

Transilvania University of Braşov, Romania

Study program: Agricultural and Food Eco-Biotechnologies

Faculty: Food and Tourism

Study period: 2 years (master)

1st Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Regulations and European Rural Policy	RPRE	5	1	1	-	-

Course description (Syllabus): European Union; European Commission; Common Agricultural Policy; Rural Development; National Plan for Rural Development; European Agricultural Guarantee Fund; European Agricultural Fund for Rural Development; Sustainable Growth; Income Support.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Equipment for Advanced Processing of Foods of Vegetal Origin	EPPAPV	5	2	-	2	-

Course description (Syllabus): Advanced techniques using to expand and extrude agricultural products and vegetal foodstuffs; Advanced techniques for superior processing of agricultural products and vegetal foodstuffs; Pulsed electric field treatment; Agricultural products and food preservation by irradiation Preservation of agricultural products and foodstuffs with microwaves; Preservation of agricultural products and foodstuffs using radio waves; Advanced technological lines for production of canned food; Fish conservation.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Equipment for Advanced Processing of Foods of Animal Origin	EPPAPA	5	2	-	2	-

Course description (Syllabus): Livestock technologies; Equipment for the production and distribution of fodders; Equipment for water supply of farms; Equipment for the hygiene of shelters in animal farms; Mechanical milking installations; Incubators and hatcheries; Milk processing machines; Meat processing machines; Technological lines in the milk industry; Technological lines in the meat industry.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern Equipment for Milling and Bakery	EMMP	5	2	-	2	-

Course description (Syllabus): Modern technologies and lines for conditioning cereals for grinding; Modern methods for sifting flour and intermediate products; Bread and new bakery specialties. Technological phases. Types of technological processes; Elements of dough rheology. The influence of the rheological properties of the dough on the operations of fragmentation and modeling. Modern technologies and equipment for modeling dough; Modern technologies and installations for baking bread; Products with high value. Making bakery premixes; Elements to improve the energy efficiency of the installations and equipment in the bakery and pastry industry.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Construction and rural infrastructure	CIR	4	1	1	-	-

Course description (Syllabus): This course provides an introductory presentation of various building materials as well as structural typologies used in this domain. It is, also, complemented by specific provisions for constructive, functional and technological composition of poultry, swine, sheep, cattle, horses and goats farms.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Ethics and academic integrity	EIA	1	1	0	0	0

Course description (Syllabus): Academic writing: text, discourse writer, reader. Importance of ethics in scientific research. Drawing the reader's attention; Paraphrasing texts; Academic structures used in scientific texts I. Citing and combining cited sources; Academic structures used in scientific texts II. Organizing texts, extracting information, writing abstracts; Academic structures used in scientific texts III. Identifying sources to write scientific texts.; Using databases; Academic structures used in scientific texts IV. Writing references. Common referencing styles; Academic structures used in scientific texts V. Writing academic texts (technical reports, instructions, procedures, manuals); Academic structures used in scientific texts VI.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern equipment and transmissions for agriculture	TUMA	5	2	-	1	1

Course description (Syllabus): Calculation of transmissions and tractors and construction vehicles. The calculation and construction of the main clutch; The calculation and construction of the gearbox and the transmission gear units; The calculation and construction of cardan transmissions; Calculation and construction of vehicle wheel axles; Calculation and construction of the vehicle axle track; The calculation and construction of the front axle of the vehicle wheel; Calculation and construction mechanisms and auxiliary systems for motor vehicles; The body, frame and vehicle body; Equipment coupling and drive machine work.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern machinery for communal administration	UMGC	5	2	-	2	-

Course description (Syllabus): Technical city management and landscaping; Generalities; The importance of technology for city management and of landscaping; Equipment for city management. Landscaping equipment. Machines for cleaning pedestrian areas and streets. Winter construction equipment; Equipment for water maintenance; Tractor for communal services. Couplings machine joint wear.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern Methods of Conditioning, Packaging and Labeling of Agricultural Products and Food	MMCAE	5	2		1	1

Course description (Syllabus): Use of fundamental knowledge needed to tackle problems regarding technologies, techniques and operations for conditioning, packaging and labeling of food products.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Internal Transport in Agri-Food Units	TIUAA	5	1	-	1	-

Course description (Syllabus): Basic parameters of internal transport systems; General organization of transport systems; Main parameter of the transport systems; Electrical equipment for persons and goods transport; Equipment for hydraulic and pneumatic transport; Safety standards and fire prevention

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Environmental Safety in Agriculture and Agri-food Units	PMAUA	5	1	-	1	-

Course description (Syllabus): Environmental safety; Pollution prevention; Environmental quality; Treatment and emission control installations; Green technologies.

2nd Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Agri-Food Quality Management	MCPAA	4	2	-	2	-

Course description (Syllabus): Authorized and the accredited laboratory; Quality indicators for products; Quality standard for the product; Analysis bulletin / declaration of conformity HACCP plan.; Potential danger and risk in food industry. Official quality sign (standard, controlled origin, bio, etc.).

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Advanced Experimental Analysis of Agricultural and Food Products Characteristics	AECA	4	2	-	2	-

Course description (Syllabus): The overall performance of measurement methods and means used to measure non physical quantities (displacements, velocities and accelerations, linear and angular, force, torque and pressure, fluid flow and the materials from bunkers and tanks, temperature, concentration of solutions, pH and moisture. Principles and methods for acquiring, storing and processing the results of measure-workers.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Energy Optimization for Enterprises and Processes in Agriculture and Food Industry	OEUPA	5	2	-	2	-

Course description (Syllabus): Introduction; Unconventional energy sources; Solar energy; Conversion of solar energy into thermal energy; Conversion of solar energy into electricity; Wind energy; Principles of conversion of wind energy into electricity; Construction and operation of wind power electric generators; Calculation of dimensioning of a wind energy system generating electricity. Hydraulic energy; Hydropower potential; Classification; Construction and operation of micro-hydroelectric plants; Energy calculation and conversion elements; Exploitation of micro-hydroelectric systems; Geothermal energy. Methods of conversion and use of geothermal energy; Use of geothermal resources; Thermal systems for direct use; Calculation elements. Biomass - renewable energy source. Biomass and sustainability; Types of biomass; Analysis and estimation of biomass production; Calculation of available biomass potential and biomass; Energy conversion of biomass; Technologies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Modern Systems and Equipment in Fermentation Industry	SEMIF	4	2	-	1	1

Course description (Syllabus): Brewing stages; Barley malting; Wort manufacture; Wort boiling; Wort fermentation; Beer filtration; General considerations regarding varieties of grapes used for wine; Quantitative and qualitative grape reception; Machines for unloading the grapes to wine cellar; Machinery for crushing grapes; Grapes pressing. General notions about the pressing process of grapes. General presentation of wine pots. Equipment for sparkling wine production. Factors that affect the longevity of wines; Wine flaws.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Hygienic Design in Food Industry	DIIA	5	2	2	-	-

Course description (Syllabus): Introduction to hygienic design of equipment in the food industry; Risks in industrial food processing; Design criteria for hygienic purposes; Building materials for hygienic design; Welding in the design and hygienic construction of equipment; Static seals and couplings in hygienic design; Cleaning and disinfection in hygienic design; Pumps and homogenizer; Location of buildings and processes.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Waste Management	MNGD	4	2	2	-	-

Course description (Syllabus): Legislation; Food processing waste; Raw material waste; Energy saving and minimization; Combined heat and power minimization; Combined energy and water minimization; Renewables in the food industry; Implementation of the waste hierarchy concept in relation to food processing co-products and wastes.