



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



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PACKAGE OF COURSES
Bachelor study program: ENVIRONMENTAL ENGINEERING

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

FIELD: ENVIRONMENTAL ENGINEERING
PROGRAMME TITLE: ENVIRONMENTAL ENGINEERING

1ST YEAR, 1ST SEMESTER

COURSE TITLE: SPECIAL CHAPTERS OF MATHEMATICS

CODE: D30IML101

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Knowledge of the fundamental concepts of probability theory, probabilistic computation rules, the main probability schemes, the notion of random variable. Knowledge of the main classical distribution laws. Statistical analysis of the phenomenon. Graphical representation of a statistical series. The distribution of statistical data and graphical representation, the synthesis of data with an indicator representing them, the determination of statistical indicators of populations and samples (for example, indicators of the variations and moments).

COURSE CONTENTS: Basic theory of probabilities. Elements of mathematical statistics.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam 60%, 30% test scores, 10% attending actively at classes.

COURSE TITLE: INFORMATICS

CODE: D30IML102

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The use of IT tools to solve problems in the field of specialization; Making documents in a form as appropriate as possible for the purpose for which they were created; Approaching, at various levels of complexity, computerized word processing, by way of example; Computer modeling of engineering processes; Processing and interpreting data using Excel spreadsheets; exemplifying the diversity of areas where Excel can be used.

COURSE CONTENTS: *Microsoft Word:* Edit actions: create/save/open/close file; Page Setup: page margins, page sizes, page orientation, header and footer options; View, Print Preview. Move/copy/paste; Select text; Search and replace, move to document. View Document; Header and footer creation, ruler, toolbars. Insert into file: page numbers; Page break/section break; Footnotes; diagram, object, text box. Text Formatting: specifying all formatting attributes; Create lists numbered/with bullets/hierarchies; Applying curbs and shadows. Formatting text in columns, specifying TAB positions and guiding characters. Insert table, work with tables. Drawing toolbar; Inserting equations in the document. *Microsoft Excel:* Excel Work Environment; data types; input and edit data. Format spreadsheets. Working with data: sorting; query/filter; Creating links. Working with formulas. Usage of functions: time and date functions; Mathematical functions; Statistical functions; Financial functions. Create and edit charts: the Wizard application for chart creation; Types of charts; Editing and

formatting charts. Data analysis: pivot tables; scenarios/variants.

LANGUAGE OF INSTRUCTION : Romanian

ASSESSMENT METHOD(S): Exam (answers to exam 70%, final answers to Laboratory works 30%).

COURSE TITLE: CHEMISTRY

CODE: D30IML103

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Familiarize with the concepts of atom structure and classification of elements; Understanding the electronic configuration of the elements, their valence; Acquiring knowledge to understand the types of chemical bonds; Explaining some notions of thermochemistry and chemical thermodynamics in order to establish the conditions of maximum stability and the laws by which they are transformed to reach the chemical equilibrium state; Interpreting the numerical values of all the most important quantitative parameters determined; Identifying, respectively recognizing the ions in the sample solutions to be analyzed by using the appropriate specific reagents; Determination by calculation of the unknown concentration of volumetric and gravimetric samples.

COURSE CONTENTS: Atoms. Atomic structure. classification of elements. Molecules. Chemical links. Chemical thermodynamics. Chemical equipment. Solutions. Ionic balancing. Chemical cinematics. Catalysis. Coloidal status of material. Oxidation and reduction.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: BOTANY

CODE: D30IML104

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): The presented botanical notions give students the support of understanding and acquiring the knowledge necessary for the biochemical and systematic approach of the spontaneous plants.

COURSE CONTENTS: General notions. Biology as a science. Branches of biology. Botany development worldwide. Development of botany in Romania. Nomenclature of spontaneous and cultivated species. Plant cell cytology. Theory of vegetal histology. Meristematic, defense, conductive, mechanical, fundamental and secretory tissues. Organography. Study of the vegetative and reproductive organs (morphology, types and anatomy). Systematic plant. Getting Started. Plant classification systems. Systematic units (taxa). Phyl. Pteridophyta and Spermatophyta - general characters, classification, representatives.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: ECOLOGY I**CODE:** D30IML105**ECTS CREDITS:** 5**TYPE OF COURSE:** Fundamental**COURSE OBJECTIVE(S):** Acquiring information regarding the structure and functions of supra-individual 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, objects and definitions, 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.**LANGUAGE OF INSTRUCTION:** Romanian**ASSESSMENT METHOD(S):** Exam (exam answers 60% course + 30% practical course and continuous assessment throughout semester 10%).**COURSE TITLE: LINEAR ALGEBRA, ANALYTICAL AND DIFFERENTIAL GEOMETRY****CODE:** D30IML106**ECTS CREDITS:** 4**TYPE OF COURSE:** Fundamental**COURSE OBJECTIVE(S):** Knowing the methods of descriptive geometry; Knowing the representation techniques of geometric bodies, plane sections in geometric bodies.**COURSE CONTENTS:** Axiomatic bases; Elements of flat geometry; Elements of geometry in space; Conventions, notations, symbols; Point representation; applications; Representation of a straight line; Applications; Straight lines on projection planes; applications; Straight lines on bisecting and lateral plane; Particular positions of a straight line; The relative position of a straight line; Representation of a plan; General considerations; Traces of a plan; Particular positions of a plan; Relative position of two planes; The relative position of a straight line to a plane; Perpendicular line to a plan; Perpendicular planes; Seminar theme and project: Introduction to the technical drawing, General rules used for drawing technical designs, Projection systems, Representation of parts in view and section; Quotation in industrial design.**LANGUAGE OF INSTRUCTION:** Romanian**ASSESSMENT METHOD(S):** Exam (answers to exam 80%, final answers to seminary works 20%)**COURSE TITLE: ENGLISH I****CODE:** D30IML107**ECTS CREDITS:** 2**TYPE OF COURSE:** Complementary**COURSE OBJECTIVE(S):** Improving the ability to understand spoken English and specific vocabulary texts

written in English, using a reference material especially designed for students of the Faculty of Horticulture, but also for those who want to learn ESP vocabulary in context. Practice of important vocabulary and grammar practice, tackle four skills, reading, listening, speaking and writing, explain specific vocabulary, and grammar lessons which are thought in detail, with exercises that give students useful practice in this particular area. True or false exercises, gap filling, matching the words with their definition, translations, in context dialogues and lessons with key bolded words are really selected for students to understand and use it correctly. Deepening the main grammar rules of English in a modern way, problematic, requiring students to learn but also to think. Consolidation of skills to dialogue, describe, report. Emphasizing the practical nature of learning, the course is ment to stimulate students' interest in written and spoken language, to improve knowledge and communication in English.

COURSE CONTENTS: Focus on language: Present Tense Simple/ Continuous, Vocabulary: Waste water management. Air pollution control. Recycling, waste disposal, radiation protection. Industrial hygiene. Animal agriculture. Environmental sustainability. Public health and environmental engineering law.**LANGUAGE OF INSTRUCTION:** English**ASSESSMENT METHOD(S):** Checking (exam answers 80%, theoretical and practical checking 20%).**COURSE TITLE: PHYSICAL EDUCATION AND SPORTS****CODE:** D30IML109**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.**COURSE CONTENTS:** Athletics: school elements of jumping and running; Application paths combined with treadmills; Application paths combined with jumping elements; Application paths combined with equilibrium, escalation, climbing, etc.; Sports games: volleyball, badminton; Bilateral games under similar competitions conditions.**LANGUAGE OF INSTRUCTION:** Romanian**ASSESSMENT METHOD(S):** Assessment through practical tests 80%, continuous assessment throughout semester 20%**1ST YEAR, 2ND SEMESTER****COURSE TITLE: CHEMISTRY II****CODE:** D30IML210**ECTS CREDITS:** 5**TYPE OF COURSE:** Fundamental**COURSE OBJECTIVE(S):** The course aims to study the main classes of organic compounds, the correlations between their structure and the main properties that determine and influence the pollution of the environment.

COURSE CONTENTS: Structure of organic compounds. Electronic structure and covalent bonds. Stereochemistry. Types of isomerism; Optical isomers, Characteristic aspects (thermodynamic, kinetic, mechanistic) of organic reactions. Hydrocarbons, Halogenated compounds Hydroxylic combinations: mono- and poly-ols: properties, representatives. Organic combinations of sulfur; Organic combinations of nitrogen. Amines, nitro-derivatives. Carbonyl combinations: aldehydes and ketones; Carboxylic acids: Functional derivatives of carboxylic acids.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (written examination 70% + continuous evaluation 20% + report 10%).

