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

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PACKAGE OF COURSES
Bachelor study program: HORTICULTURE

This is the package of course of bachelor study program of Horticulture from the University of Craiova / the Faculty of Horticulture /The Department of Horticulture and Food Science.

FIELD: HORTICULTURE
PROGRAMME TITLE: HORTICULTURE
BACHELOR'S DEGREE

1ST YEAR, 1ST SEMESTER

COURSE TITLE: INFORMATICS

CODE: D29HCL101
ECTS CREDITS: 5
TYPE OF COURSE: Fundamental
COURSE OBJECTIVES: using computer tools to solve problems in the field of specialization; creating documents in a form that is most appropriate for the purpose for which they were created; approaching, on different levels of complexity, computerized text processing, through examples; computer modeling of engineering processes; exemplifying the diversity of fields in which Word can be used and processing and interpreting data using Excel spreadsheets.
TOPICS: Windows operating systems: general presentation; applications running in the Windows environment; utilities; Windows Explorer. Microsoft WORD: Creating/saving/opening/closing a file. Page setup: page margins, page dimensions, page orientation, page header and footer options; viewing Print Preview. Moving/copying/pasting; selecting text; searching and replacing, moving around in the document. Document viewing; creating header and footer, ruler, toolbars. Inserting into a file: page numbers; page/section breaks; footnotes; inserting a drawing, diagram, object, text box. Text formatting – specifying all formatting attributes. Creating numbered/bulleted/hierarchical lists; applying borders and shadows. Formatting text in columns, specifying TAB positions and guide characters. Inserting a table, working with tables. Creating drawings: Drawing toolbar; inserting equations into the document. Microsoft EXCEL: Excel working environment. Data types; entering and editing data. Formatting spreadsheets. Working with data: sorting; querying/filtering; creating links. Working with formulas. Using functions: time and date functions; mathematical functions; statistical functions; financial functions. Creating and editing diagrams: Wizard application for creating diagrams; diagram types; editing and formatting diagrams. Data analysis: pivot tables; scenarios/variants**.**
LANGUAGE OF INSTRUCTION: Romanian
KNOWLEDGE EVALUATION: exam answers 50%, laboratory activity 50%

COURSE TITLE: BOTANY I

CODE: D29HCL102
ECTS CREDITS: 5
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): Ability to understand the morphological and structural characteristics of vascular plants, knowledge that will underpin the study of horticultural plants studied at the specializations of the following years of study. The ability to correlate the morphological and structural notions of horticultural plants in the technological process, in order to achieve productive performance results.
COURSE CONTENTS: Objective and methods of investigation. Botanical subdivisions. Development of botany in the world and in Romania. Plant cytology. Plant histology. Organography. The plant organs. Vegetative and reproductive organs.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (final theoretical exam 70%, final practical exam 30%).

COURSE TITLE: PEDOLOGY

CODE: D29HCL103
ECTS CREDITS: 5
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): Pedology is an interdisciplinary science located at the intersection of fundamental sciences (Physics, Chemistry, Biochemistry) and natural sciences (Geology, Geodesy, Climatology, Microbiology), as well as applied sciences (Agrotechnics, Agrochemistry, Forestry, Applied Engineering Sciences). Based on field and laboratory research, Pedology classifies soils according to their genesis and agro-productive properties.
The object of study in Pedology is the soil, which is a product of the natural environment and plays an important role due to the connections it establishes with all other components of the ecosystem.
COURSE OBJECTIVE(S): The course refers to the role of pedogenetic factors in the evolution of soils; to the processes of formation of the mineral and organic parts of the soil; to the processes of formation of soil profiles and horizons, and their identification based on morphological characteristics; as well as to the physical, hydro-physical, and chemical properties of soils.
In the second part of the course, the Romanian system of soil taxonomy and the description of soil types found on the territory of Romania are presented. All this knowledge helps to decipher the complex process of soil formation and its evolution over time.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (final theoretical exam 70%, final practical exam 30%).

COURSE TITLE: PEDOLOGY

CODE: D29HCL103
ECTS CREDITS: 5
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): Pedology is an interdisciplinary science located at the intersection of fundamental sciences (Physics, Chemistry, Biochemistry) and natural sciences (Geology, Geodesy, Climatology, Microbiology), as well as applied sciences (Agrotechnics, Agrochemistry, Forestry, Applied Engineering Sciences). Based on field and laboratory research, Pedology classifies soils according to their genesis and agro-productive properties.
The object of study in Pedology is the soil, which is a product of the natural environment and plays an important role due to the connections it establishes with all other components of the ecosystem.
COURSE CONTENTS: The course refers to the role of pedogenetic factors in the evolution of soils; to the processes of formation of the mineral and organic parts of the soil; to the processes of formation of soil profiles and horizons, and their identification based on morphological characteristics; as well as to the physical, hydro-physical, and chemical properties of soils.

In the second part of the course, the Romanian system of soil taxonomy and the description of soil types found on the territory of Romania are presented. All this knowledge helps to decipher the complex process of soil formation and its evolution over time.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (final theoretical exam 70%, final practical exam 30%).

COURSE TITLE: MECHANIZATION

CODE: D29HCL104
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the construction and operation of horticultural machinery and equipment and also the complex influences that are established between their working organs, with soil and plants; knowledge the optimization of the working parameters of the formed aggregates and their role in establishing differentiated technologies; establishing the machine system according to the biological features of the cultivated plants, the values of the ecological factors and the environment protection.
COURSE CONTENTS: Presenting some notions regarding: mechanization technologies; soil working machines; machines for preparing the germinating bed; sowing machines; planting machines; machinery and equipment for the application of fertilizers and amendments; plant protection machinery; horticultural crop maintenance machines; horticultural crops harvesting machines; vegetable harvesting machines; fruit and grape harvesting machines; machinery for conditioning and preserving horticultural products; operation of horticultural machines.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers to exam 60%, final answers to Laboratory works 40%).

COURSE TITLE: AGROCHEMISTRY

CODE: D29HCL105
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): To provide knowledge on the chemical composition of plants in order to determine their nutritional requirements and to establish appropriate doses of chemical and organic fertilizers. To develop an understanding of soil agrochemistry for harmonizing soil nutrient availability with crop requirements and compensating for nutrient deficits through fertilization. To study acidic, alkaline, and anthropogenically degraded soils in order to establish agrochemical and fertilization measures that improve their fertility while minimizing environmental impact and ensuring the long-term sustainability of horticultural systems.
COURSE CONTENTS: Purpose and development of agrochemistry. Agrochemicals. Fundamentals of soil fertility in relation to horticultural plant biology. Soil as a source of nutrients for horticultural plants. Improvement of ionic composition and enhancement of the productive potential of acidic, saline, and alkaline soils. Fertilizers as a means of increasing horticultural production and maintaining soil fertility. Monitoring soil fertility status for horticultural plants using agrochemical methods. Principles and methods of rational fertilizer use in fruit growing, viticulture, and vegetable cultivation.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Written exam (70%) and final evaluation of practical work (30%)

COURSE TITLE: INTRODUCTION TO HORTICULTURE

CODE: D29HCL106
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the importance of horticulture and the main sectors of production in the horticultural field. Knowledge of general notions regarding the structure, growth and development of horticultural plants, requirements for environmental factors, propagation methods and possibilities for valorization of horticultural products.
COURSE CONTENTS: Definition and importance of horticulture. Classification of horticultural plants. Biological bases of horticultural plants. Relationships of horticultural plants with environmental factors. Propagation of horticultural plants. Harvesting and valorization of horticultural products.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (70% exam answers, 30% answers to practical works).

