POLYTECHNIC OF RIJEKA
AGRICULTURAL DEPARTMENT

PROGRAMME OF STUDY

PROFESSIONAL STUDY OF ENOLOGY

- **LIST OF COURSES**

Professional Study of Enology

1st year of study – Semester I (Winter Semester)

Course unit no.	Title of the course unit	Hours weekly				ECTS credits	Exam
		L	S	E	P		
1	Chemistry	2	-	1	-	4	1
2	Informatics	1	-	2	-	4	1
3	Foreign language I	1	-	1	-	3	1
4	Mathematics and statistics	2	-	2	-	5	1
5	Botany	2	-	1	-	4	1
6	Ecology	3	-	-	-	4	1
7	Vine growing I	2	-	1	2	6	1
8	Physical Education	-	-	(2)	-	-	-
	Total / semester	**13**	**-**	**8(10)**	**2**	**30**	**7**

Note: 1) L – lecture, S – seminar, E – exercise, P – practical
2) Students can choose one of the following foreign languages: English and Italian
3) Physical Education is performed out of time-table

1st year – Semester II (Summer Semester)

Course unit no.	Title of the course unit	Hours weekly				ECTS credits	Exam
		L	S	E	P		
9	Economics of agricultural enterprise	2	-	-	-	2	1
10	Biochemistry	2	-	1	-	4	1
11	Foreign language II	1	-	1	-	3	1
12	Soil science	2	-	1	-	4	1
13	Mechanisation in vine growing and wine making	2	-	2	1	5	1
14	Vine growing II	2	-	1	3	5	1
15	Wine making I	2	-	1	-	4	1
16	Plant physiology	2	-	-	-	3	1
8	Physical Education	-	-	(2)	-	-	-
	Total / semester	**15**	**-**	**7(9)**	**4**	**30**	**8**

2nd year – Semester III (Winter Semester)

Course unit no.	Title of the course unit	Hours weekly				ECTS credits	Exam
		L	S	E	P		
17	Foreign language III	1	-	1	-	3	1
19	Microbiology of must and wine	2	-	1	-	4	1
20	Vine growing III	2	-	1	1	6	1
21	Wine making II	2	-	2	2	7	1
	Optional course A	2	-	1	-	4	1
	Optional course B	2	-	1	-	3	1
	Optional course C	2	-	1	-	3	1
	Total / semester	**13**	**-**	**8**	**3**	**30**	**7**

Note: Student chooses one (A) of two optional courses: Mediterranean fruit growing and Growing of vegetable. Student chooses two (B and C) of tree optional courses: Marketing of beverages, Rural forms of tourism

22 Mediterranean fruit growing
23 Growing of vegetable
28 Marketing of beverages
29 Rural forms of tourism

2nd year – Semester IV (Summer Semester)

Course unit no.	Title of the course unit	Hours weekly				ECTS credits	Exam
		L	S	E	P		
24	Foreign language IV	1	-	1	-	3	1
25	Vine growing IV	2	-	2	3	7	1
26	Wine making III	2	-	1	2	7	1
27	Special and sparkling wines	2	-	1	-	4	1
18	Plant protection	3	-	2	1	6	1
	Optional course D	2	-	1	-	3	1
	Total / semester	**12**	**-**	**8**	**6**	**30**	**6**

Note: Student chooses three of the available optional courses:

31 Costs and Calculation
32 Olive growing

3rd year – Semester V (Winter Semester)

Course unit no.	Title of the course unit	Hours weekly				ECTS credits	Exam
		L	S	E	P		
38	Irrigation	2	-	1	-	5	1
34	Technology of strong alcoholic beverages	2	-	1	-	5	1
35	Practical activities in wine making I	-	-	-	4	3	-
36	Vine growing V	2	-	1	2	5	1
37	Sensory analysis of wine I	1	-	1	-	4	1
	Optional course E	2	-	1	-	4	1
	Optional course F	2	-	1	-	4	1
	Total / semester	**11**	**-**	**6**	**6**	**30**	**6**

Note: Student chooses two of the available optional courses:

33 Small business management
39 Business analysis
40 Hygiene and maintaining
41 Aromatic and medicinal plants

3rd year – Semester VI (Summer Semester)

Course unit no.	Title of the course unit	Hours weekly				ECTS credits	Exam
		L	S	E	P		
42	Practical activities in wine making II	-	-	-	6	5	-
	Optional course G	2	-	1	-	4	1
	Optional course H	2	-	1	-	4	1
43	Bachelor paper	-	-	(x)	-	17	1
	Total / semester	**4**	**-**	**2**	**6**	**30**	**3**

Note: Student chooses two of the available optional courses:

44 Farm premises
45 Vineyards in landscape
46 Wine serving and eno-gastronomy
47 Wine presentation and promotion

Total – entire curriculum of Professional Study of Enology

Semester	Hours weekly					ECTS credits	Exam
	L	S	E	P	Total		
Semester I	195	-	120	30	345	30	7
Semester II	225	-	105	60	390	30	8
Semester III	195	-	120	45	360	30	7
Semester IV	180	-	120	75	375	30	6
Semester V	165	-	90	90	345	30	7
Semester VI	60	-	30	90	180	30	3
Total number at the study	**1020**	**-**	**585**	**390**	**1995**	**180**	**38**

Through studies, students attend 1995 teaching hours (total) and, after fulfilling all requirements, they gather 180 ECTS credits (total).

CHEMISTRY **Course unit number: 01**

Hours weekly 2+0+1+0/I **ECTS credits: 4**

Syllabus outline

Introduction to chemistry: matter and its chemical transitions. Structure of an atom and periodical system of elements. Chemical laws of bonding related to mass and volume. Characteristics of solid matter, liquid and gaseous substances. The relative atomic and molecular mass and definition of mol as a measure of matter quantity. The chemical bond and structure of molecules. Types of solutions and quantitative definitions of their content. Colloids, electrolytes, acids and bases. pH of solution and buffers. Methods of purification and chemical analysis used in vine and olive oil production technology. Types of chemical reactions. Redox-reactions and redox potential of vine. The harmony, velocity and energetics of chemical reactions. Chemical composition of earth and biogenic elements. Properties of important elements and compounds used in viticulture and vine and olive oil production. Types and properties of hydrocarbons. Organic compounds with different functional groups: composition and properties. Common organic compounds found in the goring of the main Mediterranean plants and agricultural products.

Developing of general and specific competence (knowledge and skills)

Students will develop their knowledge about the structure and changes of chemical compounds during reactions. Compounds and reactions used in production of the main Mediterranean plants will be discussed. Exercises develop the ability to solve numeric problems and introduce students to experimental work.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

INFORMATICS **Course unit number: 02**

Hours weekly: 1+0+2+0/I **ECTS credits: 4**

Syllabus outline

Units which will be analysed are: the concept of informatics, information, information technology and information society; computer system; computer programmes; organisation and data processing; multimedia; information systems in agriculture; computer networks; Internet; security of programmes and data; ergonomics and use of computers.