COURSE TITLE: PHYSICS

CODE: D30IML211

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Knowledge of notions, concepts, laws and principles specific to physics with implications in phenomena that cause environmental pollution. Knowledge of physical monitoring methods, physical techniques of investigation and exploration of the environment. Knowledge of physical activities in assessing and combating environmental pollution. Assumption of knowledge related to physics-specific terms to the phenomena and laws governing the environment, the similarity and the difference between them at all levels of organization of matter, starting at the subatomic level to the biosphere. Knowledge of environment-specific applications and recording and research equipment of importance in physics and applied to environmental engineering. Discipline aims to explain the phenomena, processes, applications and devices according to the main physical parameters, characteristics of the environment. Students should explain the involvement of each process in the correct functioning of the living environment (from the body level to the biosphere) or interpret the evolution of the system based on the evolution of environmental factors.

COURSE CONTENTS: Introduction to environmental physics. Matter structure and their organization. Quantum Physics. Elements of spectroscopy. Solar spectrum. Interaction of radiation with matter. Molecule, aggregation states. Molecular biophysics. Contact phenomena between liquid and solid. Molecular transport phenomena. Diffusion and osmosis. Water and its role. Introduction in biological thermodynamics. Radiant energy, characteristics of thermal energy.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (answers to exam 60 %, periodic answers to practical work 10 %, results to periodic control works 30 %).

COURSE TITLE: MATHEMATICAL ANALYSIS

CODE: D30IML212

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): Understanding students of the basic notions of algebra; Understanding the ways to

approach algebra problems; Development of students' logical thinking; Educating students in the spirit of more realistic approaches to practical problems in the environment; Managing positive and responsible attitudes towards the mathematical field, which helps to investigate economic or engineering problems.

COURSE CONTENTS: Equations, inequalities, matrix calculus, determinants, linear systems, vector spaces, linear applications, bilinear forms.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 70%, final answers for workshops 10%, continuous assessment throughout semester 10%, activities such as homework/essays/papers/projects 10%).

COURSE TITLE: TOPOGRAPHY

CODE: D30IML213

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): Knowledge of the elements of base Topography. Reading and use of topographic maps. Basic competences in planimetric survey. Ability to use main surveying schemes for realising engineering and environmental protection projects. Identifying the advantages and disadvantages of each alternative solution.

COURSE CONTENTS: Basic topography and general concepts; Measurement units in topography. The topographic circle and angular functions. Orientations and axis of coordinates. Marking and signaling points. Surveying Instruments. Measure of distances and angles. The errors in Topography. Planimetric surveying methods: Closed traverse; Closed-loop traverse; Detailed survey; Abscissas and ordinates method. Intersection.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (answers to exam 50%, periodical assessment through practical tests 20%, continuous assessment throughout semester 10%, activities such as homework/papers 20%).

COURSE TITLE: PROTECTION OF ECOSYSTEMS

CODE: D30IML214

ECTS CREDITS: 5

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): The discipline aims to familiarize students with the main notions and concepts related to the protection of natural ecosystems, to the national strategy in the field of ecosystem protection and conservation. Understanding the interdependence between different environmental factors and human activities, the correct use of notions, concepts, principles specific to the discipline; integrating the knowledge acquired into basic concepts, interpreting theoretical and practical contents in an interdisciplinary approach.

COURSE CONTENTS: Ecosystems: definition, classification criteria, Structure and functions of ecosystems, Natural terrestrial ecosystems, Anthropogenic terrestrial ecosystems, Natural aquatic ecosystems, Anthropogenic aquatic ecosystems, Primary production in terrestrial ecosystems, Primary production in aquatic ecosystems, Factors influencing the

productivity of terrestrial ecosystems: water, light, temperature, air currents, pH, Factors influencing the productivity of aquatic ecosystems: light, temperature, salinity, Natural causes of ecosystem deterioration, Anthropogenic causes of ecosystem deterioration, Strategies for the conservation of terrestrial ecosystems, Strategies for the conservation of aquatic ecosystems
Feedback

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 70%, periodical assessment through practical tests, activities such as essays/ projects 30%.

COURSE TITLE: ECOLOGY II

CODE: D30IML215

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Acquiring information regarding the structure and functions of supra-individual 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: Population - characteristics, heterogeneity, spatial structure. Population - rates: natality, mortality, natural growth rate; carrying capacity of the environment; the dynamics of a population's size; exponential and logistic growth of a population; self-regulation - adjustment mechanisms. Ecosphere system - Ecosystem structure (troposphere and biosphere), global circuit of matter, turnover rate, turnover time, global biogeochemical cycles, biogeochemical circuit of carbon.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers - 60% course + 30% practical course and continuous assessment throughout semester 10%).

COURSE TITLE: ENGLISH II

CODE: D30IMAL217

ECTS CREDITS: 2

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Improving the ability to understand spoken English and specific vocabulary texts written in English; using a reference material especially designed for students of the Faculty of Horticulture, but also for those who want to learn ESP vocabulary in context. Practice of important vocabulary and grammar practice, tackle four skills, reading, listening, speaking and writing, explain specific vocabulary, and grammar lessons which are thought in detail, with exercises that give students useful practice in this particular area. True or false exercises, gap filling, matching the words with their definition, translations, in context dialogues and lessons with key bolded words are really selected for students to understand and use it correctly. Deepening the main grammar rules of English in a modern way, problematic, requiring students to learn but also to think. Consolidation of skills to dialogue, describe, report. Emphasizing the practical nature of learning, the course is ment to stimulate students' interest in written and

spoken language, to improve knowledge and communication in English.

COURSE CONTENTS: Focus on language: Past Tense Simple/ Continuous, Vocabulary: The environmental impact of proposed construction projects. The effect of technological advances on the environment. Hazardous-waste management. Advice on treatment and containment. Municipal water supply and industrial wastewater treatment systems. The effects of acid rain, global warming, ozone depletion, water pollution and air pollution from automobile exhaust and industrial sources.

LANGUAGE OF INSTRUCTION: English

ASSESSMENT METHOD(S): Checking (exam answers 80%, theoretical and practical checks 20%).

COURSE TITLE: PHYSICAL EDUCATION AND SPORTS

CODE: D30IMAL216

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.

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: basketball; Sports game: football; 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: ENVIRONMENTAL MICROBIOLOGY

CODE: D30IML319

ECTS CREDITS: 5

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): Learning morphological, metabolic and reproduction features of important microorganisms (viruses, bacteria, molds) in environmental protection domain.

COURSE CONTENTS: Characterization of the major groups of microorganisms: viruses, bacteria, yeasts, molds. Chemical composition of microorganisms. Enzymatic equipment of bacteria and yeasts. Nutrition of microorganisms; Forming the skill to execute and interpret microscopic preparations.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (answers to exam 35%, Active participation in courses 10%, Written assessment (during the semester): questionnaire 10%, Final written assessment (in the exams session) 35%, Active participation in seminars 10%).

COURSE TITLE: TOPOGRAPHY**CODE:** D30IML320**ECTS CREDITS:** 5**TYPE OF COURSE:** Specialty**COURSE OBJECTIVE(S):** Basic knowledge and competence about the survey and representation of the territory. Measuring level differences and calculating points altitudes; Elaboration of quoted plans and drawing of level curves; Integration of specific topographical problems in environmental engineering protection projects. Identification of alternative solutions.**COURSE CONTENTS:** Desing- Surveying plan -Area calculation. Detachment of surfaces. Geometric leveling: scheme, instrumentation, accuracy, methodes. Leveling of the surfaces. Methods of relief representation. Slopes. Relief forms. Elements of the topographic and cartographic drawing.**LANGUAGE OF INSTRUCTION:** Romanian**ASSESSMENT METHOD(S):** Exam (answers to exam 40%, periodical assessment through practical tests 5%, continuous assessment throughout the semester 5%, activities such as homework/projects 50%).**COURSE TITLE: SOIL SCIENCE****CODE:** D30IMAL321**ECTS CREDITS:** 5**TYPE OF COURSE:** Specialty**COURSE OBJECTIVE(S):** Knowledge of formation, composition and evolution of soils, soil and development of human society, preserving soil quality, objective necessity of increasing agricultural production.**COURSE CONTENTS:** Soil-definition, role and importance, Pedogenetic factors of soil formation, Formation and composition of mineral and organic part of the soil, Formation and composition of the soil profile, Classification of soils in our country, The main soil types, Soil physics, Hydro-physical properties, Soil colloids, soil solution and its reaction, Soil flora and fauna, Nutrient cycle in the soil.**LANGUAGE OF INSTRUCTION:** Romanian**ASSESSMENT METHOD(S):** Exam (answers to exam 80%, final answers to Laboratory works work 20%).**COURSE TITLE: ENVIRONMENTAL CHEMISTRY****CODE:** D30IML322**ECTS CREDITS:** 4**TYPE OF COURSE:** Specialty**COURSE OBJECTIVE(S):** Students will be able to approach and explain the complex notions and phenomena specific to environmental chemistry: Explaining and interpreting a problem of environmental chemistry in clear terms; Identification of the processes, concepts and phenomena underlying the specific methods and instrumental analyzes and measures specific to the field of Environmental Science; Explaining a concept / phenomenon involved in environmental chemistry using the related field instruments (physical, geology, biology, ecology, mathematics); Recognize the scientific significance of the magnitudes, phenomena and processes in environmental chemistry and the size orders associated with the values of the usual concentrations;