COURSE TITLE: PHYSICAL EDUCATION

CODE: D29HCL217
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: main elements of long jumps and speed running; Application routes combined with treadmills; Application routes combined with jumping elements; Application routes combined with balance, climbing, climbing, etc.; 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%

COURSE TITLE: ENGLISH LANGUAGE

CODE: D29HCL215
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: Horticulture is the branch of agriculture that deals with the art, science, technology, and business of growing plants. It also is the study of plants. It includes the cultivation of medicinal plants, fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds and non-food crops such as grass and ornamental trees and plants.

LANGUAGE OF INSTRUCTION: English

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

COURSE TITLE: FRENCH LANGUAGE

CODE: D29HCL216

ECTS CREDITS: 2

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Improving the ability to understand spoken French and specific vocabulary texts written in French, using a reference material especially designed for students of the Faculty of Horticulture, Horticulture Specialization, but also for those who want to learn vocabulary in context. Practice of important Horticulture 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 French 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 French.

COURSE CONTENTS: Focus on language, Vocabulary: Landscape. Scale and heterogeneity (incorporating composition, structure, and function). Patch and mosaic. Boundary and edge. Ecotones, ecoclines, and ecotopes. Disturbance and fragmentation. Theory. Application. Research directions.

LANGUAGE OF INSTRUCTION: French

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

1ST YEAR, 2ND SEMESTER

COURSE TITLE: MATHEMATICS

CODE: D29HCL208

ECTS CREDITS: 3

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Determination of lengths, areas and volumes of geometric objects. Solving specific problems of linear programming, such as crop distribution, setting feed ration for animal feed and working technology, based on matrix computing techniques. 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, indi-cators of the variations and moments).

COURSE CONTENTS: Measurement of lengths, areas and volumes. Linear programming. The calculus of probabilities. Elements of mathematical statistics.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: BOTANY II

CODE: D29HCL209

ECTS CREDITS: 5

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Studying and recognizing the main vascular plants, assimilating the main methods of plant investigation; Recognition of the main groups of the studied organisms; Differentiation between the main groups of the studied organisms; Knowledge of the ecology of the analyzed species and the presentation of the practical and scientific importance of plants.

COURSE CONTENTS: Introduction: Definition and object of study; Research methods; Systematic units (taxa); Plant nomenclature; Short history; Classification systems. Regnum Plantae sensu lato: What are plants (Plantae); Taxonomic considerations; The diversity of green plants sensu stricto; Phylogeny; Green algae: Charophyta. General characters; The importance of green algae. Regnum Plantae sensu strictissimo: Diversity and classification; Bryophytes - Non-vascular plants; Tracheophytes (Cormobionta, Tracheobionta) - Plantae vasculares: The origin and meaning of tracheophytes evolution; General characters; Systematic. Phyl. Pteridophyta (Ferigi) and Spermatophyta (gimnosperm and angiosperms); General characters, scientific and practical importance. Representatives.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: THE HISTORY OF GARDENS AND LANDSCAPES

CODE: D29HCL210

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The knowledge of the evolution of concepts in the art of gardens, focusing on general compositional features of different styles, under the context of specific geographic, historic, economic, social and cultural conditions.

COURSE CONTENTS: The importance of studying the history of landscape architecture; a short presentation of the evolution of concepts in the art of gardens. Gardens of Antiquity: Mesopotamian Gardens; Gardens of Ancient Egypt; Persian Gardens; Ancient Greek Gardens; Ancient Roman gardens. The art of gardens in Middle Age (5th – 11th centuries): Byzantine Gardens; Medieval Gardens of Western Europe; Islamic Gardens; Spanish Arab Gardens. The Gardens of Middle East-Chinese Gardens; Japanese Gardens. The art of gardens during Renaissance and Baroque. Landscape gardens. Mixed style in the art of gardens. Contemporary trends in garden and landscape art. Gardens and parks in Romania.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (50% exam answers; 50% participation during seminar talks, presentation seminar theme).

COURSE TITLE: TOPOGRAPHY

CODE: D29HCL211
ECTS CREDITS: 4
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): Elaborate a long-term or short-term action plan for the landscaping of a space; Executing distance and surface measurements; Preparation of topographical plans; Use of topographic devices; Rebuilding plans and maps; Measuring level differences and calculating points altitudes; Elaboration of quoted plans and drawing of level curves; Explanation of calculation formulas specific to trace and control work;Choosing the best solutions, depending on the concrete situation in the field, for the design and control of the engineering works; Design and construction of support networks for topographic surveys, cadastral surveys and other engineering works. Making topographical surveys specific to topographic and themed plans and maps.
COURSE CONTENTS: General notions of topography; Units of measurement in topography; The topographic circle and trigonometric functions; Orientations and coordinate axes; Errors in topography; Marking and signaling points; The measurement of the angles and distances; Closed planimetric traverse method; Planimetric traverse method supported over known points; Picking up the details; Intersection and retrointersection;Drawing up plans; Calculation and detachment of surfaces; Leveling survey; Methods of geometric leveling; Trigonometric leveling; Leveling of the surfaces; Representation of relief.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers to exam 50%, periodical assessment through practical tests 20%, continuous assessment throughout semester 30%).

COURSE TITLE: CHEMISTRY

CODE: D29HCL212
ECTS CREDITS: 4
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): Familiarization with notions related to the structure of atom and classification of elements; Understanding the electronic configuration of elements, and their atomicity. Acquiring the necessary knowledge in order to understand the different types of chemical bonds.
COURSE CONTENTS: Atoms. Atomic structure. Classification of elements. Molecules. Chemical bonds. Chemical thermodynamics. Chemical equilibriums. Solutions. Ionic equilibriums. Notions of chemical kinetics. Catalysis. Colloid status of matter. Oxidation and reduction.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (exam answers 70%, final answers for workshops 30%).