Developing of general and specific competence (knowledge and skills)

Familiarise students with basic principles of establishment and functioning of computer and information systems. Learn how to work at computers using software applications which are mostly used in business processing, especially in agriculture and Internet surroundings.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

ENGLISH I **Course number: 03**

Hours weekly: 1+0+1+0 / I **ECTS credits: 3**

Syllabus outline

Primarily based on linguistic issues covering the following grammar units that are the most important in understanding written or oral language, such as: parts of speech, word derivation; system of basic tenses (active and passive), sequence of tenses; indirect speech; modals; conditional clauses.

Development of general and specific skills (knowledge and skills)

Systematic practice on the above stated grammar structures in real speaking contexts and on writing different types of tasks (translation, abstract, note taking …)

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

ITALIAN I **Course number: 03**

Hours weekly: 1+0+1+0/I **ECTS credits: 3**

Syllabus outline

ESP – vocabulary and structures .
Exercises include: Tense System – Active Voice (*presente, passato prossimo, futuro semplice, anteriore*). Personal pronouns. Possessives. Sequence of tenses. Modals. Compound words and word derivation.

Lectures selected from the following professional contents: soil science and plant nutrition, viniculture, olive growing, plant protection, wine making, agroclimatology, fruit growing, growing of vegetables, agrotourism.

Preparation of materials for seminar papers: selected professional terminology and issues covering wine making and viniculture.

Development of general and specific competence (knowledge and skills)

Independent reading and making comments on agricultural texts. Acquiring grammar knowledge as pre-requisite for correct written and oral ways of expressing.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

MATHEMATICS WITH STATISTICS **Course number: 04**

Hours weekly: 2+0+2+0/I **ECTS credits: 5**

Syllabus outline

Functions: term and features, composition of function, inverse function, elementary functions and their graphs, marginal value and continuity of functions, asymptotes.
Derivations: definition and geometrical meaning of derivation, rules of deriving, derivations of elementary functions, higher-order derivations, differential of function, L'Hospital's rule, extremes and inflection points, flow of function, economic application of derivation.
Economic and financial maths: percentage and per mil calculi; rule of three, recursive calculus, division calculus, composition calculus, interest account, periodical sums, loan service.
Descriptive statistics: distribution of frequencies, inductive and deductive methods, average values; dispersion measures, asymmetry and flatness.
Correlation and regression: method of smallest squares, linear regression, linear correlation.

Development of general and specific competence (knowledge and skills)

Enable students to use mathematical and statistical disciplines for better understanding other courses during their tertiary education and for solving concrete problems afterward graduating.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

BOTANY **Course unit number: 05**

Hours weekly: 2+0+1+0/I **ECTS credits: 4**

Syllabus outline

Introduction into Botany – features of lively beings; differences between plants and animals; importance of plants in the environment and in man' s life; botany and its division. Cytology – cell structure. Morphological levels of organisation. Histology – constitute and material cells. Anatomy and morphology of vegetative organs. Anatomy and morphology of generative organs. Plant multiplication. Systematic descriptions – systematic categories and nomenclature; systematic descriptions of lower-order ones – bacteria, algae, fungi and lichens – emphasis on plant parasites and those of higher-order plants (moss, ferns, spermatophyta) – including survey of families of cultivated plants belonging to monocotyledons and dicotyledons and weed.
Exercises: Microscope and its use; Structure of epidermal cell of onion. Cell colonies and germination – yeasts; Anatomic structure of annual and biennial vine stalk. Anatomic structure of vine leaf and root. Vine bud in longitudinal section. Flower and inflorescence of vine. Fruit and seed of vine. Morphological differences between monotyledons and dicotyledons.

Development of general and specific competence (knowledge and skills)

To be knowledgeable about structure of plants and their ability to change due to certain outdoor factors, enabling influence on plants (very important in plant production). In exercises, to get practised with use of microscope and how to prepare microscopic preparations, and be familiar with anatomy of vine and yeasts.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

ECOLOGY **Course unit number: 06**

Hours weekly: 3+0+0+0/I **ECTS credits: 4**

Syllabus outline

Definition, history and significance of ecology. Basic ecological terms: biotope, population, biocenosis, ecosystem. Matter cycles and energy flows in ecosystem. Food chains.
Ecosphere and its components. Man's impact on environment. Biosphere. Biodiversity and agents of its reduction. Sustainable growth and ecological efficiency.
Abiotic and biotic interacting components. Biological tolerance.
Agrosphere. Critical points of agrosphere. Organic agriculture. Agroecological indicators. IFOAM. Ecological agents of pest control.
Vineyard as ecosystem. Main abiotic and biotic factors affecting growth of vine. Ecological control of insects and diseases in vineyard. Assessment of ecological acceptability in treating vine with various insect controlling agents.

Developing of general and specific competence (knowledge and skills)

After following course, students should know of how to preserve agrobiotope. Besides, they should be theoretically qualified to pass from conventional to biological wine-making.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

VINE GROWING I **Course number : 07**

Hours weekly: 2+0+1+2/I **ECTS credits: 6**

Syllabus outline

Introduction into vine growing. Vine origin. Historical development of vine growing. Expansion of vine. Morphology of vine and some more important physiological functions of vine. Vegetative organs of vine. Generative organs of vine. Developmental cycle of vine. Cutting of vine. Mature wood section. Cutting technique.

Development of general and specific competence (knowledge and skills)

Insights into the history of viticultural production in Croatia and the world. Basic morphological features of grape vine. Basic and advanced techniques of vine cutting.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

PHYSICAL EDUCATION **Course unit number: 08**

Hours weekly: 0+0+2+0 / I, 0+0+2+0 / II **ECTS credits: -**

Syllabus outline

Classes are held in fitness center and as outdoor running exercises (cross country).
Through exercises students become aware of the importance of regular exercising.
Students also acquire basic information about physical education which has great influence on general heath, on capacity for work and defense mechanisms.
The above mentioned elements influence the development of functional and motoric ability as well as conative and cognitive characteristics of the human body.

Developing of general and specific competence (knowledge and skills)

Students gain knowledge and develop skills in physical education to satisfy biological and psychosocial need for movement.

Types of classes and methods of assessment

ECONOMICS OF AGRICULTURAL ENTERPRISE

Course unit number: 09

Hours weekly: 2+0+0+0/ II

ECTS credits: 2

Syllabus outline

Introduction into agricultural economics. Means of agricultural estate: term and classification of means production, capital assets, current assets, liquidity and solvency. Function of production, total, average and marginal product, law of diminishing returns, economy of scale. Theory of costs and calculation: term and kinds of costs, fixed charges, variable costs, marginal costs, cost dependence on changes related to capacity utilization, calculation of costs valid for different degrees of capacity utilization, expense cover point, calculations. Determination of performance results: expenditures, revenues, profit and loss account, financial flow of funds, operating result, establishing value of agricultural estate. Indicators of good performance: term of good performance, labour productivity, cost effectiveness, profitability. Economics of investment: preparation of investment projects, evaluation of investment projects.