Processing data acquired during the investigation process to solve specific concrete situations specific to the environmental chemistry study program; Critical comparison of data acquired, analyzed and processed with theoretical estimates or data provided by the literature; Elaboration of data sheets comprising: experimentally measured values or theoretically calculated values, calculation of errors, graphical representation, interpretation of results.

LANGUAGE OF INSTRUCTION: Romanian**ASSESSMENT METHOD(S):** Colloquy (40% Written evaluation; 30% project and 30% portfolio).**COURSE TITLE: INSTRUMENTAL ANALYSIS****CODE:** D30IML323**ECTS CREDITS:** 5**TYPE OF COURSE:** Fundamental**COURSE OBJECTIVE(S):** Understand the theoretical foundations of major instrumental techniques; Explain the function and design of analytical instruments; Select appropriate analytical methods for specific instruments; Interpret instrumental data using statistical and calibration approaches; Evaluate advantages, limitations and sources of error.**COURSE CONTENTS:** Classification of analytical methods; Role of instrumental analysis in modern laboratories; Spectroscopic Methods: UV-VIS Spectroscopy: principles of absorption; Beer-Lambert law; instrumentation and calibration, applications; Infrared Spectroscopy (IR): molecular vibrations; FT-IR instrumentation; qualitative analysis; Fluorescence Spectroscopy: Luminescence mechanisms, instrumentation, sensitivity and applications; Atomic Spectroscopy: AAS, AES, ICP-MS; Atomization and excitation; Electroanalytical Methods: Potentiometry (pH, ion-selective electrodes), Voltammetry (polarography), Conductometry, Amperometry.**LANGUAGE OF INSTRUCTION:** Romanian**ASSESSMENT METHOD(S):** colloquy (answers at the exam 70%, Laboratory works 30%).**COURSE TITLE: SCIENCE AND ENGINEERING OF MATERIALS****CODE:** D30IML324**ECTS CREDITS:** 4**TYPE OF COURSE:** Specialty**COURSE OBJECTIVE(S):** Knowledge of notions, concepts, laws and principles specific to materials physics with implications in engineering. Knowledge of physical methods of analysis, characterization and study of material properties. 1. The knowledge and the appropriate use of the notions specific to the discipline such as: materials and techniques / processing methods. 2. It is intended to explain and interpret the processes of production of materials and their main processing techniques (mechanical, thermal, chemical, physico-chemical). 3. It is desired to understand how technological processes can influence the environment 4. Insist on understanding the properties of the materials and how they are analyzed, controlled and characterized 5. To understand how to choose and use the materials 6.

To develop skills for developing projects, papers and scientific articles in this area.

COURSE CONTENTS: 1. Introduction to materials (definitions, relationship with the environment, types of materials, behavior of materials) 2. Materials classification - metals, nonmetals (ceramics, polymers, semiconductors) and composites 3. Structure of materials, electronic structure of atoms, types of chemical bonds. Crystalline and amorphous structures. Crystalline networks. Defects (p, unducts, linear, surface, volume). Microstructure of materials. Allotropy, Polymorphism, Isomorphism. 4. Properties of materials. Physical properties (electrical, magnetic, optical, thermal) , chemical, mechanical (elasticity, stiffness, plasticity, fragility). 5-6 Tests of materials - destructive tests. Static mechanical tests (tensile testing, compression, bending, shearing). Nondestructive testing (liquid control, magnetic, ultrasonic control, thermography). 7. Alloys. Phases. Binary diagrams. Fe-C diagrams. 8. Ferrous alloys vs non-ferrous (Al, Cu) 9. Ceramic materials. (traditional, technical). Properties, structure, uses. 10. Polymeric Materials, Definition, classification, obtaining, types of polymers, uses 11. Composite Materials. Definition, classification, obtaining, processing, uses. 12. Insulating materials. Definition, classification, production, processing, uses 13. Semiconductor materials. Definition, classification, obtaining, processing, uses 14. Corrosion of materials.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Answers to verification 60 %, periodic answers to practical work 10 %, results to periodic control works 30 %.

COURSE TITLE: PHYSICAL EDUCATION AND SPORTS

CODE: D30IML326

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.

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%

COURSE TITLE: MODERN LANGUAGES

CODE: D30IMAL327

ECTS CREDITS: 2

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Improving the ability to understand spoken English and specific vocabulary texts written in English, using a reference material especially

designed for students of the Faculty of Horticulture, but also for those who want to learn ESP vocabulary in context. Practice of important vocabulary and grammar practice, tackle four skills, reading, listening, speaking and writing, explain specific vocabulary, and grammar lessons which are thought in detail, with exercises that give students useful practice in this area. True or false exercises, gap filling, matching the words with their definition, translations, in context dialogues and lessons with key bolded words are really selected for students to understand and use it correctly. Deepening the main grammar rules of English in a modern way, problematic, requiring students to learn but also to think. Consolidation of skills to dialogue, describe, report. Emphasizing the practical nature of learning, the course is ment to stimulate students' interest in written and spoken language, to improve knowledge and communication in English.

COURSE CONTENTS: Focus on language: Present Tense Simple/ Continuous, Vocabulary: Waste water management. Air pollution control. Recycling, waste disposal, radiation protection. Industrial hygiene. Animal agriculture. Environmental sustainability. Public health and environmental engineering law.

LANGUAGE OF INSTRUCTION: English

ASSESSMENT METHOD(S): Checking (exam answers 80%, theoretical and practical checking 20%).

2ND YEAR, 2ND SEMESTER

COURSE TITLE: ZOOLOGY

CODE: D30IML429

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): The capacity to understand the geological evolution of the Romanian fauna, the ways of deterioration of fauna; the knowledge of the protection measures for different faunistic elements.

COURSE CONTENTS: 1. The groups of invertebrates and vertebrates: Protozoa, Porifera, Cnidaria, Ctenophora, Vermes (Platyhelminthes, Annelida, Nematelminthes), Mollusca, Arthropoda, Echinodermata, Cyclostomata, Pisces, Amphibia, Reptilia, Aves, Mammalia – the ground plan and general features, diversity, biology, importance and interactions with the human activities. 2. Fauna – introductory elements, the spatial distribution of the fauna in Romania. 3. The ways of constitution of the faunas – species and speciation; the geological evolution of the Romanian fauna – the cuaternar glaciation. 4. The anthropic factor in changing and deteriorating the fauna 5. Categories of faunistic elements; protected faunistic elements. 6. The role of the natural parks and reserves; measures and laws for animals, habitats and environmental protection. 7. Parasitic pollution.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 50%, continuous assessment throughout semester 50%).

COURSE TITLE: NATURAL RESOURCES

CODE: D30IML430

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): The discipline provides students with informational support for studying renewable and non-renewable natural resources, but also for knowing and understanding the complexity of the relationships between natural and anthropogenic factors and the influence of these factors on the quantity and quality of these resources

COURSE CONTENTS:

The concept of natural resources: definitions, opinions, classification criteria, Abiotic exhaustible non-renewable natural resources, Energy resources: oil, natural gas, coal, Abiotic exhaustible non-renewable natural resources, Ferrous and non-ferrous metallurgical resources, Abiotic exhaustible natural resources – Halide salts, Rocks with industrial utility, Ornamental rocks, Biotic exhaustible renewable natural resources – vegetation, Biotic exhaustible renewable natural resources – fauna, Air, Wind energy, Solar energy, Water resources, Hydropower potential and its exploitation. Energy of ocean waters and rivers, Groundwater (drinking, industrial, for irrigation, therapeutic), Potential resources, Reserves and stocks, Global natural resources situation, Natural resources situation in Romania

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 70%, periodical assessment through practical tests, activities such as essays/ projects 30%.