COURSE TITLE: BIOPHYSICS AND AGROMETEOROLOGY

CODE: D29HCL213
ECTS CREDITS: 4
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): Knowledge of specific applications living and research equipement with importance in biophysics and agricultural meteorology; explain the phenomena, the processes, applications and devices according to the main meteorological parameters, environmental characteristics; interpret the evolution of the system based on changes in environmental factors.
COURSE CONTENTS: Matter organisation. Elements of spectroscopy. Contact phenomena between liquid and solid. Molecular transport phenomena. Diffusion and osmosis. Introduction in biological thermodinamoics. The physical structure of the atmosphere. Solar radiation in the atmosphere and the ground. Thermal regime of the soil and air. Condensation and water vapor condensation products. Rain fall. The climate of Romania and of Eorope.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers to exam 60 %, periodic answers to practical work 20 %, results to periodic control works 20 %).

COURSE TITLE: PRACTICE

CODE: D29HCL214
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): The purpose of practical training is to form skills and abilities appropriate to the specific activities of horticulture. Acquiring the applied skills of the knowledge obtained at the specialized courses regarding the field identification of the horticultural species, cultivating, harvesting and preserving them, the recognition and description of the soil profile, the field study of some soil properties, the identification of the plant nutrition disorders horticulture, knowledge of the equipment used in surveying, how to work with them and the execution of measurements of distances and surfaces.
COURSE CONTENTS: Methods of collecting and preserving vascular plants to achieve herbaceous plants. Identification of the main morphological types of roots, stems, leaves, flowers and fruits. Identification of different plants encountered on the ground by means of dicotomic keys. Soil analysis on the ground: location of the soil profile; Orientation of the soil profile; Execution of the soil profile; The description of the soil profile determining morphological properties: (number, sequence and thickness of horizons, color, texture and structure of horizons, porosity, compactness,

neoformations and soil inclusions, appreciation of soil humidity, appreciation of humus content, characterization of plant nutrition status Fertilization of plants grown on nutrient substrates Presentation of the equipment used in surveying and how to work with them Surveying of distances and surfaces measurements Practical knowledge of the fields of activity in horticulture, floricultural plants, fruit trees, leguminous plants and vine under Morphological, structural, multiplication and lifecycle, and training of practical skills.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Checking (the practice book and the exam answers 100 %).

COURSE TITLE: ENGLISH LANGUAGE

CODE: D29HCL215

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: Horticulture is the branch of agriculture that deals with the art, science, technology, and business of growing plants. It also is the study of plants. It includes the cultivation of medicinal plants, fruits, vegetables, nuts, seeds, herbs, sprouts, mushrooms, algae, flowers, seaweeds and non-food crops such as grass and ornamental trees and plants.

LANGUAGE OF INSTRUCTION: English

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

COURSE TITLE: FRENCH LANGUAGE

CODE: D29HCL216

ECTS CREDITS: 2

TYPE OF COURSE: Complementary

COURSE OBJECTIVE(S): Improving the ability to understand spoken French and specific vocabulary texts written in French, using a reference material especially designed for students of the Faculty of Horticulture, Horticulture Specialization, but also for those who want to learn vocabulary in context. Practice of important Horticulture 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 French 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 French.

COURSE CONTENTS: Focus on language, Vocabulary: Landscape. Scale and heterogeneity (incorporating composition, structure, and function). Patch and mosaic. Boundary and edge. Ecotones, ecoclines, and ecotopes. Disturbance and fragmentation. Theory. Application. Research directions.

LANGUAGE OF INSTRUCTION: French

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

COURSE TITLE: PHYSICAL EDUCATION

CODE: D29HCL218

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: ECOLOGY AND ENVIRONMENT PROTECTION

CODE: D29HCL319

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): Knowledge of the structure, functions and relations of natural and anthropic ecosystems, knowledge of the impact of anthropogenic activities on the environment, knowledge of environmental protection.

COURSE CONTENTS: Laws and ecological principles, ecosystem (structure, functions, dynamics), environmental degradation, nature protection.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: MICROBIOLOGY

CODE: D29HCL320
ECTS CREDITS: 5
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): knowledge of microorganisms of interest for horticultural production.
COURSE CONTENTS: general characters, internal structure, metabolism of microorganisms. Relationships between microorganisms. Implications of microorganisms in the preservation and processing of horticultural raw materials.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers to exam 90%, final responses sustained upon practical works performed in laboratory: 10%).

COURSE TITLE: PLANT PHYSIOLOGY

CODE: D29HCL321
ECTS CREDITS: 5
TYPE OF COURSE: Fundamental
COURSE OBJECTIVE(S): Knowledge and interpretation of the physiological processes of plants; deepening knowledge regarding the physiology of the plant cell, as well as how to achieve water exchange between the plant cell and the external environment; knowledge of how the processes of absorption, transport and elimination of water and mineral substances occur under the influence of environmental factors, but also of the physiological role of water and mineral elements in the processes of plant growth and development; knowledge of the mechanisms of the development of the processes of photosynthesis, respiration, growth and development of plants, establishing connections and correlations between these physiological processes and environmental factors.
COURSE CONTENTS: Plant cell physiology. Structure and physiological functions of structural subunits in the cell. Water exchange between the plant cell and the external environment. Diffusion, osmosis and imbibition. Plasmolysis and cellular turgor. Suction force of the plant cell. Water regime of plants. Water content of plants. Absorption, transport and elimination of water by plants through transpiration and guttation. Influence of external and internal factors on transpiration. Mineral nutrition. Methods of researching mineral nutrition in plants. Absorption, transport and excretion of mineral substances in plants. Factors influencing the absorption of mineral elements. Physiological role of mineral elements in plants. Photosynthesis. Methods of studying photosynthesis. Mechanism of photosynthesis. Factors influencing photosynthesis. Synthesis, conduction and storage of organic substances in plants. Aerobic respiration. Methods for determining aerobic respiration. Mechanism of respiration and factors influencing respiration. Anaerobic respiration. Types of fermentations and their practical importance. Plant growth. Seed germination and growth of plant organs. External factors influencing plant growth. Plant development. Vernalization and photoperiodism. Physiology of flowering and fruiting. Orientation and growth movements in plants. Passive and active movements of plants.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (exam answers 70% course and 30% practical course).

COURSE TITLE: COMMUNITY AGRICULTURAL POLICIES

CODE: D29HCL322
ECTS CREDITS: 3
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the objectives, premises and tools for implementing agricultural policies, knowledge of institutions involved in the implementation of agricultural policies
COURSE CONTENTS: Stages of European construction. Institutions of the U.E. involved in the promotion and implementation of common agricultural policies. Types of European Policies: Common Agricultural Policy Current measures to support Romanian agriculture
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (examination answers 50 %, final answers for workshops 50%).

COURSE TITLE: FLORICULTURE I

CODE: D29HCL324
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): The purpose of the discipline is to provide students with specialized knowledge and practical skills regarding the biology, ecology and culture technology of floricultural plants. The discipline aims to familiarize students with notions regarding the suitability of various indoor and outdoor conditions, propagation methods, production of floricultural seedlings, general aspects of cultivation technologies in the field and protected areas.
COURSE CONTENTS: Definition, object of study, history and importance. Current status of ornamental plant cultivation. Morphological and biological characteristics. Classification of flowering plants (or 'floral species'). The requirements of flowering plants regarding ecological factors and the mutual relationships that influence the development of the biological cycle. Propagation of flowering plants (generative and vegetative). Technology for growing ornamental plants in the field and in protected environments. Harvesting, conditioning, preservation, and marketing of ornamental plants (cut flowers and potted plants).
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (60% based on written exam answers; 40% based on test results and active participation in practical activities).