Development of general and specific competence (knowledge and skills)

Providing students with information about basic economic sizes, crucial for good performance of agricultural estate. Helping students learn how to determine them. Presentation of possibilities and ways of influences that estate leader may have on its good performance.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

BIOCHEMISTRY **Course unit number: 10**

Hours weekly: 2+0+1+0/II **ECTS credits: 4**

Syllabus outline

Biochemistry as a study of molecular structures and chemical reactions in the organism. Macromolecules: principles of organisation, conformation and molecular interactions. Amino acids and peptides: properties and functions. Proteins: structure and function, enzymes as biological catalysts. Action of biocides as enzyme inhibitors. Coenzymes, prosthetic groups and vitamins. Carbohydrates: structure and function, main categories in grapes. Lipids: structure and function. Neutral fats, oils and lipids in Mediterranean cultured plants and products. Waxes and complex lipids. Metabolism: basic concepts and regulation. Photosynthesis: reactions on the light and the dark reactions. Glycolysis. Alcoholic, lactic and glycero-pyruvic fermentation. Biochemical transformations that occur during vine production and in cases of vine defects. Citric acid cycle and oxidative phosphorylation. Nitrogen fixation and biosynthesis of amino acids. Nucleic acids and the genetic code. Protein synthesis and genetic engineering. Characteristics of GMO and problems associated with their production and utilisation.

Developing of general and specific competence (knowledge and skills)

Students will develop the knowledge about molecular level structures and reactions found in the living organism. Biochemical base of some processes that take place during production of main Mediterranean plants will be emphasized.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

ENGLISH II **Course number: 11**

Hours weekly: 1+0+1+0 /II **ECTS credits: 3**

Syllabus outline

Course contents to be selected from the following professional fields: soil science and plant nutrition, vine growing, plant protection, wine making, agroclimatology, fruit growing, agrotourism, etc.
The above stated contents to be expanded by some more general issues related to the future professional orientation of students.
Analysis of selected texts from professional literature.
Auditory-speaking exercises through defining, classifying, logically interpreting compounds, rhetoric analyses and summary writing.

Development of general and specific competence (knowledge and skills)

Improvement of reading and listening comprehension as well as speaking competence aimed at being prepared for written and oral communication in English, paying special attention to professional issues covered by this type of studying.

Types of classes and method of assessment

The course is carried out weekly, in the form of consultancy.

ITALIAN II **Course number: 11**

Hours weekly: 1+0+1+0/II **ECTS credits: 3**

Syllabus outline

ESP – vocabulary and structures.
Exercises include: Tense System – Active Voice (*imperfetto, condizionale semplice e composto, imperativo*). Relative pronouns. Sequence of tenses. Compound words and word derivation.

Lectures selected from the following professional contents: soil science and plant nutrition, viniculture, olive growing, plant protection, wine making, agroclimatology, fruit growing, growing of vegetables, agrotourism.

Preparation of materials for seminar papers: selected professional terminology and issues covering Mediterranean agriculture.

Development of general and specific competence (knowledge and skills)

Independent reading and making comments on agricultural texts. Acquiring grammar knowledge as pre-requisite for correct written and oral ways of expressing.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

SOIL SCIENCE **Course number: 12**

Hours weekly: 2+0+1+0/II **ECTS credits: 4**

Syllabus outline

Definition of soil, ground and pedosphere. Factors of soil genesis. Mother substrate and mother rock, climate, relief, time, organisms. Soil genetic processes. Soil morphology. Specific wine yard soils. Physical features of soil. Texture, structure, density, porosity, consistency, water in soil, air in soil, heat characteristics. Chemical features of soil. Mineral substance, organic substance, fertility elements – macro and micro nutrients, oxido-reduction processes in soil, sorption, soil solution, puffers and puffing characteristic of soil. Microbiological features of soil. Soil classification. FAO classification. Soil classification in Croatia with particular consideration of soil types appropriate for agricultural production. Soil spread according to Pedological map Scale 1:300.000. Soil degradation. Erosion. Saltening of soil. Decrease in soil fertility. Soil survey for vinicultural production.

Development of general and specific competence (knowledge and skills)

Basics of soil science including more important soil features. Insights into specific ways of using soil for wineyard production. Soil protection and ecological problems of agricultural production.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

MECHANISATION IN VINE GROWING AND WINE MAKING **Course number: 13**

Hours weekly 2+0+2+1/II **ECTS credits: 5**

Syllabus outline

Internal-combustion engines: types, operation principle, ways of using them. Fuels and lubricants. Main parts of tractor. Models of tractors in vine growing and wine making. Machines and devices for arranging grounds, preparing planting and vine planting. Equipment for production of vine planting material. Machines for tillage, basic and additional fertilisation in vineyards and orchards. Methods, machines and devices for applying pesticides in vineyards and orchards. Methods and systems for irrigation in vine growing and fruit growing. Machines and equipment for picking and transporting grapes to cellars. Maintaining agricultural machines and devices. Organisation of wine cellar. Accepting grapes and controlling their quality. Machines and equipment for grape processing: line for processing white varieties; line for processing red varieties; Grape crushers; Drainers; Discontinuous and continuous presses; Pumps and systems for mass transfer; Devices for fermentation control. Machines and equipment for wine doctoring**:** Filters; Stabilizers; Lines for washing and filling bottles; Sterilisation systems, corking and labelling.

Development of general and specific competence (knowledge and skills)

Insights into parts of internal-combustion engines; modern machines and devices in vine growing and fruit growing; machines and devices for grape processing and wine doctoring. Work on particular types of machines and devices in vineyards and wine cellars.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

VINE GROWING II **Course number: 14**

Hours weekly: 2+0+1+3/II **ECTS credits: 5**

Syllabus outline

Binding of vine. Binding techniques. Materials required for vine binding. Green vine cutting. Technique of green cutting. Sprout shortening. Sprout topping. Removing leaves. Other ways of applying green cutting.

Development of general and specific competence (knowledge and skills)

Insights into basic and advanced techniques of binding and green vine cutting.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

WINE MAKING I **Course unit number: 15**

Hours weekly: 2+0+1+0/ II **ECTS credits: 4**

Syllabus outline

History of wine making. Chemical composition of grapes. Chemical composition of must: most important characteristics of main ingredients: sugar, organic acids, polyphenols, enzymes, minerals, etc. Processes of grape ripening. Wine cellars: purpose, type, size. Wine vessels and machines. Preparing cellars. Deciding on vintage time and vintage. Corrections made in must before fermentation: setting levels of sugar and acids, sugar adding, decreased and increased acidification. Must protection from oxidation. White wine vinification: characteristics, grape crushing, pressing (types of presses), protection from oxidation, fissure of pure must (spontaneous, filtering, centrifuging), activation of yeasts, alcoholic fermentation, spontaneous, controlled - cold, equipment and vessels used for controlled fermentation, violent and calm fermentation, decanting. Red wine vinification: grape crushing, maceration (classical and thermo-vinification, warm-cold), carbonic maceration (technology, characteristics), factors affecting maceration. Rose wine vinification. technology, characteristics.