COURSE TITLE: COMPUTER AIDED GRAPHICS

CODE: D30IML431

ECTS CREDITS: 2

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Using the AutoCAD Graphics Environment; To present the theoretical principles, the general notions for engineering graphic representations; To create students the necessary skills to generate two-dimensional (three-dimensional) models for the correct transposition of space objects on the drawing.

COURSE CONTENTS: Basic elements; presentation of AutoCAD interface; Configuration and use of drawing tools; Coordinate systems; specifying distances by coordinates; Interpreting cursor modes and explaining prompts; Setting up a working surface; use AutoCAD modes as drawing tools; Selection of objects; editing using control points; Presentation of graphical menu Draw, using Drawing Commands; Presentation of graphical menu Modify - editing commands; Hatching; adding text; listing the drawings; Organization of objects with blocks and groups; Managing Layers and Blocks; modeling and creating 3D images.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (answers to exam 70%, final answers to Laboratory works 30%).

COURSE TITLE: PROTECTION OF FLORA AND FAUNA, BIODIVERSITY CONSERVATION

CODE: D30IML872

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): Knowledge of the role and importance of biodiversity for the present and future of mankind. Getting familiar with biodiversity structural elements and factors of influence. Knowledge of genetic centers of plant diversity. Knowledge of methods and techniques for conservation of plant and animal genetic resources, improvement of the conservation activities and utilization of biodiversity.

COURSE CONTENTS: Concept, importance and strategies used in protection of flora and fauna and conservation of biodiversity. Structural elements and influence factors of biodiversity. Genetic centers of plant diversity. Management of biodiversity and collection of genetic resources. *In situ* conservation (protected and non-protected areas). *Ex situ* conservation (gene banks, botanical gardens, field conservation - collections). Protection and conservation of animal genetic resources. Plant and animal biodiversity conservation in Romania. Use of genetic resources.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S) Exam (60% of the final grade represent the response to the written theoretical questions and 40% of the final grade the answers to laboratory tests).

COURSE TITLE: FLUID MECHANICS

CODE: D30IML433

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): Knowledge of concepts, theories and basic methods of Fluid Mechanics for understanding the technological issues needed to operate general engineering processes / facilities within specific equipment for environment protection engineering in agriculture in order to prevent and to reduce the pollution phenomena. Knowledge and application of basic engineering principles and methods of Fluid Mechanics to improve understanding the technological and constructive issues within specific equipment for environment protection engineering in agriculture.

COURSE CONTENTS: Course: General consideration concerning Fluid Mechanics: Physical properties of ideal and real fluids. Fluid Hydrostatics: Considerations hydrostatic pressure; Hydrostatics basic equation of the in the terrestrial gravitational field; Pascal's principle; Euler equation; Hydrostatic force generated by the pressure on flat and curved surfaces. Fluid Dynamics: General hydrodynamics; Classification and defining of fluids movement; Continuity equation in integral form; Fluids flowing in pipes and channel: Basic equation of permanent flowing in pipes and channel. Laminar and turbulent flowing in circular pipe; Fluid leakage through the orifices, nozzles and overflow; Timing drain for reservoir with variable level; Channel optimal cross-section; Silt transport (transport of solid material); Permeability; Fluids flow through porous media. Hydraulic machines: Classification and defining hydraulic machines; Operating regimes for centrifugal pumps; Volumic pumps; Fans. Air hydrodynamics: Air flow in pipes; Air flow equations. Pressure and frictional losses. Filtration considerations. Functional dust filters characteristics; Types of filters; Smell sources; Air deodorizing systems.

Practical works: Fluids parameters measurement (temperature, pressure / vacuum, gas velocity). Bunker dis-charging using pneumatically shock waves. Storing and transporting IS CIR vessels for pressurized gas. Fluids filtration through porous adsorbent powder. Project: Pumps functional parameters (Q, H, NPSH); Pump calculation for free level aspiration, lower than pump level; Pump calculation for free level aspiration, above than pump level; Pump calculation for closed tank aspiration, when inside pressure is different from the atmospheric pressure.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (answers to exam 50%; final answers to periodical Laboratory Tests 30%; Laboratory Notebook and Project Notebook 20%).

COURSE TITLE: MECHANICAL ENGINEERING ELEMENTS
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CODE: D30IMAL434

ECTS CREDITS: 4

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): Knowledge and application of basic engineering principles and methods of Mechanical Engineering (specific for discipline Machines Elements) to improve understanding the techno-logical and constructive issues needed to operate general engineering processes within specific equipment for environment protection engineering in agriculture. Knowledge the principles for dimensioning and verification of mechanical assemblies and mechanical transmission components within specific equipment for environment protection engineering in agriculture.

COURSE CONTENTS: Consideration concerning of dimensional and shape accuracy of constituting parts in mechanical transmission: Tolerances and fits; Surface roughness. Permanent assemblies: Welded joints; Riveted joints. Removable assemblies: Threaded; Nuts; Shaped. Friction transmission: Belt drive transmission; Geometry of the V-belt transmission; Calculation of V-belt transmission. Spur gear transmission: Classification; Materials for the gears making; Geometry of cylindrical gears; Basic relations for spur gear; Spur gear basic law; Rack reference; Tooth profile; Gears damage; Load cyclogram characteristics; Forces in cylindrical spur gears; Sizing and verification calculation of cylindrical spur gears; General computing for inclined toothed spur gear. Axles and shafts: General; Materials; Shaft resistance calculi. Bearings: Classification; Materials for bearings; Sliding bearings; Rolling bearings; Bearings symbolization; Dynamic load capacity; Equivalent dynamic load. Couplings: Classification couplings; Couplings choosing calculus.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Rexam (answers to exam 50%; final answers to periodical Laboratory Tests 40%; Laboratory Notebook 10%).

COURSE TITLE: ECOLOGICAL AGROCHEMISTRY

CODE: D30IML435

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): To provide knowledge on ecological principles governing the chemical composition of plants and their nutrient uptake, in order to determine their nutritional requirements and to establish appropriate doses of organic, natural, and environmentally friendly fertilizers. To develop an understanding of soil ecological agrochemistry for harmonizing natural soil nutrient availability with crop requirements, enhancing nutrient cycling, and compensating for nutrient deficits through sustainable fertilization practices. To study acidic, alkaline, saline, and anthropogenically degraded soils from an ecological perspective, in order to establish agrochemical and fertilization measures that improve soil fertility, maintain soil biodiversity, minimize environmental impact, and ensure the long-term sustainability of horticultural ecosystems.

COURSE CONTENTS Purpose and development of ecological agrochemistry. Natural agrochemicals and environmentally compatible inputs. Fundamentals of ecological soil fertility in relation to horticultural plant biology. Soil as a living system and as a natural source of nutrients for horticultural plants. Organic matter dynamics and nutrient cycling in ecological systems. Improvement of ionic composition and enhancement of the productive potential of acidic, saline, and alkaline soils through ecological methods. Organic fertilizers, composts, green manures, and natural amendments as tools for maintaining soil fertility. Monitoring soil fertility status in ecological horticulture using agrochemical and biological methods. Principles and methods of rational and sustainable fertilizer use in fruit growing, viticulture, and vegetable cultivation within ecological systems.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Written exam (70%) and final evaluation of practical work (30%)

COURSE TITLE: PHYSICAL EDUCATION AND SPORTS
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CODE: D30IMAL436

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.

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%

COURSE TITLE: MODERN LANGUAGES**CODE:** D30IMAL437**ECTS CREDITS:** 2**TYPE OF COURSE:** Complementary

COURSE OBJECTIVE(S): Improving the ability to understand spoken English and specific vocabulary texts written in English; using a reference material especially designed for students of the Faculty of Horticulture, but also for those who want to learn ESP vocabulary in context. Practice of important vocabulary and grammar practice, tackle four skills, reading, listening, speaking and writing, explain specific vocabulary, and grammar lessons which are thought in detail, with exercises that give students useful practice in this particular area. True or false exercises, gap filling, matching the words with their definition, translations, in context dialogues and lessons with key bolded words are really selected for students to understand and use it correctly. Deepening the main grammar rules of English in a modern way, problematic, requiring students to learn but also to think. Consolidation of skills to dialogue, describe, report. Emphasizing the practical nature of learning, the course is meant to stimulate students' interest in written and spoken language, to improve knowledge and communication in English.