COURSE TITLE: EXPERIMENTAL DESIGN

CODE: D29HCL325
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the role, importance and particularities of design of experiments in horticultural research. Defining research objectives, methodologies and tehniques, set up experiments, data collection and inference. Capitalization of experimental results.
COURSE CONTENTS: Role, importance, objectives and particularities of experimental design in horticultural

research. Design of experiments and methodology in horticultural research. Extraction of samples for analysis. Measurement errors in 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.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (50% of the final grade represent the response to the written theoretical questions and 50% of the final grade the answers to laboratory tests).

COURSE TITLE: TROPICAL HORTICULTURE

CODE: D29HCL327

ECTS CREDITS: 3

TYPE OF COURSE: DS

COURSE OBJECTIVE(S): Acquiring knowledge about tropical and subtropical plant culture, requirements for environmental factors, plant biology, culture technology and economic importance.

COURSE CONTENTS: Climatic and edaphic features of the tropical and subtropical area; Relationships with environmental factors and culture technology in Citrus sp., Olea europaea, Actinidia sp., Ficus sp., Pistacia vera, Phonix dactylifera, Punica granatum, Ziziphus sp., Ananas sativus, Musa paradisiaca, Carica papaya, Mangifera indica, Macadamia integrifolia, Carya illinoensis, Theobroma cacao, Coffea arabica, Camellia sinensis, Cocos nucifera and Artocarpus altilis.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: PHYSICAL EDUCATION

CODE: D29HCL436

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: AGROPHYTOTECHNY

CODE: D29HCL428

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVES: This course explores the complex relationships between vegetation factors, agrotechnical methods for controlling these factors, and soil characteristics, integrating conventional and unconventional soil cultivation systems with various tools, agricultural machinery, and cultivated plants. Weeds and strategies for controlling them are studied, particularly through the rational use of herbicides, crop rotation, irrigation, differentiated agricultural techniques, and farming systems, aiming for sustainable and efficient agriculture. Understanding the factors that influence plant growth through the interactions between soil properties and plant development makes it easier to assess the biological requirements of crops in relation to climate and soil. The description and application of scientifically proven techniques for better productivity and sustainability lead to creating the ideal conditions in which crops can thrive.

COURSE CONTENTS: Study and analyze the factors that influence the life and growth of plants. Understand methods to direct and optimize these factors for maximum yield and quality. Learn the requirements of different cultivated plant species and how to meet them efficiently. Develop practical skills in using agricultural tools and machinery. Acquire competence in integrated weed management and crop rotation techniques. Appreciate the importance of crop and soil systematics in agricultural planning

LANGUAGE OF INSTRUCTION: ROMANIAN

ASSESSMENT METHOD(S): Exam (exam answers 50%, final answers to practical laboratory work 30%, continuous testing during the semester 20%).

COURSE TITLE: ORNAMENTAL ARBORICULTURE

CODE: D29HCL429

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Knowledge of the importance of growing ornamental trees and bushes. Knowledge of the main biological, ecological, ornamental and technological features of ornamental trees and bushes in the sense of familiarizing with the possibilities of using in green areas.

COURSE CONTENTS: The biological bases of ornamental arboriculture. The technological bases of ornamental arboriculture. Production of planting material for ornamental species. The presentation of morphologic and landscape characters, ecology and ways of using ornamental wood species in green areas.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: LAND IMPROVEMENTS

CODE: D29HCL430

ECTS CREDITS: 4

COURSE TYPE: Speciality

COURSE OBJECTIVE: Knowledge and understanding of the importance of land improvement works; which have as object of study the agricultural technique works that are carried out in order to remove the harmful action of some natural factors, through these works aiming to increase the productive potential of the

cultivated lands, creating an optimal relationship between water and air necessary for the growth and development of plants.

Knowledge and understanding of phenomena related to soil erosion, landslides, drainage and drainage of agricultural land, arrangement of accumulation basins and irrigation systems, dams, etc. Knowledge of the methods of design, execution and maintenance of land improvement works.

COURSE CONTENT: Object of the discipline. The importance and characteristics of land improvement works. Brief history of land improvements. Soil erosion. Definitions, importance and spread of the erosion process in the world and in Romania. The mechanism of the water erosion process. Determinants of soil erosion. Damage caused by soil erosion. Studies necessary for the preparation of soil erosion control projects. Soil erosion mapping and research. Preventing and combating soil erosion on sloping arable land. Prevention and control of soil erosion in vineyards. Preventing and combating soil erosion in fruit plantations. Preventing and combating deep erosion. Deep erosion formations, their development and works to combat deep erosion. Prevention and control of wind erosion. Landslides: measures for prevention and control. Water retention basins in agriculture: classification, components, studies needed for designing retention basins, conditions for locating basins. Determining the water volume in the retention basin. Dams: classification, main issues in designing earth dams. Irrigation: studies required for irrigation project planning. Water consumption of agricultural crops. Irrigation methods. Types of irrigation systems. Water sources for irrigation. Quality of irrigation water. Operation and maintenance of irrigation systems. Drying of agricultural lands: by open channels, flooding prevention by dikes. Generalities: causes of floods. Components of dike construction. Classification of dikes. Studies required for designing dike works. Design and construction of dikes. Establishing the distance between dikes. Dike dimensioning. Dike construction. Ancillary structures for dikes. Maintenance and protection of dike works.

LANGUAGE OF INSTRUCTION: ROMANIAN

ASSESSMENT METHOD(S): Exam (exam answers 50%, final answers to practical laboratory work 30%, continuous testing during the semester 20%).

COURSE TITLE: FLORICULTURE II

CODE: D29HCL431

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Knowledge of flower species cultivated in the field and greenhouses. Factors that influence the productivity and quality of flower plants. Knowledge of the establishment and maintenance works of floral crops. Ways of use in outdoor and indoor spaces, according to ecological requirements, growth particularities and decorative features.

COURSE CONTENTS: Annual, biennial, perennial hemicryptophyte and geophyte flower species used in different floral compositions in green spaces. Crops in greenhouses. Species grown in the soil of the greenhouse for the production of cut flowers. Species decorative through flowers, leaves, fruits, cultivated in pots (biological particularities, morphological and decorative features, ecological requirements, culture technology, use).