Development of general and specific competence (knowledge and skills)

Insights into characteristics of basic must ingredients, allowed corrections and treatment of must before fermentation. Insights into modern technologies of producing white, red and rose wines as preparation for student's vinification of 'his own barrel' of white and red wine next term.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

PLANT PHYSIOLOGY **Course unit number: 16**

Hours weekly: 2+0+0+0/II **ECTS credits: 3**

Syllabus outline

Basic functions of cell. Water regime of plants (content inside plants, absorption, transport and extraction). Mineral substances (importance, intake and transport across plant). Photosynthesis (importance, mechanism and chemism, types, factors affecting process of photosynthesis). Chemosynthesis. Circulation of assimilates inside plant. Biological oxidations, respiration and fermentation. Heterotrophic plants. Growth and development of plants. Development of agricultural plants. Commotion of plants. Resistance to extreme factors of outdoor environment.

Development of general and specific competence (knowledge and skills)

To have insights into plant life processes and into how certain outdoor factors affect these processes, enabling better use of potentials related to fertility of cultivated verities which contributes to better yield and better quality of plant products.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

PHYSICAL EDUCATION | **Course unit number: 08**

Hours weekly: 0+0+2+0 / I, 0+0+2+0 / II **ECTS credits: -**

Syllabus outline

Classes are held in fitness center and as outdoor running exercises (cross country).
Through exercises students become aware of the importance of regular exercising.
Students also acquire basic information about physical education which has great influence on general heath, on capacity for work and defense mechanisms.
The above mentioned elements influence the development of functional and motoric ability as well as conative and cognitive characteristics of the human body.

Developing of general and specific competence (knowledge and skills)

Students gain knowledge and develop skills in physical education to satisfy biological and psychosocial need for movement.

Types of classes and methods of assessment

Classes are carried out weekly in the form of physical exercises. The activity of the students is monitored.
There is no exam.

ENGLISH III **Course number: 17**

Hours weekly: 1+0+1+0 / III **ECTS credits: 3**

Syllabus outline

Course contents to be selected from the following professional fields: soil science and plant nutrition, vine growing, plant protection, wine making, agroclimatology, fruit growing, agrotourism, etc.
The above stated contents to be expanded by some more general issues related to the future professional orientation of students.

Development of general and specific competence (knowledge and skills)

Development of strategic approach to reading with special respect to reading professional literature, development of ability to translate professional texts independently (English-Croatian and vice versa).

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

ITALIAN III **Course number: 17**

Hours weekly: 1+0+1+0/III **ECTS credits: 3**

Syllabus outline

ESP – vocabulary and structures.
Exercises include: Tense System – Active Voice (*passato remoto,* piuccheperfetto, congiuntivo, modi indefiniti). Sequence of tenses.
Lectures selected from the following professional contents: soil science and plant nutrition, viniculture, olive growing, plant protection, wine making, agro climatology, fruit growing, growing of vegetables, agro tourism.
Preparation of materials for seminar papers: selected professional terminology and issues covering vine growing and wine making.

Development of general and specific competence (knowledge and skills)

Independent reading and making comments on agricultural texts. Acquiring grammar knowledge as pre-requisite for correct written and oral ways of expressing.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

MICROBIOLOGY OF MUST AND WINE **Course number: 19**

Hours weekly: 2+0+1+0 / III **ECTS credits: 4**

Syllabus outline

Introduction into role and importance of micro organisms. Structure of procariotic and eucariotic ones. Metabolism of micro organisms (catabolitic and anabolitic reactions, catabolism of carbohydrates, aerobic respiration, anaerobic respiration, fermentation). Growth and propagation of micro organisms (ways of their nourishing, bacterial growth curve).
Micro organisms important in wine making (yeasts, moulds and bacteria).Yeasts: Classification of yeasts. Characteristics of most important types of yeasts. Selected yeasts. Autochthonous flora and alcoholic fermentation. Selection of autochtonous yeasts. Current knowledge about role and importance of autochthonous yeasts in emphasising so-called 'typical' features of wine in some terroir. Bacteria. Bacteria of malolactic fermentation. Impact of malolactic fermentation on wine quality. Causing and preventing malolactic fermentation. Acetic bacteria. Some more important representatives. Prevention of acetification bacteria growth. Moulds, mould-agents of negative changes in wine.

Development of general and specific competence (knowledge and skills)

Insights into role and importance of micro organisms in wine making. Most important micro organisms in wine making.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

VINE GROWING III **Course number: 20**

Hours weekly: 2+0+1+1/III **ECTS credits: 6**

Syllabus outline

Agro-ecological conditions of viniculture. Warmth. Rain. Light. Winds. Starting vine plantations. Arranging production area. Improving physical, chemical and biological features of soil. Preparing surface for planting vineyard. Other preparatory activities before planting. Planting vine roots and shoots. Care of young vineyard. Systems of vine growing. Elements and names of growing. Growing models and basic features. Complex growing systems. Renewal and changes of growing system. Supports in vineyard. Wooden posts and poles. Stanchions made of other materials. Wire in vineyard. Other materials used for supporting, binding of tree, branchings and sprouts.

Development of general and specific competence (knowledge and skills)

Insights into agro-ecological conditions of vine growing. Vine growing systems, modelling and armature in vineyard.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

WINE MAKING II **Course unit number: 21**

Hours weekly: 2+0+2+2 / III **ECTS credits: 7**

Syllabus outline

Alcoholic fermentation: chemism of fermentation, primary and secondary products of fermentation, more important representatives of yeasts, selected yeasts, activation of yeasts, yeast nutrition. Malolactic fermentation: changes of chemical composition and sensor characteristics of wine, influences on quality, provoking and preventing malolactic fermentation. Care and maturation of wine (inox, wood), wine protection - SO_2, ascorbic acid, inert gases, infusion, racking. Oxido-reproduction processes of wine: oxidation, redox potentials, oxidation and redox potential. Wine deposits: iron, copper, tartars, proteins. Wine stabilisation: stabilisation of proteins, stabilisation of tartars, stabilisation of deposited metals, biological stabilisation. Wine clarification: purpose of clarification, types of clarifying agents (organic and mineral), application, trials, ways of adding. Filtering and centrifuging: filters (panel, deposit, membrane and cross-flow), centrifuges. Bottling: preparation of wine for bottling, bottling equipment, types of bottling machines and corking machines, corks.