COURSE CONTENTS: Focus on language: Past Tense Simple/ Continuous, Vocabulary: The environmental impact of proposed construction projects. The effect of technological advances on the environment. Hazardous-waste management. Advice on treatment and containment. Municipal water supply and industrial wastewater treatment systems. The effects of acid rain, global warming, ozone depletion, water pollution and air pollution from automobile exhaust and industrial sources.

LANGUAGE OF INSTRUCTION: English**ASSESSMENT METHOD(S):** Checking (exam answers 80%, theoretical and practical checks 20%).**COURSE TITLE: ETHICS AND ACADEMIC INTEGRITY****CODE:** D30IML440**ECTS CREDITS:** 2**TYPE OF COURSE:** Complementary

COURSE OBJECTIVE(S): Familiarizing issues, concepts and ethical issues and professional deontology. Ensuring the knowledge and skills necessary for a research activity in accordance with the requirements of university ethics and deontology. Acquiring knowledge to draw up scientific communications

COURSE CONTENTS: Principles and values of academic ethical conduct Academic responsibilities and rights. Documentation techniques, source identification. Forms of citing sources. Communication of research results. Plagiarism, forms, ways of identification. Other forms of lack of academic integrity and ethics. The consequences of lack of ethics and academic integrity

LANGUAGE OF INSTRUCTION: Romanian**ASSESSMENT METHOD(S):** answers to exam 100%,**3RD YEAR, 1ST SEMESTER****COURSE TITLE: SOURCES, PROCESSES AND POLLUTING PRODUCTS****CODE:** D30IML541**ECTS CREDITS:** 4**TYPE OF COURSE:** Specialty

COURSE OBJECTIVE(S): To develop students' ability to identify, analyze, and assess pollution sources, processes, and products by applying modern methods for monitoring and diagnosing environmental factors, supporting informed decision-making for sustainable environmental management.

COURSE CONTENTS: Concepts regarding air, water, and soil pollution sources. Classification, pollutant types, and their effects. Investigation methods for atmospheric, surface water, groundwater, and soil pollutants (gravimetric, electrometric, spectrophotometric, colorimetric, etc.). Modern techniques for pollutant detection and quantification.

LANGUAGE OF INSTRUCTION: Romanian**ASSESSMENT METHOD(S):** Exam (70%). Laboratory activities (30%).**COURSE TITLE : ECOTECHNOLOGIES IN FRUIT GROWING****CODE:** D30IML542**ECTS CREDITS:** 4**TYPE OF COURSE:** specialty course

COURSE OBJECTIVE(S): To understand the evolution of anthropic orchard systems and the way fruit growing is being repositioned within the paradigm of sustainable development. Students will become familiar with the diversity of orchard systems and will be able to identify their structural and functional components. A central objective is to acquire competence in the propagation and production of planting material, as well as in the selection of assortments adapted to real growing conditions. The course also aims to develop the capacity to design soil management and efficient water management in ecological orchards. Modern technologies applicable to ecological fruit growing, including digitalization and monitoring systems, are presented and analyzed.

COURSE CONTENTS: The course covers the evolution of anthropic orchard systems and the principles of sustainable development applied in fruit growing, the types and structure of orchard systems, propagation technologies and the production of planting material, criteria for species and cultivar selection for organic orchard systems, soil and water management in ecological orchards, modern technologies for monitoring and decision support in fruit growing, and ecological strategies for preventing and controlling diseases and pests.

LANGUAGE OF INSTRUCTION: Romanian**ASSESSMENT METHOD(S):** Exam (60% written exam, 40% continuous assessment)

COURSE TITLE: ENVIRONMENTAL ECONOMICS**CODE:** D30IML543**ECTS CREDITS:** 4**TYPE OF COURSE:** Specialty

COURSE OBJECTIVE(S): Development of fundamental notions and concepts in understanding the environment-economy relationship. Acquisition of knowledge of the rational use of resources and the concept of sustainable development; Knowledge of sustainable development strategies at European and national level and environmental policies; Understanding the theoretical and applied significance and importance of the interaction between the economy and the natural environment and of the ecological crisis due to human activities; Adequate acquisition of specific methods and tools in the analysis, management and control of problems regarding the bioeconomy, balances and imbalances in the environmental economy.

COURSE CONTENTS: Introductory notions about ecology, economics, human needs and economic resources. The relationship between the environment and the economy – the economics of natural resources. Demand and supply: typology of demand and supply, elasticity of demand, elasticity of supply. Production cost: definition of cost, typology of costs, evolution of costs, cost efficiency. Environmental pollution – consequences of pollution and impact on the environment. Cost of pollution. Economic evaluation of natural resources and biodiversity. Challenges in biodiversity conservation. Ecological crisis of economic development. Equilibria and imbalances in the ecosphere. Climate change. Economic and financial measures: environmental policies, environmental taxes – economic instruments for environmental protection. Environmental externalities and their economic consequences. The concept of sustainable development and economic and financial implications. The ESG concept. Sustainable production and consumption. Ethics, economics and the environment. Circular economy. A framework for evaluating the merit/value of an environmental project: cost-benefit analysis, risk and uncertainty. Regional development policy in Romania. The economy of the future: identifying sustainable business opportunities.

LANGUAGE OF INSTRUCTION: Romanian**ASSESSMENT METHOD(S):** Exam answers 60%, periodical assessment active participation in the course, discussions 10%, activities such as essays/ projects 20%.**COURSE TITLE: TOXICOLOGY****CODE:** D30IMAL538**ECTS CREDITS:** 4**TYPE OF COURSE:** Specialty

COURSE OBJECTIVE(S): Acquiring basic and specific theoretical knowledge and the practical skills required to conduct work in toxicology laboratories and related fields.

COURSE CONTENTS: General Toxicology, Factors that affect toxicity, Toxicokinetics, Toxicodinamy, Combating toxic effects, Toxic and volatile substances, Toxics of a mineral nature, Toxicity of hydrocarbons,

Toxicity of alcohols, glycols, aldehydes and ketones, Toxic of plant and animal nature, Toxicity of phytosanitary substances, Toxicity of drugs and hallucinogenic substances

LANGUAGE OF INSTRUCTION: Romanian**ASSESSMENT METHOD(S):** Exam (exam answers 70%, final answers for workshops 10%, periodical assessment through practical tests 10%, activities such as homework/essays/papers/projects 10%).**COURSE TITLE: HIDROLOGY AND HIDROGEOLOGY I****CODE:** D30IML545**ECTS CREDITS:** 5**TYPE OF COURSE:** Specialized discipline

COURSE OBJECTIVE(S): The course aims to provide an integrated understanding of the water cycle and the processes governing the dynamics of the hydrosphere. Emphasis is placed on understanding hydrological and hydrogeological phenomena, analyzing interactions between surface and groundwater, and identifying natural and anthropogenic factors influencing the hydrological regime.

The course also focuses on developing practical skills for measuring, processing, and interpreting hydrological and hydrogeological data, essential for assessing and managing water resources in a sustainable manner.

COURSE CONTENTS: Understanding basic hydrological and hydrogeological processes. Identifying and characterizing surface and groundwater sources. Applying methods for measuring and analyzing water parameters. Interpreting hydrological and hydrogeological data for water resource assessment.

LANGUAGE OF INSTRUCTION: Romanian**ASSESSMENT METHOD(S):** Exam (60%). Laboratory activities (40%).**COURSE TITLE: INTEGRATED WASTE MANAGEMENT I****CODE:** D30IML546**ECTS CREDITS:** 5**TYPE OF COURSE:** Specialty

COURSE OBJECTIVE(S): The course aims to provide fundamental knowledge on the principles, legal framework, and methods of integrated waste management. Students will learn to identify waste generation sources, apply the waste management hierarchy, and analyze environmental impacts. Emphasis is placed on pollution prevention, recycling, and the circular economy concept.

COURSE CONTENTS: General concepts and classification of waste. Waste generation sources and types. National and EU legislative framework on waste management. Integrated management stages: collection, transport, disposal, recovery. Pollution prevention and source reduction strategies. Circular economy principles.

LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (60%), final answers to practical laboratory work 40%).

