical skills for individual or group practice for a healthy lifestyle; Awareness of students about the role and importance of practicing physical exercise; Developing students' physical, mental and social skills.

COURSE CONTENTS: Fitness - optimization of physical condition; utilitarian-applicative skills; Exercises for the development of general strength; Exercises for speed development; Exercises for the development of coordination capacity; Sports games: handball, table tennis; Bilateral games under similar competition conditions.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Assessment through practical tests 80%, continuous assessment throughout semester 20%.

3ND YEAR, 1ST SEMESTER

COURSE TITLE: GENERAL GENETICS

CODE: D30BIOL542

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The knowledge of the notions regarding cell division, mitosis, meiosis, chromosomes and genes.

COURSE CONTENTS: Specific terminology. The cellular cycles. Cell division. Cytokinesis and kariokinesis. Stages of mitosis. Meiosis. Chromosomes – structure and morphological forms. Telomeric regions. Nucleic acids: DNA, RNA. DNA repair. Patterns of protein synthesis. Translation. Transcription. Genes. Human gene diversity and expression patterns. Alleles. Mutations. The human genome. Codon usage and genome evolution. Human genome project.

Principles of human heredity. Mendelian inheritances. Caryotypiques. Autosomal dominant/recessive transmission.

Dermatoglyphics. Fingerprints.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (final theoretical exam 40%, final practical exam 50%, making and essay 10%).

COURSE TITLE: ANIMAL PHYSIOLOGY

CODE: D30BIOL543

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The course aims to develop a comprehensive understanding of the mechanisms that ensure the normal functioning and adaptation of animal organisms to both internal and external environments. By studying physiological processes from the cellular level to that of organ systems, the course fosters scientific reasoning, analytical thinking, and the ability to integrate biological knowledge.

COURSE CONTENTS: Introduction to animal physiology. General physiological properties of the organism. Physiology of the central nervous system: sensory functions; motor functions; higher nervous activity. Physiology of the autonomic nervous system. Physiology of the muscular system and effectors. Physiology of the endocrine system. Physiology of digestion and absorption. The internal environment: composition and functions; blood physiology; hemostasis; blood groups and transfusions. Circulatory physiology: cardiac physiology; arterial, capillary, venous, and lymphatic circulation; regulation of circulation. Respiratory physiology: types of respiration in invertebrates and vertebrates; gas exchange and regulation of respiration. Metabolism and thermoregulation: energy metabolism; thermoregulation; neuroendocrine control of body temperature. Excretory physiology: excretion in invertebrates and vertebrates; nephron functions; regulation of renal activity; micturition and urine characteristics. Reproductive physiology: asexual and sexual reproduction; physiology of the male and female reproductive systems.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (Continuous assessment during the semester – 50%, Final theoretical exam – 50%).

COURSE TITLE: GENERAL ECOLOGY

CODE: D30BIOL544

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Acquiring information regarding the structure and functions of supraindividual biological systems (populations, communities and the entire biosphere). Understanding the structure and

functioning of (ecosystem energy, minerals circulation and self-control) natural ecosystems.

COURSE CONTENTS: Introduction to ecology, object and definition, history of ecology. Theoretical bases of ecology; The ecosystem - the concept of ecosystem; Conceptual directions regarding the ecosystem; Ecosystem components - biotope, communities. The structure of the biotope.; The structure of natural communities - the community as a level of organization of living matter; community structure; indices of diversity; similarity indices; functional diversity; interspecific relationships - interspecific competition; competitive exclusion principle. Population-structure, geographical distribution of species and location of populations within the range; abundance and density of a population; spatial distribution of a population; metapopulation; metapopulation model established by Levins. Population - population growth: general population growth model; geometric population growth model; exponential population growth model; logistic population growth model; population growth structured by ages, developmental stages or size classes; matrix population growth model (Leslie matrix); stable age-class distribution.

LANGUAGE OF INSTRUCTION: romanian

ASSESSMENT METHOD(S): Exam (exam answers 60% course + 20% practical course+20% Periodic answers).