Development of general and specific competence (knowledge and skills)

Through theory, students will acquire some new knowledge and expand their existent knowledge about main biochemical reactions of wine, appropriate doctoring, care, stabilisation and finalisation of wine. Their practical activities refer to their vinification of 'their own barrel' of red and white wine. Exercises include basic analysis of wine.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

MEDITERRANEAN FRUIT GROWING **Course number: 22**

Hours weekly: 2+0+1+0/ III **ECTS credits: 4**

Syllabus outline

Insights into fruit structure and functions of particular parts. Explanation of blooming, pollination and fructification as well as of propagation, cutting and growing forms. Following certain measures of fruit growing: intertillage, nutrition and types of fertlization, irrigation, protection from diseases and pests, picking and storaging, processing and offering products. Description of agroecological conditions on growing some fruit varieties.
The above-mentioned to be explained with help of following Mediterranean fruit varieties (fig, tangerine, kiwi, hazel, carob, peach, almond, sour and sweet cherries, strawberries, plum, quince and apricots). State origin of each variety, its spread, production areas, foundations and yields.

Development of general and specific competence (knowledge and skills)

Insights into most frequent fruit varieties in Mediterranean, their agro and pomotechnical measures in growing each variety, and cost-effectiveness of growing certain crops. Learning about cutting and modelling growing forms, and ways of picking and appropriate storage of fruits.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

GROWING OF VEGETABLES **Course unit number: 23**

Hours weekly: 2+0+1+0/III **ECTS credits: 4**

Syllabus outline

Importance and position of vegetable growing in agriculture. Improvement possibilities of vegetable production in Croatian agriculture. Requirements needed for setting up economy of vegetable growing. Vegetables and nourishment. Parting of vegetables. Propagation of vegetable crops. Factors of fructification. Deciding on technological ripening of vegetables. Influences of outdoor vegetative factors on growing of vegetable crops. Phytohormones and growth inhibitors in vegetable growing. Characteristics of soil for vegetable-growing and tillage practices. Soil as substrate in vegetable production. Use of soil analysis in determining doses of fertilizers. Dressing and fertilizers. Systems of plant production in vegetable growing. Basics of vegetable protection. Picking, packing and transportation of vegetables. Protected areas. Irrigation of vegetable crops. Technical procedures of seeding, planting and picking vegetable crops. Growing of vegetable varieties according to basics of botany, biochemistry, physiology, feeding, general production and plant protection.

Development of general and specific competence (knowledge and skills)

To have insights into prerequisites and possibilities of introducing production of vegetables onto family farms. To have insights into basic agro-ecological conditions of vegetable growing. To acquire basic elements of technologies related to growing of vegetable crops.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

GROWING OF VEGETABLES | **Course unit number: 23**

Hours weekly: 2+0+1+0/III **ECTS credits: 4**

Syllabus outline

Importance and position of vegetable growing in agriculture. Improvement possibilities of vegetable production in Croatian agriculture. Requirements needed for setting up economy of vegetable growing. Vegetables and nourishment. Parting of vegetables. Propagation of vegetable crops. Factors of fructification. Deciding on technological ripening of vegetables. Influences of outdoor vegetative factors on growing of vegetable crops. Phytohormones and growth inhibitors in vegetable growing. Characteristics of soil for vegetable-growing and tillage practices. Soil as substrate in vegetable production. Use of soil analysis in determining doses of fertilizers. Dressing and fertilizers. Systems of plant production in vegetable growing. Basics of vegetable protection. Picking, packing and transportation of vegetables. Protected areas. Irrigation of vegetable crops. Technical procedures of seeding, planting and picking vegetable crops. Growing of vegetable varieties according to basics of botany, biochemistry, physiology, feeding, general production and plant protection.

Development of general and specific competence (knowledge and skills)

To have insights into prerequisites and possibilities of introducing production of vegetables onto family farms. To have insights into basic agro-ecological conditions of vegetable growing. To acquire basic elements of technologies related to growing of vegetable crops.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

MARKETING OF BEVERAGES **Course unit number: 28**

Hours weekly: 2+0+1+0 / IV **ECTS credits: 3**

Syllabus outline

Term and definition of marketing. Marketing functions. Marketing concept as a company policy. Analysis of consumers' market and consumers' behaviour. Analysis of competitors. Identification of market segments and selection of target markets. Management of products during their life cycles. Establishment of marketing plan, stages of planning. Analysis of situations, analysis of chances and risks, analysis of advantages and disadvantages, setting of measures. Development of strategies, term and types of marketing strategies, process of strategy marketing. Creation of strategies of communication and promotion mix. Channels of distribution. Creation of programmes of direct marketing, selling improvement and public relations.

Development of general and specific competence (knowledge and skills)

To know how to outline marketing plan. To have insights into marketing communication. To get familiar with distribution channels, particularly those of direct distribution.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

RURAL FORMS OF TOURISM **Course unit number: 29**

Hours weekly: 2+0+1+0 / IV **ECTS credits: 3**

Syllabus outline

Historical development of tourism, tourism terms and their definitions, origin and development of rural tourism, forms of rural tourism, requirements for development of rural tourism, factors of rural tourism development, effects of rural tourism, marketing in rural tourism, advertising and selling in rural tourism, policy, organisations and services aimed at developing rural tourism, foreign and domestic experiences of rural tourism development, experiences considering rural tourism in Istria.

Development of general and specific competence (knowledge and skills)

Insights into tourism and its development, in particular that in rural areas, insights into pre-requisites and subjects of rural tourism development, ability to estimate motivational-attractive values of area and facilities required for development of rural forms of tourism, planning tourist supply in respect to rural tourism, development of selling skills.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

ENGLISH IV **Course number: 24**

Hours weekly: 1+0+1+0 / IV **ECTS credits: 3**

Syllabus outline

Course contents to be selected from the following professional fields: soil science and plant nutrition, vine growing, plant protection, wine making, agroclimatology, fruit growing, agrotourism, etc.
The above stated contents to be expanded by some more general issues related to the future professional orientation of students.

Development of general and specific competence (knowledge and skills)

Development of project approach to professional issues, development of presentation skills in English, improvement of speaking competence in English.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

ITALIAN IV **Course number: 24**

Hours weekly: 1+0+1+0/IV **ECTS credits: 3**

Syllabus outline

ESP – vocabulary and structures.
Exercises include: Tense System – Active and Passive Voice. Sequence of tenses. Conditional clauses. Direct and indirect speech.
Lectures selected from the following professional contents: soil science and plant nutrition, viniculture, olive growing, plant protection, wine making, agroclimatology, fruit growing, growing of vegetables, agrotourism.
Preparation of materials for seminar papers: selected professional terminology and issues covering vine growing and wine making.

