Discipline	*VITICULTURE, PART II* code: 29 winter semester	
Specialty	AGRONOMY	
ECTS credits: **5**	Form of assessment: Exam	
Lecturer	Prof. Miroslav Ivanov, PhD Room: NUK 317a Phone: +359 52 385 725 E-mail: miro_ivanov56@abv.bg	
Department	PLANT PRODUCTION	
Faculty	*FACULTY OF MECHANICAL ENGINEERING AND TECHNOLOGIES*	

Annotation:
In the course of Viticulture – part 2, the students will get thorough theoretical background about the contemporary aspects of the vine-growing agro-technology. During the training process they will acquire practical skills for vine breeding, the production of grafted rooted vines and the creation of new vine plantations. The main focus is placed on the vine pruning and training as the most important procedures having an impact on grape yield quality and quantity. The special pruning, summer hedging, soil maintenance, fertilizing, water regime and irrigation of the vine are presented in separate sections. The training of the students for the Bachelor's degree is finalized with the harvesting of the wine and table grapes and the raisins production. They have gained knowledge both about the biological features of the grapevine and about the basic agro-technical practices and specific requirements for the cultivation of the vineyards. These competences and skills will allow them to work efficiently as specialist agronomists in the different production trends of viticulture, as well as the theoretical basis for continuing their education for Master's Degree and PhD.

CONTENTS:

Training Area	Hours lectures	Hours seminar exercises

Production of grafted rooted vines. Production of rootstock cuttings for grafting. Mother vines for the production of cuttings for grafts. Factors influencing graft-to-scroll adhesion. Deadlines for grafting. Preparation of rootstocks and rootstocks for grafting. Grafting the scion onto the rootstock. Stratification and hardening of grafted cuttings. Application of paraffin in the production of grafted rooted vines.	2	
Vine rootstock. Technological schemes for the production of grafted rooted vines. Technology for the production of grafted vines by planting in tyres. Technology for the production of grafted rooted vines by bed-strip rooting. Technology for growing the grafted, stratified and double-paraffinized cuttings in a greenhouse, planted in cardboard pots /cardboard method/. Extraction, sorting and storage of grafted rooted vines. Rooting of cuttings from rootstocks and cultural varieties.	2	
Creation of vineyards. Development of a project to create a new vineyard. Choice of place. Organization of the vineyard territory. Preparation of the area. Remedial measures. Terracing. Rooling. Forms and density of planting. Marking the site for a vineyard. Planting time. Planting technique. Care for young plants. Support structures.	2	
Pruning and forming the vine. Theoretical foundations of pruning. Essence, goals and tasks of pruning. Fighting polarity. Regulation of the ratio between growth strength, grape yield and its quality. Fertility of buds. Fertility of winter eyes depending on environmental conditions and the biology of the variety. Potential and actual fertility of the vine during the winter-spring period. Death of the buds in the winter eyes of the vine during the growing season. Influence of the amount of perennial wood on bud fertility, grape yield and its quality. Correct spatial arrangement of the aerial parts of the vine. Methods for determining the optimal loading of vines. Forecasting the yields of the vine plantations. Time to do the pruning. Rules and techniques for pruning. Pruning systems and formations. Short prunings. Cup-shaped formation. Formation Cordon Roaya. Vertical and horizontal cordon Tomry. Cordon Vertico. Long prunings. Silvoz. Maroje. Mixed prunings. Guyot formation. Formation original Guyot. Formation improved Guyot. Formation Stem double-armed Guyot. Formation Kaznav. Moser formation. Umbrella formation. Geneva double curtain. Single-slope and double-slope pergola. Loznitsa (Asma).	8	
Special prunings. Pruning of vines affected by winter, late spring and early autumn frosts. Pruning vines after hail.	2	
Pruning operations with the green parts of the vine (Green pruning). Filizene. Pinching. Breaking. Squatting. Wheeling. Thinning of grapes and grains. Thinning of the leaves. Tying the vines. Opportunities to use growth regulators to perform green pruning operations. Ecology of the vine.	2	
Maintaining the soil surface in the vineyards Tillage. Autumn plowing. Raking the vines. Scavenging the vines. Vegetation treatments. Periodic deep loosening of the soil. Use of herbicides in vineyards. Mulching the soil. Weeding the soil.	2	

Fertilization of the vine. Theoretical foundations of the fertilization of the vine. Determining the fertilizer requirement of the vine. Mineral and organic fertilizers. Fertilization system of the vines. Fertilization of young and fruiting vines.	2	
Water regime and irrigation of the vine. The vine's need for water. Availability of soil moisture. Damage to the vine from drought and excess moisture. Effect of irrigation on the vine plant. Determining the timing of irrigation. Irrigation norms. Ways of irrigation. Furrow irrigation. Raining. Subsoil irrigation. Drip irrigation. Irrigation by the "cooling system" (cooling system).	2	
Harvesting of wine and dessert grapes. Preliminary determination of yield. Determining the time of the grape harvest. Peculiarities of harvesting dessert grapes. Mechanization of grape harvesting processes. Dessert grapes. Grapes for processing. Grading of grapes for fresh consumption and processing. Standardization of grapes intended for fresh consumption. Standardization of wine grapes intended for processing. Storage of dessert grapes. Storage of grapes in refrigerators. Storing grapes at home. Damage to grapes during storage.	3	
Production of raisins. Botanical and agrobiological characteristics of the most important dessert varieties (white and red).	1	
Raisin production. Botanical and agrobiological characteristics of the most important white grapes frost varieties.	1	
Raisin production. Botanical and agrobiological characteristics of the most important red wine varieties	1	
Ripe pruning - principles, rules and systems.		3
Short pruning system - Cup-shaped formation, Cordon Roaya, Vertico.		4
Long pruning - Silvoz.		2
Mixed system of pruning - Ground Guyot, Kaznav, Stem Guyot.		3
Pruning vines for formation and fruiting in the Moser and Umbrella formations.		4
Green pruning operations in nurseries and in young vine plantations/ 1st - 4th year/.		5
Green pruning operations in fruiting vines.		4
Ampelography.		5
TOTAL: **60 h**	**30**	**30**