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (exam answers 60%, final answers to practical works 40%)

COURSE TITLE: GENETICS

CODE: D29HCL432

ECTS CREDITS: 4

TYPE OF COURSE: Fundamental

COURSE OBJECTIVE(S): The combination of fundamental scientific inquiry and practical application, primarily focused on improving plants for human benefit and contributing to global food security and sustainable horticulture. Understanding mechanisms of the transmitting hereditary information and genetic recombination as a source of variability to plants. Deepening knowledge on the latest methods of genetic modification of plants, as well as presenting the main transgenic plants with improved production characteristics.

COURSE CONTENTS: The purpose and importance of genetics. The connections of genetics with other sciences. Research methods used in genetics. Cell structure and its importance in heredity phenomena. Cytoplasmic organelles with a role in heredity. Chromosomes: morphological characteristics; particular types of chromosomes. Modes of reproduction in plants. Mitotic and meiotic division. Mendel's laws of heredity. Deviations from Mendelian laws. Biochemical basis of heredity. Chemical and molecular structure of nucleic acids (DNA and RNA). Genetic engineering. Genetically modified organisms: present and prospects.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (answers to exam 70%, periodical assessment through practical tests 30%).

COURSE TITLE: MICROPROPAGATION

CODE: D29HCL433

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): The objectives of this discipline are to understand the fundamental concepts of in vitro plant tissue cultures, including their definition, history, and fields of application, as well as to become familiar with laboratory organization and the operational stages of micropropagation techniques. The course aims to develop competences in regenerating plants from vegetative and reproductive structures, from cell and tissue cultures, including through somatic embryogenesis, as well as creating and utilizing variability. A key objective is to learn methods for in vitro conservation of plant material.

COURSE CONTENTS: In vitro plant tissue cultures (definition, history, fields of application). Tissue culture laboratory. Operational stages in micropropagation techniques and morpho-physiological processes. Regeneration of plants from vegetative structures. Somatic embryogenesis. Creating and utilizing variability. In vitro conservation.

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: PRACTICE

CODE: D29HCL435
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): The purpose of practical training is to develop skills and competences appropriate to the activities of the horticulture field. Acquiring the applied skills of the knowledge obtained at the specialized courses, regarding the identification of the horticultural species, their cultivation, the recognition and control of diseases and pests, the soil microbiology, the harvesting and the preservation of the production.
COURSE CONTENTS: Identification of phenophases in horticultural crops and correlation of these anthropogenic interventions within agroecosystems. Maintenance work applied to flower crops in the field. Identification of flower species used in decoration of green spaces. The intensity of physiological processes in plants under optimal and stress conditions practical. Obtaining in vitro cultures. Internship carried out at various horticultural units and skills training.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (the practice book and the exam answers 100 %).

COURSE TITLE: ETHICS AND ACADEMIC INTEGRITY

CODE: D29HCL434
ECTS CREDITS: 2
TYPE OF COURSE: Complementary
COURSE OBJECTIVE(S): Familiarizing with 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%,

COURSE TITLE: PHYSICAL EDUCATION

CODE: D29HCL437
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%.

3RD YEAR, 1ST SEMESTER

COURSE TITLE: VEGETABLES GROWING I

CODE: D29HCL538
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of vegetable species, their food and economic importance, as well as the development and use of conventional technologies for obtaining vegetables; Current state of vegetable farming organization in our country and in the world, as well as the way of using vegetable production.
COURSE CONTENTS: Importance of vegetable farming; Current situation and prospects for the development of vegetable farming in Romania and in the world; Biological and ecological peculiarities of vegetable species; Knowledge of vegetable species, their grouping according to edible organs, botanical family, life span and culture technology and their importance for vegetable farming practice; Methods of propagation of vegetable species; Knowledge of the relationships between vegetable plants and vegetation factors, in order to establish the practical and applied elements of classical cultivation technologies.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): written exam 70%, mid-term exam 30%.

COURSE TITLE: FRUIT GROWING I

CODE: D29HCL539
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): The objectives of this discipline are to understand fruit growing as a scientific and technological system, by clarifying the definitions, the object, the specific terminology, the importance of the field, as well as its current situation, perspectives and trends. Another objective is to acquire the criteria for classifying fruit species and to understand their relevance for the organization, selection and valorization of fruit resources. The discipline aims to understand the morphology, anatomy and physiology of vegetative and fruiting organs, the fundamental biological processes, and the factors that influence them. It also aims to understand the individual life cycle of fruit trees, the annual cycle, the vegetative and fruiting phenophases, as well as the particularities of the dormancy period. A central objective is to analyse the relationship between growth and fruiting, including the phenomenon of biennial bearing, as the conceptual basis for substantiating technological decisions in fruit growing.
COURSE CONTENTS: Definition, object, terminology, importance, history. Classification of fruit tree species. Morphology, anatomy and physiology of fruit tree plants. The individual life cycle of the fruit tree plants. Annual cyclem of fruit tree plants. Initial and final pheno-phases of vegetative organs and fruit organs. Relationship between growth and fruit-setting in the individual and annual cycle of fruit tree plants.
LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: VITICULTURE I

CODE: D29HCL540
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Understanding the importance, current and future perspectives of viticulture both as a science and as a practical and economic activity; Knowledge of the morphological, anatomical, and physiological characteristics of grapevines in order to understand the mechanisms determining vine growth and fruiting; Identification and evaluation of climatic, edaphic, and anthropic factors; acquisition of notions of viticultural climatology to correlate climate factors with the growth and ripening phases of grapevines, and to establish cultivation areas and production directions for the development of a high-quality and efficient viticulture.
COURSE CONTENTS: Definitions, importance, particularities; History and development of viticulture; Morphological and anatomical characteristics of the grapevine; Biology of vine growth and development; Ontogenetic and annual biological cycle of the grapevine; Physiological aspects regarding vine nutrition and vine defense reactions; Ecological particularities; Viticultural climatology; Evaluation of climatic favorability levels for the delimitation of vine cultivation areas.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (70% written examination, 30% periodic evaluation).

COURSE TITLE: LANDSCAPE ARCHITECTURE

CODE: D29HCL541
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the specialized terminology and the principles regarding the decoration of green areas. Knowledge of the main types of green areas and their features. Acquire the fundamental notions regarding the theory, art and technique of landscape. The general presentation of the notions regarding the projection, decoration and maintenance of green areas.
COURSE CONTENTS: The importance and functions of green spaces. Evolution and styles in landscape architecture. Classification of green spaces. Composition principles used in Landscape Architecture. Structural elements of green spaces. General concepts for designing green spaces. General notions about green spaces arrangement and maintenance.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (70 % of exam answers, 30% of final answers to workshops).