Development of general and specific competence (knowledge and skills)

Independent reading and making comments on agricultural texts. Acquiring grammar knowledge as pre-requisite for correct written and oral ways of expressing.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

VINE GROWING IV **Course number: 25**

Hours weekly: 2+0+2+3/ IV **ECTS credits: 7**

Syllabus outline

Analysis of vintage in the previous vegetative year. Fertilization of grape vine. Vine's needs for nutrients and their usage. Fertilization of vineyard. Types of composts and ways of their application. Macro and microelements of fertilizing grape vine. Planthousing. Ecologically-sustainable vine growing. System of soil maintenance. Tillage. Soil grassing. Soil mulching in vineyard. Application of herbicides. Combined systems of soil maintenance. Commonest weeds in vineyard. Vine damages caused by abiotic and biotic factors. Damages caused by high and low temperatures, hail, protection agents. Other damages.

Development of general and specific competence (knowledge and skills)

Insights into basics of fertilization of vineyard and soil maintenance. Basic principles of planthouse production in vine growing. Damages in vineyard.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

WINE MAKING III **Course number: 26**

Hours weekly: 2+0+1+2/ IV **ECTS credits: 7**

Syllabus outline

Chemical composition of wine: alcohols, esters, organic acids, sugars, etc. Wine aromas: primary - varietal: flowery, fruit, grassy; secondary – pre-fermentative, fermentative; tertiary, sensitivity thresholds. Ripening and aging of wine: oxido-reduction processes, ester forming, transformation of components of red wine colour. Maturation, barrique wines, chemical changes, wine characteristics, appropriate way of oaking.
Wine failures: cause, changes of sensor characteristics of wine (flavour resembling H_2S, flavour resembling lees, etc.), prevention and elimination of failures.
Wine diseases: cause, changes of chemical composition and sensor characteristics of wine (wine flower, lactic and manit fermentation, mucosity), prevention and cure of diseases.
Law of wine and regulations of wine.

Development pf general and specific competence (knowledge and skills)

Insights into the most important chemical ingredients of wine, changes caused by different terms of maturation, and reasons of wine deterioration (failures and diseases).

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

SPECIAL AND SPARKLING WINES **Course number: 27**

Hours weekly: 2+0+1+0/ IV **ECTS credits: 4**

Syllabus outline

Brief historical overview of sparkling wine production. Production and characteristics of basic wine (selection of varieties, blending). Yeasts: features, activation and adding yeasts for 'second fermentation'. Technology of sparkling wine production: 'classical procedure': adding so-called liqueur (*liqueur de tirage*), bottling (types and characteristics of bottles), corking, keeping and arranging bottles, control over second fermentation, maturation with help of lees (*maturation sûr lies*), depositing on stands and machine depositing (*remuage sûr pupitres*), expedition of lees (*degorgément*), adding liqueur (*liquer d'expédition*), corking and labelling. Production of sparkling wine 'in tank': equipment for wine production, secondary fermentation, filtering, stabilisation and bottling. Technology of production of sparkling wine *asti spumante*. Technology of production of dessert and liqueur wines: Prošek, Marsala, Porto, etc., maturation and aging of liqueur wines. Technology of production of flavoured wines: Vermouth, Bermet, etc.

Development of general and specific competence (knowledge and skills)

Acquire necessary theoretical knowledge about production of special (dessert, liqueur and flavoured) and sparkling wines, and be able to do basic analysis of these wines during exercises.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

PLANT PROTECTION **Course number: 18**

Hours weekly: 3+0+2+1/IV **ECTS credits: 6**

Syllabus outline

Introduction and legal regulations. General terms related to plant pests. Plant protection (phytomedicine). Plant protection agents (phytopharmacy) – general part. Plant protection agents (phytopharmacy) – special part. Mechanical and physical aids in plant protection. Plant pathology – term, definition, diseases and their agents. Abiotic agents of diseases. Epidemiology and prediction of plant diseases. Importance and task of applied entomology. Morphology, anatomy and physiology of insect. Systematics. Class: Insecta, Arachnoidae, Myriapoda, Nemathelminthes, Gastropoda, Mammalia, Aves. Methods of checking entomofauna. Polyfagous pests. Definition of weed, classification of weed, damages caused by weed. Systems of integrated plant protection. Integrated plant protection according to OILB suggestion. Integrated protection of: vine, apple, pear, peach, apricot, plum, sweet cherry, sour cherry, strawberry, almond, hazel, oak, citrus fruits, olive. Preparation of plant protection plan by crops.

Development of general and specific competence (knowledge and skills)

Students acquire knowledge about importance of plant protection in plant production., protectionist measures, plant protection agents and their application; main (in terms of economy) pests of fruit and vine, timing of their appearance and characteristic types of damages as well as measures for their prevention.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

COSTS AND CALCULATION **Course unit number: 31**

Hours weekly: **2+0+1+0/ IV** **ECTS credits: 3**

Syllabus outline

Theory of costs and calculation. Term of cost, expenditure and expense. Basic types of costs. Classification of costs based on origin. Types of costs based on business functions. Types of costs based on ways of extent. Costs with respect to capacity utilization. Movement of costs dependant on quantity of effects. Changeability (dynamics) of costs. Calculation of costs with respect to different degrees of capacity utilization. Cost elasticity. Importance of calculations. Elements and types of calculations. Preliminary calculation. Costing. Division calculation. Ex post cost accounting. Setting purchase prices of basic production inputs. Setting production costs and sales prices of basic production outputs.

Development of general and specific competence (knowledge and skills)

Education on costs as economic size and importance of this type of knowledge. Helping students learn how to determine them in terms of agricultural estate. Ability to understand costs and use them in calculations that are basics of planning financial outputs.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

OLIVE GROWING **Course number: 32**

Hours weekly: 2+0+1+0/IV **ECTS credits: 3**

Syllabus outline

Origin, production areas and expansion of olives in Croatia and abroad. Basic structure (vegetative and generative organs), phenophases, impact of agro-ecological conditions on growth of olives and certain varieties. Propagation of olives (vegetative and generative), preparation of terrain, planting, establishment of growing forms, intertillage, diseases and pests, protection from them. Agro-technical and pomo-technical measures in production plantations of olives.
Varieties of olives and their characteristics.
Practical teaching activities (propagation, planting, cutting and harvest) to be done in appropriate teaching and technological premises in Istria.

Development of general and specific competence (knowledge and skills)

Insights into origin, expansion and importance of olives in man's life in Mediterranean region, also into most important agro- and pomo-technical measures of olive growing according to varieties. Insights into technique of propagation, cutting and establishment of growing forms. Also into ways of harvest and olive processing.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

IRRIGATION **Course number: 38**

Hours weekly: 2+0+1+0/V **ECTS credits: 5**

Syllabus outline

Introduction. Definition of irrigation. History of development and current position of irrigation in Croatia and in the world. Requirements for applying irrigation. Relation soil – plant – water in conditions of irrigation. Benefits and problems considering irrigation. Water dosage. Portion of irrigation. Starting point of irrigation. Source and quantity of water for irrigation. Quality of water used for irrigation. Basic elements of irrigation designing. Methods, types and systems of irrigation. Surface irrigation. Underground irrigation. Rain irrigation. Localised irrigation. Fertirrigation. Selection of method, type and system of irrigation. Regulation of water shortage in substrate in protected area. Water economy in protected area.