COURSE TITLE: METEOROLOGY AND CLIMATOLOGY

CODE: D30IMAL547

ECTS CREDITS: 4

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): Knowledge of notions, concepts, laws and principles specific to physics with implications in phenomena that determine the state of the atmosphere. Knowledge of physical monitoring methods, physical techniques of atmospheric investigation. Increasing knowledge on specific terms atmospheric physics, meteorology and climatology, phenomena and laws that govern them, similarities and differences between them. Knowledge of applications specific to atmospheric physics, meteorology and climatology and recording and research apparatuses of importance in agricultural meteorology. The discipline aims at explaining the phenomena, processes, applications and devices according to the main meteorological parameters, characteristics of the environment. Students have to explain the involvement of each process in the proper functioning of the atmosphere (at all levels) or to interpret the evolution of the system based on the evolution of environmental factors.

COURSE CONTENTS: Diffusion and absorption of radiation. Direct and diffused solar radiation. Terrestrial radiation and atmospheric radiation. The greenhouse effect, the radiation balance of the surface and the atmosphere. The specific radiation regime of some regions. Soil thermal regime. The caloric properties of the soil. Periodic variations in surface temperature. Deep soil temperature variations. The influence of various factors on soil temperature. Water as active surface. The thermal regime of the air. Thermodynamics of the atmosphere. Periodic variations in air temperature. Variation of air temperature with height. Radiation inversions. Thermal properties of the boundary layer. Particularities of temperature distribution. Geographic distribution of temperature. Atmospheric humidity and its sources. Evaporation. Hygrometric sizes. Variations in humidity. Condensation, condensation types. Water vapor condensation products. Clouds and showers. Cloud. Atmospheric precipitation. The precipitation genesis. Types of precipitation. Precipitation regime. Geographic distribution. Air pressure. The forces of nature involved in winds. Notions of Climatology. The climate of Romania and the climate of Europe.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Verification (answers to verification 60%, periodic answers to practical work 10%, results to periodic control works 30%).

3RD YEAR, 2ND SEMESTER

COURSE TITLE: ENVIRONMENTAL AUDIT

CODE: D30IMAL649

ECTS CREDITS: 3

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): The content of the discipline will track the transmission of related knowledge.

Knowledge of the elements necessary for carrying out an environmental audit, Define the principles and laws applicable in the conduct of the audit environment, Use of related domain tools to validate an audit process, Critical evaluation of the options for the stages of the implementation process an audit program.

COURSE CONTENTS: Fields of application, Terms of reference, Regulatory references; Conducting an environmental audit program, Objectives of the environmental audit program, The procedures of an audit program, Implementation of Audit Program, Record audit progress

Monitoring and analyzing audit progress, Audit activities, Preparation, approval and distribution of the audit report. Audit within the Environmental Management System, Follow-up of audit results, ISO 19011 Guide to Systems Auditing Quality and/or environmental management, ISO 14001 Environmental Management Systems. Requirements with user guide, Structure and content of the management system manual integrated quality – environment.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (examination 70%, activities such as papers/projects 30%).

COURSE TITLE: PROTECTED NATURAL AREA

CODE: D30IMAL434

ECTS CREDITS: 3

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): Familiarization of master students with the current and varied problems related to the potential of protected areas, with emphasis on the "protection and preservation of the environment" aspects.

COURSE CONTENTS: Conservation of plant diversity at global and regional level (Global Plant Conservation Strategy & European Plant Conservation Strategy). Important areas of protection: the conceptual framework; The European program to identify the most important areas of protection; Identifying the most important areas of protection in Romania. Conservation of Plant Diversity: European and Global Coordinates. Plant diversity in the general context of biodiversity conservation. International instruments created for the purpose of biodiversity conservation. International organizations. Implementation of international standards on biodiversity conservation, infrastructure creation and access to programs. Botanical garden involvement in the overall biodiversity conservation process, strategic directions for the development of scientific research aimed at plant preservation. Classification systems and protected area categories. List of threatened species at global, European, endemic and subendemic level. Special areas for the protection and conservation of plants in Romania. Protected areas from other regions of the globe.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: ECOLOGICAL RECONSTRUCTION AND PLANNING

CODE: D30IML652

ECTS CREDITS: 3

TYPE OF COURSE: Speciality

COURSE OBJECTIVES: To provide knowledge and skills in the ecological reconstruction of degraded areas and the planning, design, and management of sustainable landscapes. The course aims to develop students' ability to analyze degraded ecosystems, propose ecological rehabilitation measures, and integrate environmental, aesthetic, and functional criteria in landscape design. It also focuses on the principles of sustainable land use, biodiversity conservation, and the rehabilitation of ecosystems affected by industrial and agricultural activities.

COURSE CONTENTS: Definition and objectives of ecological reconstruction and landscape planning. Types and causes of land degradation. Methods of ecological restoration and soil rehabilitation. Principles and techniques of landscape design and ecological landscaping. Use of vegetation in land reclamation and landscape restoration. Planning and design of green areas, ecological corridors, and buffer zones. Restoration of habitats affected by mining, erosion, or pollution. Integration of ecological and aesthetic criteria in landscape projects. Case studies of ecological reconstruction and landscape rehabilitation in Romania.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Written exam (80%) and final evaluation of laboratory and project work (20%).

COURSE TITLE: MANAGEMENT OF ECOLOGICAL VITICULTURAL SYSTEMS
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CODE: D30IML652

ECTS CREDITS: 3

TYPE OF COURSE: Specialized

COURSE OBJECTIVE(S): Knowledge of the structure, functions and productivity of the wine ecosystems; Knowledge of the main technological systems practiced in viticulture agro ecosystem and their impact on the environment; Promotion of sustainable cropping techniques and technologies compatible with sustainable viticulture; Acquisition of study methods of viticulture agro ecosystems.

COURSE CONTENTS: The viticultural ecosystem: structure, origin and evolution, characteristics. Biotope factors and their influence in the viticultural ecosystem. Structure of the viticultural biocenosis; interactions in the biocenosis. Productivity of wine ecosystems, valorization and quality of grape production. Întreținerea plantațiilor viticole. Sustainable viticulture and digitalization. Viticulture zoning in Romania

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Examination (examination answers 60%, final answers for workshops 40%).

COURSE TITLE: PLANT PROTECTION AND THE ENVIRONMENT

CODE: D30IMAL654

ECTS CREDITS: 3

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): Knowledge of plant protection issues as a link between culture technologies. Knowledge of morphological, bio-ecological peculiarities of cultivated plants pests. Knowledge the particularities of the methods, means and measures for prevention and control, the way of action and the reaction of the pest against them. Knowledge of the European Union's phytosanitary legislation. Normative acts for plant protection products and pesticide residues. Student knowledge and deepening of plant protection issues as a link between crop technologies and the establishment of pest control strategies for organically grown plants, taking into account the biological characteristics of the pest and the host plant.

COURSE CONTENTS: Insects general characters, Anatomy and physiology of insects, Insect biology, Ecology of insects, Systematic insects (recognition of pests from: Ord. Orthoptera, Ord. Blattaria, Ord. Dermaptera, Ord. Thysanoptera, Ord. Heteroptera, Homoptera, Ord. Hymenoptera, Ord. Coleoptera, Ord. Lepidoptera, Ord. Diptera), Preventive methods for controlling animal pests (phytosanitary quarantine, forecasting and warning, phytosanitary control, agrofitechnics), Biological methods for control of animal pests, Territorial planning methods to increase the role of predators and parasites in combating crop pests., Phytosanitary and environmental legislation.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 80%, continuous assessment throughout semester 20%).

COURSE TITLE: HYDROLOGY AND HYDROGEOLOGY II
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CODE: D30IMAL656

ECTS CREDITS: 3

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): Defining the study topic of hydrology and the implications of the branches of hydrology in the system of environmental protection sciences.

COURSE CONTENTS: Groundwater, Groundwater Action on earth's surface, Groundwater Circulation, Improvements in groundwater hydrology.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: INTEGRATED WASTE MANAGEMENT II

CODE: D30IML658

ECTS CREDITS: 4

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): The course deepens the applied aspects of waste management, including modern technologies for recovery, treatment, and recycling, as well as environmental impact assessment methods. It aims to develop competencies for designing integrated

waste management plans and implementing sustainable management systems.