COURSE TITLE: PHYTOPATOLOGY I

CODE: D29HCL543
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Learning and accumulating knowledge on some aspects of biological characteristics of the main types of pathogens, the role of interaction parasite- plant, host-environment in the pathogenesis process, mechanisms of plant resistance to diseases and protection means for plants in the context of integrated control.
COURSE CONTENTS: General notions about diseases (disease classification, interface of plant host –parasite and successive phases of disease), Changes in the plants during the pathogenesis process (biochemical, physiological and anatomical- morphological). Parasitism from its origins to the present and its consequences; Parasitic traits of pathogens, Pathogen agents epidemology, conservation and transmission of infectious inoculum, Plant resistance to diseases (before the infection, after the infection). General characteristics of phytopathogenic viruses, mycoplasmas and phytopathogenic bacteria, of phytopathogenic fungi. General prevention technologies and intergated control of horticultural plant diseases, Protection measures of the agro-ecosystem and the prevention of poisoning in phyto-sanitary works.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers at the exam 70 %, final answers at practical laboratory works 30 %).

COURSE TITLE: FLORAL ART

CODE: D29HCL544
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the history of floral art; the materials used in the creation of floral arrangements; the styles, principles and ways of arranging flowers. The choice, association and placing of floral plants in order to use them in different types of floral decorations for interior or exterior design.
COURSE CONTENTS: The art of arranging flowers in different historical epochs. The vegetal material used in floral arrangements. Harvesting, maintenance and processing of fresh or dry vegetal material. Pots, materials, accessories and techniques used in floral art design. Western floral art – the principles of floral composition and the used styles. Eastern floral art – basic principles of arrangements. Ikebana. Indoor plants - assortment, placement criteria, floral compositions from whole plants. Bonsai. Use of flowers in culinary art. AI in floral art: opportunities for the floral design industry.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (70% of exam answers; 30% of involvement in practical activities).

3RD YEAR, 2ND SEMESTER

COURSE TITLE: VEGETABLES GROWING II

CODE: D29HCL646
ECTS CREDITS: 4
COURSE TYPE: Speciality
COURSE OBJECTIVES: Knowledge of vegetable species, their nutritional and economic importance, as well as the development and use of conventional technologies for obtaining vegetables; Current state of vegetable production organization in our country and in the world, as well as the use of vegetable production.
COURSE CONTENT: Technology for producing vegetable species seedlings; Establishment of vegetable species crops in open field, protected and forced systems;

Methods and periods for establishing vegetable species crops; General and special crop maintenance works in the three crop systems; Harvesting and production of vegetables.
LANGUAGE OF TEACHING: Romanian
KNOWLEDGE EVALUATION: written exam 70%, mid-term exam 30%

COURSE TITLE: FRUIT GROWING II

CODE: D29HCL647
ECTS CREDITS: 4
TYPE OF COURSE: Specialty
COURSE OBJECTIVE(S): Knowledge of the particularities of the fruit tree ecosystem, of the relationships of the fruit species with the environmental factors and the other components of biocenosis. Assimilation of the technology for producing the fruit propagation material. Assimilationof technology for the setting-up and maintenance of different types and systems of fruit tree plantations.
COURSE CONTENTS: Ecology of fruit trees and fruit shrubs. Production of fruit propagating material. Land organization and planting of fruit trees. Maintenance of fruit tree plantations. Harvesting and capitalisation of fruit production.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (final theoretical exam 60%, final practical exam 40%).

COURSE TITLE: VITICULTURE II

CODE: D29HCL648
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): The objectives of the course focus on acquiring theoretical knowledge, skills, and competencies necessary for the production of vine planting material and the establishment of viticultural plantations; Learning technologies for the maintenance of vineyards during the early years and after fruiting;
Correct application of agrotechnical and phytotechnical measures specific to grapevine cultivation; Development of research abilities, synthesis of scientific information, and presentation of findings.
COURSE CONTENTS: Grapevine propagation; Production of vine planting material; Technological bases for establishing vineyards; Maintenance of young plantations; Maintenance and exploitation of fruit-bearing vineyards; Correction of trophic resources; Phytosanitary protection of vineyards; Grape harvesting.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (70% written exam answers, 30% periodic evaluation).

TITLUL CURSULUI: ENTOMOLOGY II

CODE: D29HCL 649
ECTS CREDITS: 5
COURS TYPE: Speciality
COURSE OBJECTIVE(S): Knowledge of systematics, morphology, anatomy, biology, ecology, and pest control in major horticultural crops. Recognizing the main pests of horticultural plants and the damage they produce. Knowing appropriate plans for phytosanitary measures and remedies recommended in the prophylaxis and fight against the main pests of horticultural plants in conjunction with reducing environmental pollution in carrying out chemical treatments against pests.
COURSE CONTENTS: Biology, ecology, systematic and control of the polyphagous pests, Biology, ecology, systematic and control of the cereals pest, Biology, ecology, systematic and control of the legumes pests, Biology, ecology, systematic and control of the technical plants pests, Biology, ecology, systematic and control of the vegetable pests, , Biology, ecology, systematic and control of the fruits trees pests, Biology, ecology, systematic and control of the vines pests, Biology, ecology, systematic and control of the flowering and ornamental plants pests, Biology, ecology, systematic and control of the forest trees, Biology, ecology, systematic and control of the agri-food products stored pests, Harmful and useful vertebrates for agriculture.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (exam answers 50%, periodical assessment through practical tests 50%).

COURSE TITLE: PHYTOPATHOLOGY II

CODE: D29HCL650
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of economically important diseases, taxonomy, ecology, epidemiology, prophylaxis and therapy of pathogens in the main horticultural plant.
COURSE CONTENTS: Vegetable plant diseases (tomatoes); Vegetable plant diseases (peppers, eggplants, onions); Vegetable plant diseases (brasicaeae and cucurbitaceae); Vegetable plant diseases (peas and beans); Plant diseases of seedlings; Apple tree diseases; Plum tree diseases; Fruit tree diseases (peach, apricot); Fruit tree diseases (cherry and sour cherry); Walnut diseases, fruit shrub diseases (gooseberries, currant, raspberry and strawberry); Vine diseases; Floral diseases, Ornamental plants diseases - economic significance, spreading area, symptoms, aetiology, disease ecology, prophylactic and curative measures with little impact on the environment and on consumers.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers at the exam 70 %, testing practical skills along the semester 10%, final answers at practical laboratory works 20 %).

COURSE TITLE: PLANT BREEDING I

CODE: D29HCL651
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the role, importance and need for genetic improvement of horticultural plants in ensuring food safety and sustainable human society. The role and importance of horticultural genetic resources for use in plant breeding. Establishment of specific breeding objectives and horticultural plant genetic improvement. Conventional and modern methods of transformation and selection of new genotypes and their implications.
COURSE CONTENTS: Importance and role of plant breeding. Current situation and future national and global trends. Cytogenetic bases, ontogenetic and reproduction of horticultural plant breeding. General and specific objectives of horticultural plant breeding. Horticultural

genetic resources - role and importance; collection, evaluation, conservation and use of genetic resources. Conventional methods used in horticultural plant breeding (selection, hybridization, selfing, mutagenesis, poliploidy). Modern methods used in horticultural plant breeding. Genetic engineering.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Colloquy (60% of the final grade represent the response to the written theoretical questions and 40% of the final grade the answers to practical laboratory questions).