Development of general and specific competence (knowledge and skills)

Insights into basics of planning and using different irrigation systems in agricultural production. Feasibility study with calculations of water shortage and usage of fertilisers in systems of fertirrigation.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

TECHNOLOGY OF STRONG ALCOHOLIC BEVERAGES **Course number: 34**

Hours weekly: 2+0+1+0/ V **ECTS credits: 5**

Syllabus outline

Raw material for production of strong alcoholic beverages. Technological procedures of primary processing of raw material used for production of strong alcoholic beverages. Alcoholic fermentation, chemism and products of alcoholic fermentation. Preservation of residue. Distillation – basic principles, chemical changes, distillation equipment, columns. Procedures of standardisation (blending) of strong alcoholic beverages, preparation of water for diluting distillates, preparation of alcoholates, flavours and additives. Maturation and care of strong alcoholic beverages, physical-chemical processes during maturation. Technological procedures of production of strong alcoholic beverages. Production of grape brandies: grape brandy, wine-marc brandy, grape brandy from wine lees, wine-brandy. Wine distillate, distilled wine (cognac). Brandies with 'traditional' additives (honey, parts of plants and fruits - *ruda*, *biska*, *medenica*, etc.). Legal regulations on strong alcoholic beverages, importance of production of strong alcoholic beverages in the world and in Croatia.

Development of general and specific competence (knowledge and skills)

Appropriate preservation of raw material used for production of strong alcoholic beverages. Quality distillation (temperature, extraction of 'heart' of distillate) and additional processing of distillate. Selection of plant parts, preparation, adding and extracting required for production of brandies with 'traditional' additives.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

PRACTICAL ACTIVITIES IN WINE MAKING I **Course number: 35**

Hours weekly: 0+0+0+4/ V **ECTS credits: 3**

Syllabus outline

In students' wine cellar, students are to do their 'second independent vinification', applying the knowledge and skills (lectures and exercises) as well as experience (practical activities) acquired during their studying. A smaller amount of practical activities (technologically possible in students' wine cellar) is to be realised in the wine cellar and lab of the Institute of Agriculture and Tourism, Poreč.

Development of general and specific competence (knowledge and skills)

Due to practical activities, students will be able to gain the required professional-practical experience, so much important in modern wine production.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

VINE GROWING V **Course number: 36**

Hours weekly: 2+0+1+2/V **ECTS credits: 5**

Syllabus outline

Zoning of vine growing locations in Croatia. Vine growing foundations. American types of Vitis and their selection. American-American hybrids. European-American hybrids. Wine varieties of grape vine. Table varieties of grape vine. Vineyard designing. News in technology of vine growing production.

Development of general and specific competence (knowledge and skills)

Insights into range of wine and table varieties of vine and selection of foundations. Zoning of wine growing locations in Croatia and news related to modern technology of wine growing production.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

SENSORY ANALYSIS OF WINE I **Course number: 37**

Hours weekly: 1+0+1+0/ V **ECTS credits: 4**

Syllabus outline

Senses and their locations. Senses of sight, smell, taste (sweet, salty, sour, bitter). Descriptive sensory aspects of wine, terminology and ways of describing sensory experiences related to wine. Description of colour (ideal to defective), description of clarity (turbid to crystal-clear). Description of smells, types of wine aromas (flowery, fruit, grassy, spicy, etc.) intensity, subtlety and duration of wine flavour. Wine flavour, components forming taste of wine, evaluation of harmony between flavours of certain wine ingredients, retro-nasal flavour. Methods of points-system evaluation. Methods of taste testers. Recognition of wine flavours compared to deficient smells and flavours of wine. Tasting white, red and rose wines. Tasting and describing young, mature and archived wines. Tasting and describing Istrian wines (*Malvazija*, *Muškat* from Momjan, *Teran*, *Refošk*, etc.) and most important Croatian wines (*Graševin*a, *Plavac mali* etc..).

Development of general and specific competence (knowledge and skills)

Insights into required theoretical knowledge about senses, sensory aspects and appropriate way of describing or evaluating wine. Students will be thus able to follow and evaluate their production properly as well as to take active part in professional boards for evaluating sensory evaluation.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

SMALL BUSINESS MANAGEMENT **Course unit number: 38**

Hours weekly: 2+0+1+0 / V **ECTS credits: 4**

Syllabus outline

Management of agricultural businesses: what is entrepreneurship/management, what means to be a good manager, differences among entrepreneurs and managers, management roles (organizing, planning, leading…), efficient management, small and middle entrepreneurship, quick test of agricultural business efficiency, production factor of agricultural businesses, types of agricultural businesses, managing agricultural businesses (specifics; managing roles, overlapping of managing and ownership roles), developing business plans, state and local incentives for agricultural businesses, rural development programmes and agricultural businesses, agricultural holdings record, specific organisational associations of agricultural businesses.

Developing of general and specific competence (knowledge and skills)

Enabling students for autonomous management of agricultural businesses. From theoretical knowledge about management and examples from businesses, students will obtain sufficient entrepreneurial and management skills and learn how to use them in agricultural businesses (family farms, small/middle businesses, craft etc.).

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

BUSINESS ANALYSIS **Course unit number: 39**

Hours weekly: 2+0+1+0/ V **ECTS credits: 4**

Syllabus outline

Term, aim and task of analytical examination. Types and forms of analysis. Homogeneity of evidence. Preparations for analysis. Basic methods of analysis. Special methods of business analysis. Special methods of value analysis. Disturbance factors of comparative analysis. Usage of analysis results. Balance auditing. Balance analysis. Analysis of company financing and liquidity. Analysis of current assets. Analysis of financial outputs. Analysis of workforce structure. Organisation analysis and work standardisation. Analysis of salaries. Analysis of working activities done by management structures. Analysis of business policy. Complex analysis of production. Analysis of designing and planning production programme. Analysis of planning and realisation of production plan. Checking product solvency. Complex analysis of purchase. Complex analysis of selling. Analysis of productivity, cost-effectiveness and earning capacity.

Development of general and specific competence (knowledge and skills)

Helping student learn how to analyse agricultural estate considering all the elements that are important in business: current assets, financing and solvency, workforce, market, financial results. Ability to do these analyses as pre-requisite for making appropriate business decisions in time.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

HYGIENE AND MAINTENANCE **Course unit number: 40**

Hours weekly: 2+0+1+0 / V **ECTS credits: 4**

Syllabus outline

HYGIENE OF AIR. HYGIENE OF SOIL. HYGIENE OF WATER. Microbiology of water. Polution of water. Treatment of waste water. FOOD HYGIENE. Microorganisms in food products. FOOD SPOILING. Toxins of bacteria, fungi and algae. Preservation methods of food products. STERILIZATION. Methods of sterilization. DISINFECTION. Cleaning agents and disinfectants. Disinfectants: modes of action. Principles of «CIP». DESINSECTION. Insects in general: properties and species of interest. Agents in desensitization. Modes of action. DERATIZATION. Rodents in general: properties and species of interest. Basic principles of rodents′ elimination. FOOD PROCESSING PLANTS AND EQUIPMENT. General and specific demands in construction of processing plants – ventilation, water, light, materials. HACCP systems in food processing plants. Hygiene of personnel. SANITARY INSPECTION AND LEGISLATION.