COURSE TITLE: PHYTOPATHOLOGY

CODE: D30BIOL545

ECTS CREDITS: 5

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): Knowledge and in-depth study of aspects related to the biological properties of the main categories of pathogens, the role of the parasite-plant-environment interaction in the pathogenesis process and the mechanisms of plant resistance to the harmful action of pathogens; knowledge of the general characteristics of the main phytopathogenic agents, knowledge of the symptomatology, systematics, epidemiology and specific prevention and control measures; knowledge of minimal notions of biological statistics for calculating the dynamics of phytopathogenic agents, the degree of attack, in order to establish adequate methods for preventing and controlling phytopathogenic agents.

COURSE CONTENTS: Introduction to phytopathology. Importance, object of study and history of phytopathological research. General notions about plant diseases and phytopathogenic agents. The concept of plant disease and classification of plant diseases. Pathogenesis and changes produced in plants during the pathogenesis process. Evolution of the pathological process in plants and changes produced in plants. Parasitism

and its consequences. Parasitic properties of pathogens. Mode of transmission and spread, possibilities of prevention and control. General characteristics of phytopathogenic viruses and diseases produced in plants (viroses). General characteristics and classification of phytopathogenic viruses. The main diseases produced by viruses in plants (viroses). General characteristics of phytopathogenic bacteria and diseases produced in plants (bacteriosis). General characteristics and classification of phytopathogenic bacteria. The main diseases produced by bacteria in plants (bacteriosis). General characteristics of pseudofungi and phytopathogenic fungi and diseases produced in plants. Generalities, structure, types of vegetative apparatus, transmission and spread of pathogens. Kingdom *Protista*. General characters, classification and diseases produced by important representatives. Kingdom *Chromista*. General characters, classification and diseases produced by important representatives. Kingdom Fungi. General characters and classification. Phylum *Chytridiomycota*. General characters, classification and diseases produced by important representatives. Phylum *Ascomycota*. General characters, classification and diseases produced by representative fungi. Phylum *Basidiomycota*. General characters, classification and diseases produced by representative fungi of the class *Ustilaginomycetes* and the class *Pucciniomycetes*. Natural and physiological resistance of plants to diseases.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (exam answers 70% course and 30% practical course).

COURSE TITLE: EVOLUTIONISM

CODE: D30BIOL546

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental discipline

COURSE OBJECTIVE(S): Knowledge of the current conception of the origin and evolution of life on Earth, as well as of the main moments that led to the conception of this concept: scientific personalities, discoveries, theories. Underlining the importance of Charles Darwin's theory for understanding the mechanisms underlying species evolution. The contribution of molecular biology to support Darwinian theory. Knowledge of the current classification system of the living world. Identification of mechanisms for generating and amplifying / reducing genetic variability in populations; Understanding the importance of maintaining species diversity as a guarantee of the continuity of life on Earth. Presenting modern methods for assessing the genetic diversity of species.

COURSE CONTENTS: Evolution of theories and hypotheses regarding the origin of life. Spontaneous generation theory; Panspermy theory; Life Stability Theory; Biochemical

theory of evolution (Oparin-Haldane theory). Other theories. Theory of bio-structure. The cold theory of Simionescu and Dénes. The Genotype Theory. Monod's hypothesis. The theory of ribbing. The theory of the egoistic gene and the extended phenotype theorem. The Origin of the Universe. The Big Bang. Black holes and multiple universes. Big-Crunch and the hypothetical end of the Universe Biological Evolution. Classical pre-Darwinist evolutionary theories. Darwinian theory of evolution: the premises of its emergence. Darwinian Factors of Evolution. The main post-Darwin currents. Neo-Darwinism, Neo-Lamarckism. Synthetic theory of evolution. The factors of evolution. Microevolution and macroevolution of creatures. Evidence of Evolution. Cytological, embryological, biochemical and physiological evidences, serological, systematic, paleontological, bio-geographic, comparative anatomy. The origin and evolution of man. Considerations on humanization phenomena.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (Final theoretical exam 60%, continuous assessment during the semester 20%, making essay 20 %)

COURSE TITLE: MICROBIOLOGY

CODE: D30BIOL548

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Acquiring and understanding basic notions in the field of microbiology, notions used by students in the study and understanding of other specialized disciplines (cell biology, plant protection, biochemistry, molecular biology, modern biotechnology, etc.).

COURSE CONTENTS: Methods of research used in Microbiology. Microbiology relationships with other sciences. Bacteria and Archea. Growth and nutrition of prokaryotes. Metabolism of prokaryotic cells. Eukaryotic cell structure and functions. Fungi. Yeasts. Viruses. Pathogenic microorganisms. Influence of physical and chemical factors on microorganisms. Ecology of microorganisms. Microbiology of the environment. Microorganisms involved in biotechnology.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (Final theoretical exam 70%, continuous assessment during the semester 30%).