COURSE TITLE: PRACTICE

CODE: D29HCL652
ECTS CREDITS: 4
COURSE TYPE: Specialized
PRACTICE OBJECTIVES: Practical training aims to apply theoretical knowledge acquired in specialized courses in the field of horticulture; Recognition of species and varieties in order to apply technologies in the field; Application of technological sequences depending on the particularities of the species or variety.
COURSE CONTENT: Formation, maintenance and fruiting pruning of horticultural species; Formation, maintenance and fruiting of seed horticultural plantations; Formation, maintenance and fruiting pruning of shrubs and trees from the nut group; Formation, maintenance and fruiting in vineyards; Application of green operations to horticultural species (vegetables, vines, fruit trees, dendrological plants, flowers, etc.); Technological sequences for seasonal horticultural species (sowing, planting, transplanting, pinching, grafting, etc.).
LANGUAGE OF TEACHING: Romanian
KNOWLEDGE EVALUATION: Evaluation during each session and final theoretical evaluation by the practice committee - 100%
ASSESSMENT METHODS: practical exam.

4TH YEAR, 1ST SEMESTER

COURSE TITLE: SPECIAL VEGETABLE GROWING I

CODE: D29HCL755
ECTS CREDITS: 5
COURSE TYPE: Speciality
COURSE OBJECTIVES: Knowledge of the cultivation technologies of vegetable species in order to develop and use production technologies in different crop systems (field, protected and forced cultivation) for sustainable horticulture. Knowledge of aspects regarding the production technologies of seeds and biological planting material for the cultivation of vegetable species.
COURSE CONTENT: Biology specificities, ecological requirements and cultivation technology of vegetable species from which thickened and tuberized roots are consumed; Biology specificities, ecological requirements and cultivation technology of bulbous vegetable species; Biology specificities, ecological requirements and cultivation technology of vegetable species from the cabbage group; Biology specificities, ecological requirements and cultivation technology of vegetable species from which the leaves are consumed; Biology specificities, ecological requirements and cultivation technology of vegetable species from which the pods and capsules are consumed
TEACHING LANGUAGE: Romanian
KNOWLEDGE EVALUATION: written exam 70%, mid-term test 30%

COURSE TITLE: SPECIAL FRUIT GROWING I

CODE: D29HCL756
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Study of trees organographies, as identifier element of varieties and their behavior in the growth and fruiting process. The requirements of different species of fruit to biotype factors in order of their enviromentally and zoning. Knowledge of particularities and intensity of physiological processes in conection with varieties of enviromental factors and methods to optimize their relationship through differentiated technologies of cultivated species in areas with temperate climate in order to obtain maximum yields of good quality fruits at the minimum prices. Study of fruit rootstocks, behavior of varieties on different rootstocks, compatibility and force – of rootstock-variety combination. Highlighting the qualities and faults of varieties of fruit tree.
COURSE CONTENTS: The variety and assortment – determinant factors in production area. Research methods used in the study of varieties and the effects of differentiated technologies; Importance, current situation and perspective on the world and national pome species (apple, pear, quince, etc.). Biological and technological peculiarities of pome species (apple, pear, quince, etc.).
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers to exam - 70%, final answears to practical laboratory work - 30%).

COURSE TITLE: AMPELOGRAPHY I

CODE: D29HCL757
ECTS CREDITS: 5
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of Vitis varieties and species in order to develop and use sustainable viticulture technologies; Knowledge of vineyard areas and production directions of varieties for the development of a quality viticulture and economic efficiency.
COURSE CONTENTS: Ampelography as a science (definitions, terminology, history , objectives, links of ampelography with other sciences); The variety with its genetic, agrobiological, productive and quality attributes; Biotype, clone, vineyard assortment; Methodologies for description, recognizing and identifying of Vitis varieties and species, in accordance with OIV (International Office of the Vine and Wine), U.P.O.V. (International Union for the Protection of New Varieties of Plants) and I.P.G.R.I. (International Plant Genetic Resources Institute); Types of ampelographic descriptors; Zoning of the Romanian viticultural area according to the ecological offer; Taxonomic classification of family Vitaceae;
LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (examination - 70%), activities such as practical workshops/ homework/essays/papers/projects (30%).

COURSE TITLE: MANAGEMENT

CODE: D29HCL759
ECTS CREDITS: 3
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the notions of the economic agent in terms of its organization, its functionality, the way of implementation of the modern management techniques and methods.
COURSE CONTENTS: The role of the food industry in the production of food for human consumption, Introductory management, Running management in modern management, Production capacity and optimal ways of use in the food industry, Creation and development of technical-material basis in the food industry, Organization and management of production Nutrition, Organization of food industry production by types of enterprises, Technical and economic forecasting in the food industry, Human resource management in the food industry, Labor normalization in the food industry.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (answers to exam 70%, final answers to seminars 30%).

COURSE TITLE: OENOLOGY I

CODE: D29HCL760
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Knowledge of the biological, biochemical and technological bases of modern winemaking.
COURSE CONTENTS: The raw material used in the wine industry; The technical and material basis of the winery industry; The grape processing technology and the production of must; The chemical and biochemical composition of the grape must; The microflora specific to the wine industry; Antiseptic and antioxidant substances used in the wine industry; Biochemical and biophysical nature phenomena that occur in the conversion of must to wine; The chemical composition of wines.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S):Colloquium (examination 80%, continuous assessment 20%).

COURSE TITLE: TECHNOLOGY OF HORTICULTURAL PRODUCTS I

CODE: D29HCL761
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): The course aims to familiarize students with the technologies and operations necessary for preserving plant products in a fresh state. The curriculum covers both theoretical and practical aspects related to the physical and chemical properties of vegetables and fruits, as well as the technological flows for their optimal storage and preservation. Essential operations such as harvesting, conditioning, packaging, pre-cooling, and storage are discussed, along with the use of different spaces and means to maintain the quality and hygiene of these products.
COURSE CONTENTS: Fundamentals of Horticultural Products. Characterization of horticultural production (e.g., types, growing conditions). The main physical and chemical properties of fruits and vegetables. Metabolic processes occurring in fruits and vegetables after harvesting (e.g., respiration, ripening, senescence). Quality criteria for fruits and vegetables. Methods for determining and assessing the quality of fruits and vegetables.
Preservation Technology and Application
Understanding the technological flow for the fresh preservation of fruits and vegetables, broken down by species (species-specific requirements).
Developing and implementing an action plan relevant to the tasks defined by a typical job description in the field.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers to exam 70%, final answers to Laboratory works 30%).