Developing of general and specific competence (knowledge and skills)

Comprehension of basic causes of food infections and intoxications, hygiene maintenance and sanitation in food processing plants.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

AROMATIC AND MEDICINAL PLANTS **Course number: 41**

Hours weekly: 2+0+1+0/V **ECTS credits: 4**

Syllabus outline

Aromatic and medicinal plants through history.
Medicinal vegetable matters and their effects.
Collecting and drying of plants.
Preparation and ways of using.
Description of plants and their characteristics.

Development of general and specific competence (knowledge and skills)

Insights into the most important aromatic and medicinal plants and their possible use.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

PRACTICAL ACTIVITIES IN WINE MAKING II **Course number: 42**

Hours weekly: 0+0+0+6/ VI **ECTS credits: 5**

Syllabus outline

Finish vinification started in the previous term. A bigger part of the practical activities, which covers specific technologies and wine analyses, will be realised in the cellar and lab of the Institute of agriculture and tourism, Poreč. A part of the practical activities will be also realised in our teaching-technological premises.

Development of general and specific competence (knowledge and skills)

Due to practical activities, students will be able to gain the required professional-practical experience, so much important in modern wine production.

Types of classes and methods of assessment

The quality of realised practical activities will be controlled and assessed.

FARM PREMISES **Course number: 44**

Hours weekly: 2+0+1+0/VI **ECTS credits: 4**

Syllabus outline

Specific features of rural economy in Mediterranean region. Farm buildings: farmer's house and cellars; Store houses and stores; Wine vaults. Structure of modern rural economy. Structure and organisation of barn for machines, equipment and production materials. Structure and organisation of oil-mill. Structure and organisation of wine cellar. Structure and organisation of premises in planthouse and facilities for producing planting material. Polythene greenhouses and hothouses and other facilities of protected space. Facilities for composting. Infrastructure of premises with special reference to disposal of utility, organic and dangerous wastes. Measures of work protection and fire-fighting measures in farm premises. Lab and other facilities used for production of wine and distillates. Spatial planning law. Building law. Topographical surveying law. Regulations on contents, scales of cartographic projections, compulsory spatial indicators and standard of survey of spatial plans. Measures for protecting farm environment.

Development of general and specific competence (knowledge and skills)

Insights into structure of different farm premises, especially in Mediterranean region, and into their organisation. Exercises aimed at recognising different farm premises.

Types of classes and method of assessment

The course is carried out weekly, in the form of consultancy.

VINEYARDS IN LANDSCAPE **Course number: 45**

Hours weekly: 2+0+1+0 /VI **ECTS credits: 4**

Syllabus outline

From origin of vine and vine growing to modern legislature. History of vine growing. Vine as garden element in urban and rural areas. Garden architectural elements, paths and terraces, staircases, walls and drystone walls, fences, shelters, pergolas and eaves. Renewing, starting and maintaining vineyards. Vine – crop with special purpose. Vineyard areas in Croatia and their peculiar features. Ecological conditions, features of annual cycle of vine. Istria, Croatian Littoral and Kvarner islands (Where was the first vineyard planted in Istria? Climate in Istria, Croatian Littoral and Kvarner islands). Islet of Susak and its special features. Bakar terraces. Dalmatian vine growing and wine making in the past. Vineyards of Primošten – monuments of Dalmatian agricultural labourers. Vineyards in landscapes of continental Croatia. Vine growing estates and their history. Vine motifs in archaeology, ethnography, vine growing and wine making technology, as well as in economy and tourism. Vine in national customs, literature and visual arts.

Development of general and specific competence (knowledge and skills)

Insights into importance of vine in history and its significance in landscape modelling.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

WINE SERVING AND ENO-GASTRONOMY **Course number: 46**

Hours weekly: 2+0+1+0/ VI **ECTS credits: 4**

Syllabus outline

Describing wines and acquiring appropriate terminology. Basic principles of wine serving and presentation, opening and serving white wines, opening and serving red wines, decantation f wine, opening and serving sparkling wines. Wine temperatures at serving. Wine glasses. Wine list. Eno-gastronomy: basic principles of matching meals and wines, wine wheel of taste and flavour, harmony between ingredients, evaluating impressions on wine and food. Matching on basis of tradition, season, etc.

Development of general and specific competence (knowledge and skills)

Students will acquire basic knowledge about appropriate way of presenting, serving and pouring wine, as well as basic rules of matching meals and wines. Thus, they will be qualified for quality presentation of wine.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

WINE PRESENTATION AND PROMOTION **Course number: 47**

Hours weekly: 2+0+1+0/ VI **ECTS credits: 4**

Syllabus outline

Describing wines and mastering technical terminology. Basic principles at wine presentations (wine preparation, length of presentation, etc.). Temperatures when serving wine and wine glasses. Opening and serving white, red, aged wines (racking) and sparkling wines. Emphasizing specific characteristics of products (varieties, vineyard positions, categories and wine styles, specific technological procedures in production and etc.). Wine aroma wheel, harmonized ingredients, assessing wine impressions. Package and its significance for wine promotion.

Development of general and specific competence (knowledge and skills)

This course will provide basic discoveries about a proper way of wine presenting and promoting. Namely, students will be capable of giving a well-structured presentation of their products or of a wine company they work for.

Types of classes and methods of assessment

The course is carried out weekly, in the form of consultancy.

BACHELOR PAPER **Course number: 43**

Hours weekly: (X) Term VI **ECTS credits: 17**

Syllabus outline

It is paper, independently written by student, and presents form of assessment of candidate's professional competence confirming that candidate is adequately capable of solving given professional task on his/her own. Its contents is based on application of knowledge acquired within curriculum of wine production professional studies. Student chooses its topic in term V, and has right to apply for his/her task and paper after passing all exams and realising all exercises. Topic is confirmed by Board responsible for graduation exams, upon suggestion of course professor, i.e. mentor who will guide student through writing final paper. Candidate should apply engineering work methods, professional literature and regulations, computers, etc. Paper, independently written by student, should consist of 30 -50 pages, and 180 hours are available to student for finishing it. Complete procedure of working on paper is assessed, and, in particular, student's presentation of paper in front of Board members.

Development of general and specific competence (knowledge and skills)

Acquiring professional knowledge, skills and experience through independent professional problem solving task and presenting bachelor paper.

Types of classes and methods of assessment

Student works on bachelor paper professionally supported by mentor.