COURSE TITLE: NUTRITION, AND REPRODUCTION FUNCTIONS IN ANIMALS

CODE: D30BIOL549

ECTS CREDITS: 4

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): The course provides students with the informational foundation necessary for the study, understanding, and analysis of the mechanisms underlying the coordination and integration of the animal organism within its external environment, through the functions of relation, nutrition, and reproduction.

COURSE CONTENTS: Functions of relation and integration into the environment. Role and structure of the nervous system. Fundamental principles, functions of the nervous system, and their role in regulating involuntary activities. The muscular system and mechanisms of muscular adaptation to the external environment. The endocrine system and homeostatic regulation. Functions of nutrition and metabolism. Processes of digestion and nutrient absorption. Comparative aspects of the digestive system in vertebrates. The internal environment – the concept of homeostasis and the role of body fluids in maintaining internal balance. The circulatory system and its functional adaptations in different species. Structure and function of respiratory organs, mechanisms of adaptation to aquatic and terrestrial environments. Structure and functions of the excretory system, adaptations to various living environments. Reproductive function and species development. Differences and reproductive adaptations in vertebrates and invertebrates.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (Continuous assessment during the semester – 50%, Final theoretical exam – 50%).

3ND YEAR, 2ND SEMESTER

COURSE TITLE: HUMAN GENETICS

CODE: D30BIOL651

ECTS CREDITS: 4

TYPE OF COURSE: Specialized discipline
COURSE OBJECTIVE(S): The teaching of this discipline aims at students acquiring notions about the types of transmission of normal and pathological features, genetic diseases, and the prophylaxis of genetic diseases. It also aims to familiarize students with specific nomenclature, modern optical and electron microscopy techniques, and modern notions and techniques of cytogenetics, DNA-RNA technology, and oncogenesis. Students are also trained to conduct family surveys and genetic counseling in genetically transmitted diseases.

COURSE CONTENTS: Mechanisms for repairing DNA injuries (NER, BER, MMR). Mitochondrial genome: replication, transcription, translation, mutations, pathology. Genetic abnormalities and prenatal diagnosis: Down, Patau, Edwards, Turner, Klinefelter, XXX, XYY syndromes. Multifactorial diseases: diabetes, hypertension, Alzheimer's, Parkinson's. Bioethics and fertilization technologies.

Eugenics. Diseases of sexual differentiation. Handling of genetic material, genetic engineering, biotechnology, cloning, breeding. Oncogenesis. Cytogenetic abnormalities in cancer. Cytogenetic and molecular diagnosis: PCR, sequencing.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (70% answers from course notions + 20% answers from practical work notions + 10% practical activity).

COURSE TITLE: PATHOPHYSIOLOGY AND FUNCTIONAL EXPLORATIONS

CODE: D30BIOL652

ECTS CREDITS: 3

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): The course provides students with the informational foundation necessary for acquiring fundamental notions of pathophysiology, essential for the analysis and interpretation of specific mechanisms underlying the alteration of human body functions, as well as for the understanding of the main pathophysiological processes.

COURSE CONTENTS: Concepts of health and disease. Inflammation. Pathophysiology of the nervous system. Pathophysiology of thermoregulation. Pathophysiology of the endocrine system. Pathophysiology of digestion. Pathophysiology of blood. Pathophysiology of circulation. Pathophysiology of respiration. Pathophysiology of metabolism. Pathophysiology of excretion.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (Continuous assessment during the semester – 50%, Final theoretical exam – 50%).

COURSE TITLE: MICOLOGY

CODE: D30BIOL653

ECTS CREDITS: 3

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): Presenting the unity and biodiversity of mushrooms, the phylogeny, the evolution and the current classification system. Presentation of the diversity of mushroom species in relation to the current concepts regarding the classification of these categories of organisms. Synthesizing aspects related to the biology, ecology and physiology of mushrooms, insisting on their practical importance.

COURSE CONTENTS: Brief history of mycology. Morphology and nutrition of mushrooms. Cultivation of mushrooms, their nutritional value. Nutritional index. Toxins produced by mushrooms. Mushroom poisoning (syndromes). Influence of environmental factors on growth, multiplication and life cycle of mushrooms. Food value of mushrooms. Inedible mushrooms and poisonous mushrooms.