4TH YEAR, 2ND SEMESTER

COURSE TITLE: SPECIAL VEGETABLE GROWING II

CODE: D29HCL862
ECTS CREDITS: 4
COURSE TYPE: Speciality
COURSE OBJECTIVES: Knowledge of the cultivation technologies of vegetable species in order to develop and use production technologies in different crop systems (field, protected and forced cultivation) for sustainable horticulture. Knowledge of aspects regarding the production technologies of seeds and biological planting material for the cultivation of vegetable species.
COURSE CONTENT: Biology specificities, ecological requirements and cultivation technology of solanaceous-fruit species;
Biology specificities, ecological requirements and cultivation technology of species from the Cucurbiatceae family;
Biology specificities, ecological requirements and cultivation technology of spice and aromatic plant species; Biology specificities, ecological requirements and cultivation technology of perennial plant species; Biology features, ecological requirements and cultivation technology of sweet corn; Seed production technology of vegetable species.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Exam (answers to exam 70%, final answers to Laboratory works 30%).

COURSE TITLE: SPECIAL FRUIT GROWING II

CODE: D29HCL863
ECTS CREDITS: 4
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Study of trees organographies, as identifier element of varieties and their behavior in the growth and fruiting process. The requirements of different species of fruit to biotype factors in order of their enviromentally and zoning. Knowledge of particularities and intensity of physiological processes in conection with varieties of enviromental factors and methods to optimize their relationship through differentiated technologies of cultivated species in areas with temperate climate in

order to obtain maximum yields of good quality fruits at the minimum prices. Study of fruit rootstocks, behavior of varieties on different rootstocks, compatibility and force – of rootstock-variety combination. Highlighting the qualities and faults of varieties of fruit tree.

COURSE CONTENTS: The importance, the current and future situation in the world and in our country, biological and technological features of stone species (plum, apricot, peach, sweet cherry and sour cherry). The importance, the current and future situation in the world and in our country, biological and technological features of nuts (walnut, hazelnut, chestnut, almond). The importance, the current and future situation in the world and in our country, biological and technological features of forest fruits (strawberry, raspberry, blackberry, currant, gooseberry, blueberry, seabuckthorn, elderberry, roses for petals). The importance, the current and future situation in the world and in our country, biological and technological features of subtropical species (fig, lemon, orange).

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: AMPELOGRAPHY II

CODE: D29HCL864

ECTS CREDITS: 4

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Description and knowledge of varieties of vines cultivated in Romania; Knowledge of differentiated crop technologies according to the biological characteristics and ecological requirements of vine varieties, as well as the ecological offer of different wine areas in Romania.

COURSE CONTENTS: Table grapes varieties cultivated in Romania and their crop specificities (morphological characteristics, description of characteristics relating to adjustment to climate, resistance to parasites and physiological accidents, the agricultural and technological characteristics and quality of products); Seedless varieties cultivated in Romania; Grapevine varieties for white wines cultivated in Romania; Grapevine varieties for rosé and red wines cultivated in Romania; Grapevine varieties for aromatic wines cultivated in Romania. Resistant grapevine varieties.

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Exam (examination - 70%), activities such as practical workshops/ homework/essays/papers/projects (30%).

COURSE TITLE: OENOLOGY II

CODE: D29HCL865

ECTS CREDITS: 3

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Knowledge of stricto-sensu wine making technologies, special wines and grape, must and wine products. Knowledge of the care operations applied to the wine during the evolution and of the conditioning and conditioning procedures. Knowledge of diseases and defects of wine.

COURSE CONTENTS: The technologies for the elaboration of the wines themselves or "Stricto-sensu; The technologies for the elaboration of the special wines and the distillates in the wine; The technological processes of wine care during the conservation; The evolution and the phases of the wine development; The disorders, accidents and defects in Wines; Clarification and Stabilization of Wine

LANGUAGE OF INSTRUCTION: Romanian

ASSESSMENT METHOD(S): Colloquium (examination 80%, continuous assessment 20%).

COURSE TITLE: TECHNOLOGY OF HORTICULTURAL PRODUCTS II

CODE: D29HCL866

ECTS CREDITS: 3

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): This discipline aims to provide students with a solid foundation in the processes and technologies used for the industrial processing of fruits and vegetables. The curriculum successfully combines fundamental theoretical knowledge with practical applications. The course covers a variety of technologies used to process fruits and vegetables into preserved forms, including: Dehydration, Freezing, Thermal sterilization, Fermentation and more. Lectures involve a detailed study of the technological flows at each processing stage. A strong emphasis is placed on optimizing conditions to maintain product quality, safety, and hygiene.

COURSE CONTENTS: Canning and Processing Technology: Core Materials and Packaging; Knowledge of raw materials and auxiliaries used in the canning industry. Understanding of packaging materials utilized in the canning industry for fruits and vegetables.

Theoretical and Industrial Processes

Knowledge of the theoretical principles behind fruit and vegetable processing. Mastery of various fruit and vegetable preservation methods: Preservation by sterilization and pasteurization., Concentration (e.g., drying, juice concentration), Freezing, Antiseptic preservation, Preservation by acidification, Lactic fermentation, Alcoholic fermentation

LANGUAGE OF INSTRUCTION: Romanian

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

COURSE TITLE: MARKETING

CODE: D29HCL867

ECTS CREDITS: 2

TYPE OF COURSE: Speciality

COURSE OBJECTIVE(S): Planning, organizing and coordinating agro-food marketing activities; Interpretation of legislation in the food industry as well as basic notions of food; Marketing, strict adherence to the principles of human nutrition and current regulations on food additives; Using basic knowledge to interpret marketing projects; Applying the principles of human nutrition and involvement in the selection of information necessary for the creation and completion of databases in the food industry; Objective evaluation of how to develop and implement the marketing strategy; Developing a marketing project with application in the food industry.

COURSE CONTENTS: Introductory Marketing, Organizing Marketing Services, Agribusiness Market, Elements of Consumer Psychology, Segmentation of Markets, Marketing Forecast, Marketing Mix, Market

Making of the Economic Agent - An Integral Part of Marketing Strategy.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (answers to exam 70%, final answers to Laboratory works 30%)

COURSE TITLE: ACADEMIC PRACTICE FOR PREPARATION OF GRADUATION THESIS

CODE: D29HCL868
ECTS CREDITS: 10
TYPE OF COURSE: Speciality
COURSE OBJECTIVE(S): Carrying out multidisciplinary/interdisciplinary scientific projects using innovative methods with a significant impact on the development of the horticultural sector;
Developing students' abilities to perform independent documentation and research work, to solve specific professional problems, to generate original data and conclusions, and to present objectives, research stages, and results obtained during the preparation of the bachelor's thesis.
COURSE CONTENTS: Finalization of the bachelor's thesis plan and bibliography; Review of specialized literature based on academic resources recommended by the scientific coordinator or other sources considered relevant by the student; Completion and implementation of the research methodology to achieve the objectives; Preparation and drafting of the bachelor's thesis; Presentation of the research results and conclusions.
LANGUAGE OF INSTRUCTION: Romanian
ASSESSMENT METHOD(S): Checking (presentation and defense of the bachelor's thesis – 100%).