COURSE CONTENTS: Modern technologies for waste collection, sorting, and recycling. Energy recovery from waste. Waste disposal. Environmental impact assessment and Life Cycle Analysis (LCA). Information systems for waste management. Development of local and regional integrated waste management plans.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Colloquium (70%). Laboratory activities (30%).

4TH YEAR, 1ST SEMESTER

COURSE TITLE: MANAGEMENT OF VEGETABLE GROWING SYSTEMS

CODE: D30IML761

ECTS CREDITS: 3

COURSE TYPE: Specialty

COURSE OBJECTIVES: Knowledge of vegetable growing agroecosystems, their organization and functioning, as well as their importance for vegetable farming practice. Study of the structural and functional particularities of vegetable growing ecosystems – properties, stability, complexity.

COURSE CONTENT: Knowledge and in-depth study of the biological and ecological particularities of vegetable species in relation to cultivation technologies. Knowledge of the factors that can disrupt the vegetable growing ecosystem. Interactions and relationships that are established within a vegetable growing ecosystem and their management. Acquisition of organizational and decision-making capacity in the design, arrangement and maintenance of a vegetable farm, as well as ensuring correct and sustainable management.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): exam answers 70%; mid-term assessment 30%

COURSE TITLE: FUNDAMENTALS OF EMERGENCY MANAGEMENT

CODE: D30IML763

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): The course aims to provide students with fundamental knowledge of concepts, principles, and mechanisms of emergency management, emphasizing prevention, preparedness, response, and post-disaster recovery. It analyzes the main natural and anthropogenic hazards, the legal and institutional framework, and the roles of organizations involved in civil protection and environmental safety.

COURSE CONTENTS: General concepts on risks and emergency situations. Types of emergencies: natural, technological, biological, social. Phases of emergency management: prevention, preparedness, response, recovery. Structure of the National Emergency Management System. Legislation on civil protection and environmental safety. Protective measures for population and environment. Roles of public authorities and institutional cooperation. Case studies on natural disasters and industrial accidents.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Colloquy (70%). Laboratory activities (30%).

COURSE TITLE: BASES OF EXPERIMENTAL RESEARCH

CODE: D30IML764

ECTS CREDITS: 5

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): Knowledge of the role, importance and peculiarities of biostatistics and research in biology and ecology. Defining research objectives, methodologies and techniques, set up experiments, data collection, calculus and inference. Capitalization of experimental results.

COURSE CONTENTS: Role, importance, objectives and peculiarities of biostatistics, biometry and ecology research. Design and organization of research in ecology. Extraction of samples for analysis. Measurement errors in environmental field experiments. Methods of setting up monofactorial and polyfactorial trials (randomized blocks, Latin square, Latin rectangle, balanced square lattice). Parameters and estimators in statistics (variance, standard deviation, coefficient of variation, correlation, regression). Statistical hypothesis testing, F, *t* and Duncan tests. Analysis of variance. Interpretation and use of experimental results in ecology.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (70% of the final grade represent the response to the written theoretical questions and 30% of the final grade the answers to laboratory tests).

COURSE TITLE: ENVIRONMENTAL QUALITY MONITORING

CODE: D30IML766

ECTS CREDITS: 5

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): Acquiring basic, theoretical and practical notions regarding the monitoring of environmental pollutants and methods of investigating environmental quality; Reducing the impact of pollution on the environment. Correct use of specialized terms in the field of environmental protection and environmental quality monitoring equipment; Managing and implementing specific databases and applying European standards for the reduction of environmental pollutants; Ability to inform and raise public awareness regarding the harmful actions of pollution and the changes that occur in the environment and the measures that must be applied in order to remedy environmental quality.

COURSE CONTENTS: General considerations regarding environmental quality monitoring. Evolution and current issues of environmental quality monitoring. Environmental quality monitoring and control. Stages of environmental monitoring. The need to establish an environmental monitoring network. Ensuring and controlling sample quality. Air quality monitoring. Sources of atmospheric pollution. National Air Quality Monitoring System. Air quality monitoring networks. Emission monitoring. Air pollution norms and directives. Methods for determining air pollutants. Dispersion of

pollutants in the atmosphere. Water quality monitoring. Types and sources of water pollution. Purpose and objectives of water quality monitoring. Integrated water monitoring system in Romania. Groundwater monitoring. Surface water monitoring. Water Framework Directive. Soil quality monitoring. Sources of soil pollution. Soil pollution assessment. Noise monitoring. Sound pollution. Legislation in the field of noise pollution. Radioactivity monitoring. General notions of pollution and air monitoring inside buildings.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 70%, periodic evaluation through practical tests/homework/essays/projects 30%.

COURSE TITLE: THE BASES OF EMERGENCY SITUATIONS MANAGEMENT

CODE: D30IMAL763

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): To develop a theoretical and practical basis in the field of emergency management. Understanding the causes and consequences of a disaster, as well as acquiring general knowledge related to emergency response; detailed knowledge and implementation of the emergency prevention activities; understanding the roles of institutions and organizations involved in emergency management; acquiring the ability to analyze and take decisions.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 70%, final answers to seminar - 30%).

COURSE CONTENTS: Introduction, definitions: hazard, risk, vulnerability. Evolution of disasters. Introduction, definitions and terms used in emergency management. History of Civil Protection in Romania. National Emergency Situation Management System - presentation, structure, attributions of ministries. Legislative aspects in the field of emergency management. Actors involved in emergency management. Measures for non-structural risk reduction in emergency management. Measures for structural reduction of risks in the management of emergency situations. Prevention and preparation for emergencies. Plans, reports, programs in the field of emergency management. Response in the event of an emergency. Stage of recovery after an emergency. Volunteering in Emergency Management.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 70%, final answers to seminar - 30%).

COURSE TITLE: GEOGRAPHIC INFORMATION SYSTEMS (GIS) APPLIED TO THE ENVIRONMENT

CODE: D30IML 767

ECTS CREDITS: 5

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): To develop the necessary competencies for starting a GIS project.

Acquisition of diverse types of spatial data.

Editing spatial data.

Integrating spatial data into a GIS project.

Performing spatial analyses in a GIS environment

COURSE CONTENTS: Introduction, basic GIS concepts, geographical reality and its representation, conceptual models, data structures.

Presentation of types and sources for spatial data acquisition (maps, Digital Elevation Models (DEMs), satellite imagery, geostatistical data, thematic data like CORINE, and geographic portals like INSPIRE, GEOSS).

Geographic projections, datum, coordinate systems, georeferencing, GPS.

Primary data acquisition methods (field measurements, GPS, photogrammetry, remote sensing).

Secondary data acquisition methods (scanning, digitization/vectorization, editing, classification).

Future data acquisition methods (automatic classification and extraction of elements of interest, sensors).

Stages of realizing a project in the GIS environment – from concept to implementation.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (70% of exam answers, 30% of final answers to workshops).

COURSE TITLE: LEGISLATIVE AND TECHNICAL REGULATIONS IN ENVIRONMENTAL PROTECTION I

CODE: D30IML768

ECTS CREDITS: 3

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Knowledge of the legislation on the legal protection of environmental factors and of national and international structures with responsibilities in the field of environmental protection. Development of skills in obtaining and processing environmental data, in order to reduce the impact of pollutants on the environment. Acquisition of the necessary skills for the correct interpretation and application of laws in order to carry out competent control.

COURSE CONTENTS: Introductory notions regarding the environment. The phenomenon of pollution. The purpose and importance of environmental protection. General considerations regarding environmental law. The object of environmental law. Sources of environmental law. Principles of environmental law. Environmental legislation of the European Union and Romania. National and international structures with responsibilities in the field of environmental protection. Authorization of activities with environmental impact. Environmental impact assessment. Authorization procedure. Environmental balance and compliance program. Environmental authorizations. Environmental opinion, agreement and authorization. Legal liability in the field of environmental protection. The notion of liability in environmental law. Contravention liability. Legal protection of the air. Atmospheric pollutants and their mode of action. Effects of atmospheric pollution on plant organisms, animals and humans. National and international legal framework regarding the atmosphere. Legal protection of water. Water pollutants and their mode of action. Effects of water pollution on plant

organisms, animals and humans. National and international legal framework regarding surface and groundwater. Legal protection of soil. Soil pollutants and their mode of action. Effects of soil pollution on plant, animal and human organisms. National and international legal framework regarding soil and subsoil. Conservation of biodiversity. Regime of protected areas. Regime of hazardous substances and waste. Risk assessment. Safety report.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 80%, periodic assessment through activities such as assignments/essays/projects 20%.