Mushrooms of medicinal and industrial importance. Fundamentals of fungi systematics: Protozoa, Chromista and Fungi. Archimycetes, Myxomycetes. Phytomycetes (Oomycetes, Zygomycetes). Ascomycetes (fam. Hemiascomycetidae, Euascomycetidae). Basidiomycetes. Actinomycetes.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (final theoretical exam 70%, final practical exam 30%).

COURSE	TITLE:	NATURE
CONSERVATION		

CODE: D30BIOL654

ECTS CREDITS: 3

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Acquiring the main theoretical knowledge regarding the conservation of biological diversity in the context of current environmental transformations, because of anthropogenic activities. Analysis of biological diversity; Evaluation of the anthropogenic impact on biological populations and communities; Presentation of the methodology for assessing the conservation status of species; Identification of strategies for establishing protected area networks.

COURSE CONTENTS: Definition of the species concept. Current conservation status of species. Red List Index. Causes of biodiversity loss. Biodiversity measurement. Alpha, beta and gamma diversity. Rarity and diversity. Prioritization of areas for biodiversity conservation. Biodiversity conservation and climate change. Habitat loss, degradation and fragmentation. Genetic diversity. Importance of genetic diversity in conservation. Loss of genetic variability. Population viability analysis. GAP analysis. Objectives of GAP analysis. Priorities in natural capital conservation.

LANGUAGE OF INSTRUCTION: romanian
ASSESSMENT METHOD(S): Exam (exam answers 60% course + 20% practical course+20% Periodic answers).

COURSE TITLE: PHYTOCOENOLOGY

CODE: D30BIOL656

ECTS CREDITS: 2

TYPE OF COURSE: Specialized discipline

COURSE OBJECTIVE(S): Understanding the inter-specific relationships in a phytocenosis, the distribution of vegetal groups both horizontally and vertically, as well as the factors that contribute to their distribution. Recognition of the main zonal, azonal and intrazonal vegetal associations.

COURSE CONTENTS: The relationship between flora and vegetation. Phytocenosis - study of phytosociology. The relationship between phytocenosis and other over populative biological

systems. Functions of phytocenoses. Phytocenosis sampling, Structure of phytocenoses (Sinstructure), Phytocenosis dynamics (Sindinamica), Phytocenotaxonomy of plant groups. Spread of phytocenoses. Geographical classification of plant cover. The conditions for the formation of the vegetation cover and of the phytosociological units in our country.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (exam answers 60%, final answers to practical laboratory work 10%, periodic testing by practical control exercises 15%, continuous testing during the semester 15%, activities like topics / essays / translations / projects, etc.)

COURSE	TITLE:	SCIENTIFIC	AND
PROFESSIONAL		WRITING	AND
COMMUNICATION			

CODE: D30BIOL659

ECTS CREDITS: 2

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): The course aims to develop scientific writing and communication skills in biology, using specialized terminology and complying with academic standards.

COURSE CONTENTS: Introduction: necessity, subject of study in the context of biological disciplines, main and specific objectives. The role of scientific communication in biology. Principles and stages of writing. Scientific documentation and databases. Structure and formatting of scientific papers. Citation rules and research ethics. Presentation of scientific results. Dissemination techniques (papers, articles, posters, conferences). Dissemination of scientific results – oral and written presentation. Ethics and academic integrity. Professional writing practices. Plagiarism.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Final theoretical examination – 50%, written project at the end of the semester – 30%, homework and exercises during the semester – 20%.

COURSE TITLE: APPLIED MICROBIOLOGY

CODE: D30BIOL660

ECTS CREDITS: 3

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Acquiring and understanding basic notions in the field of microbiology, notions that are used by students in the study and understanding of other specialized disciplines (cell biology, plant protection, biochemistry, molecular biology, modern biotechnology, etc.).

COURSE CONTENTS: Human host microorganisms. Pathogenity of microorganisms. Infection and infectious disease. Microbiological bases of infection prophylaxis. Microbiological bases of the etiological treatment of infectious

diseases. The main types of microorganisms involved in human pathology.

LANGUAGE OF INSTRUCTION: Romania

ASSESSMENT METHOD(S): Exam (final theoretical exam 70%, continuous assessment during the semester 30%).