4TH YEAR, 2ND SEMESTER

COURSE TITLE: ENVIRONMENTAL IMPACT ASSESSMENT

CODE: D30IML869

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Knowledge and appropriate use of quantitative and qualitative assessment methods of the environmental impact of anthropogenic activities. To develop the ability to evaluate and estimate the legislative and application context by activity sectors, regarding the best technologies with reduced environmental impact. Acquiring the knowledge necessary to obtain useful information for the preparation and drafting of an impact study (environmental impact report). Developing the skills to apply in practice some methods of assessing the environmental impact of an industrial activity.

COURSE CONTENTS: Environmental impact assessment (process, procedure) – definition, evolution and approach to the assessment. Stages of environmental impact assessment. Process structure. Stages of the environmental impact assessment activity. Procedure for issuing the environmental agreement (Submission of the application and its initial assessment, Project scoping stage, Checklist at the activity scoping stage, Stage of defining the scope of the assessment and preparing the report on the assessment study, Checklist at the activity definition stage, Technical memorandum required for issuing the environmental agreement, Public information and participation in the environmental impact assessment procedure). The procedure for issuing environmental permits (Issuance of environmental permits, Presentation and declaration sheet, Public debate procedure. Environmental impact assessment in protected natural areas. Appropriate assessment. Environmental impact assessment in industrial activities. Assessment of the effects of certain plans and programs on the environment (Strategic Environmental Assessment, EIA) - objectives, conditions, criteria, stages, national and European regulations.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 70%, periodic evaluation through practical tests/homework/essays/projects 30%.

COURSE TITLE: ECOLOGICAL MANAGEMENT

CODE: D30IMAL870

ECTS CREDITS: 4

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): To define the concepts of ecological management, sustainable development, natural capital, socio-economic systems, deterioration of natural capital, ecosystem management, total economic value of ecological resources, ecological economy; To identify the purpose and functions of ecological management and sustainable development; To identify strategies for sustainable development; To report on the mechanisms and tools of environmental management; To relate environmental policies and legislation, the institutional framework in terms of environmental protection.

COURSE CONTENTS: Environment and Sustainable Development; The content and meaning of the concept of sustainable development; Strategies for achieving sustainable development, Technocentrism and ecocentrism in the sustainable development approach; Sustained human development - an essential component of quality of life., environmental management of pollution; Ecology of atmospheric pollution; Ecology of water pollution; Ecology of soil pollution; Ecology of pollution for other situations, Waste management; Classification of waste; Methods of recovery and disposal of waste; The responsibility of producers and consumers in waste generation. Evaluating and authorizing activities with an impact on the environment; System for the assessment and authorization of activities with environmental impact; Audit in environmental management systems. National System of Accounts and Environment; Integrated economic and environmental accounting; Environment in the National System of Accounts; Methodology of environmental accounting. Environmental expenditures; Principles of environmental accounting; The costs of deteriorating the natural environment. Ecological management system; Specific requirements for an ecological management system; The advantages of an ecological management system; Principles of an environmental management system, Environmental monitoring; Environmental Monitoring Concept; Components of the monitoring system; The environmental data required for the monitoring system; Quantitative indicators of the natural environment. Environmental policy and legislation; EU and Romanian environmental legislation; World and Romanian environmental institutions.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (axamination 80%, activities such as papers/projects 20%).

COURSE TITLE: TECHNOLOGIES AND BIOTECHNOLOGIES FOR ENVIRONMENTAL DE POLLUTION

CODE: D30IML871

ECTS CREDITS: 4

TYPE OF COURSE: Specialty

COURSE OBJECTIVE(S): The course aims to present modern technologies and biotechnological methods used for reducing and removing pollutants from air, water, and

soil. It focuses on developing theoretical and practical skills regarding physical, chemical, and biological depollution processes, as well as selecting appropriate technologies based on pollutant type and affected environmental medium.

COURSE CONTENTS: Classification of depollution technologies: physical, chemical, and biological. Physical treatment processes: sedimentation, filtration, adsorption, reverse osmosis. Chemical processes: neutralization, oxidation-reduction, precipitation. Biotechnologies for wastewater treatment: activated sludge, bioreactors, phytoremediation. Bioremediation of contaminated soils and groundwater. Air depollution technologies: absorption, scrubbing, biofiltration. Microorganisms involved in depollution processes. Selection criteria and efficiency of treatment technologies. Case studies on the application of integrated depollution technologies.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (70%). Laboratory activities (30%).

COURSE TITLE: CONSERVATION AND VALORIZATION OF ORNAMENTAL FLORA BIODIVERSITY

CODE: D30IML871

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Knowledge of the importance and necessity of ornamental flora biodiversity conservation. Knowledge of the possibilities of valorization of spontaneous and cultivated ornamental flora in order to improve the quality of the environment.

COURSE CONTENTS: Biodiversity (concept, importance, general notions). Methods for conservation the biodiversity of ornamental species. Classification of ornamental plants. Relationships of ornamental plants with environmental factors. Valorization for ornamental purposes of cultivated species and the biodiversity of spontaneous flora.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 70%, final answers to practical works 30%)

COURSE TITLE: HYDROTECHNICAL DEVELOPMENTS AND CONSTRUCTIONS

CODE: D30IML873

ECTS CREDITS: 4

TYPE OF COURSE: specialty

COURSE OBJECTIVE(S): Acquiring basic, theoretical and practical notions regarding the design, arrangement and operation of hydrotechnical constructions; Developing the skills of obtaining and processing environmental data, in order to reduce the impact of pollutants on the environment. The ability to inform and raise public awareness regarding the harmful actions of pollution and the changes occurring in the environment and the measures that must be applied in order to remedy the quality of the environment.

COURSE CONTENTS: General notions. Brief history of hydrotechnical arrangements and constructions in Romania.

Specific elements of hydrotechnical constructions. Classification of hydrotechnical arrangements. Objectives associated with hydrotechnical arrangements. Categories of uses ensured by hydrotechnical constructions. Hydropower arrangements. Hydropower potential of watercourses. Energy parameters of hydroelectric plants. Studies necessary for the design of a hydroelectric power plant. Forces acting on a CH. Dams for water accumulation. Definition. Evolution. Classification. Construction materials.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 70%, periodic evaluation through practical tests/homework/essays/projects 30%.

COURSE TITLE: LEGISLATIVE AND TECHNICAL REGULATIONS IN ENVIRONMENTAL PROTECTION II

CODE: D30IML874

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Correct use of specialized terms in the field of environmental protection and their application to assess the performance of a technological process in accordance with environmental legislation. Knowledge of the principles and laws regarding the protection of environmental factors applicable in ecology and environmental protection. Ability to inform and raise public awareness regarding the harmful actions of pollution and changes occurring in the environment and the technical and legislative measures that must be applied in order to remedy and protect environmental quality.

COURSE CONTENTS: Theories on determining environmental impact. The role of technology in promoting sustainable development. Concepts of environmental public policy, public policy actors, evolution of environmental public policies and the field of environmental protection. European Union environmental policy, the role of the EU in the policies of the member states, principles. List of activities with significant environmental impact (Order no. 876/20.12.2004). Conventional and unconventional exploitation. Urban development and transport. Agriculture. Energy production. Criteria and methods for assessing the level of pollution. Analysis of environmental problems and environmental policies. Climate change. National system for monitoring environmental factors. Scheme for issuing environmental permits. Examples of violations of legislative norms and environmental impact assessment - case study.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam answers 80%, periodic assessment through activities such as assignments/essays/projects 20%.

COURSE TITLE: COMMUNICATION

CODE: D30IMAL870

ECTS CREDITS: 4

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Knowledge and deepening of the students with some fundamental concepts that

define communication in a knowledge-based society, modern means of communication and documentation that make it possible to access virtual information resources on the Internet. The technical and applicative learning of professional knowledge regarding: Preparing and supporting an oral presentation, Preparing for the interview, Drawing up a curriculum vitae, Writing a letter of intent / motivation, Drawing a business card, Drawing an invitation.

COURSE CONTENTS: Communication and language; Nonverbal communication; Mass Communication; Communication within working groups; Oral Communication (Preparation and support of an oral presentation; Preparing for the interview); Written communication (Writing a curriculum vitae; Writing a letter of intent/motivation, The structural requirements of a scientific work; Drawing a business card; Drawing an invitation; Press Release)

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Colloquy (exam answers 50%, activities such as homework/ essays/papers/translations/projects 50%).