

Transilvania University of Braşov, Romania

Study program: Food Control and Expertise

Faculty: Food and Tourism

Study period: 4 years (Bachelor)

1st Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Mathematical analysis	MATE	4	2	2	-	-

Course description (Syllabus): sets elementary functions analytic geometry; vector calculation; sequences and series of real numbers; definitions; convergence of sequences; Cauchy's criterion; series with nonnegative terms; absolute convergence; alternating series; functions of a real variable; limit of a function; continuity of a function; derivative of a function; application of derivatives and Taylor's series; functions of several real variables: functions of two variables (limits. continuity; partial derivative; higher order partial derivatives (homogeneous functions. Taylor's theorem); maximum and minimum values of functions; indefinite integrals; definite integrals; improper integrals; improper integrals of the first kind; improper integrals of the second kind; beta and gamma functions; improper integrals involving a parameter; double integrals; first order differential equations.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Chemistry	CA	5	2	-	2	-

Course description (Syllabus): Organic chemistry is a science that is central to chemistry, materials science and biology in that it deals with molecular interactions. Much of what you will learn in this class will serve as a fundamental basis for your chosen discipline (organic chemistry, medicinal chemistry, materials, pharmaceuticals, medicine, etc.). It will be very difficult to learn this science by "simply" memorizing different reactions without an understanding of the fundamental concepts that are the basis for these reactions.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physics I	FIZ I	5	2	-	2	-

Course description (Syllabus): mechanic phenomena: principles and fundamental laws; oscillations and waves. wave phenomena; gases and gases' laws; liquids: hydrostatics and hydrodynamics; surface and transport molecular phenomena; thermodynamics; optics; electric and electromagnetic fields; spectroscopy; atomic and nuclear physics; radioprotection; physical methods used in food engineering, control and expertise.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Ecology and Environmental Protection	EPM	4	2	-	1	-

Course description (Syllabus): What is ecology: area of interest, tools and applications. What is environment and what should it be protected against? Environmental protection: a matter of fashion, education or basic human decency and responsibility? Major topics in environmental protection: global warming, renewables, geoengineering. Environmental services. My ecological footprint. Primeval – natural – semi-natural – anthropogenic – degraded environment. Ecological indicators in environmental assessment: the case of Common Bird Indicators. Protecting nature or environment: a false alternative? Nature protection: preservation, conservation, ecosystem approach, adaptive management. Can we afford preserving wilderness? Role of wildlands, ecological corridors and working landscapes in modern societies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Computer programming and programming language I	PCLP1	5	3	-	2	-

Course description (Syllabus): main hardware and software computer components; operating systems; peripherals; specific software applications for food industry; web browsing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Mechanical Engineering Elements I	EIM1	4	2	-	2	-

Course description (Syllabus): systems of forces. polar moment of a force. the moment of a force around an axis; equivalent systems of forces; geometry of masses. centre of mass; equilibrium of a rigid body subjected to ideal connections; equilibrium of systems of rigid bodies subjected to ideal connections. trusses; equilibrium of rigid bodies and systems of rigid bodies subjected to real connections (frictions); kinematics of rigid bodies; dynamics of rigid bodies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Foreign Language I (English/French/Spanish)	LE01	2	1	1	-	-

Course description (Syllabus): travel agencies and tour operators; a career in tourism; trends in tourism; where people go; travel agents; responsible tourism.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical education	EF01	1	-	1	-	-

Course description (Syllabus): various physical education activities with the aim to contribute to the development of mobility and motricity of the human body.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Academic writing	SA	1	1	-	-	-

Course description (Syllabus): academic writing, rules, regulations, ethics, text organizing, citation rules, layout, vocabulary, technical reports, instructions, procedures, using manuals, rules for biographical references, international agreed styles.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Theory of Probabilities and Mathematical Statistics	TPSM	4	2	2	-	-

Course description (Syllabus): probability, conditional probability, probabilistic schemas; random variables, mean, variance, moments; probability distributions; probability distributions; sampling theory; estimation theory; confidence intervals; statistical hypothesis testing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Mechanical Engineering Elements II	EIM2	4	2	-	2	-

Course description (Syllabus): strength of materials; stresses and strains; axial load; traction/ compression; torsion of circular cross section beams; statical moments and moments of inertia; diagrams of internal forces; bending of beams; buckling of beams; state of stress and strain.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Analytical Chemistry	CAN	5	2	-	2	-

Course description (Syllabus): instruments and methods used to separate, identify, and quantify matter, separation isolates analytes, qualitative analysis, quantitative analysis, precipitation, extraction, distillation, chromatography, electrophoresis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Technical drawing and infographics	TDI	5	2	-	2	-

Course description (Syllabus): The study of the discipline Technical Drawing and Infographic I aims to achieve the following objectives: training, education, shaping on the technical field the spatial vision, creativity in the plane-space relationship of real or imaginary objects; learning the graphical rules of plane representation, in biunivocal relationship of space-plane images, spatial objects; learning the norms and rules of flat design of spatial images, communication elements through drawing (on plan) specific to the technical field. Training and development of spatial reasoning, rigor, creativity and initiative in addressing problems regarding the preparation of graphic documentation for various projects.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical education II	EF02	1	-	1	-	-

Course description (Syllabus): various physical education activities with the aim to contribute to the development of mobility and motricity of the human body.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Biochemistry I	Bio	5	2	-	2	-

Course description (Syllabus): Vitamins – water soluble and fat soluble, enzymes, oxidoreductase, transferase, hydrolase, isomerase, hormones, Krebs Cycle, lipids, proteins, peptide, pigment, ADP – ATP cycle, amino acids, protein metabolism.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Computer programming and programming language II	PCLP2	5	2	-	2	-

Course description (Syllabus): classification of programming languages; algorithms; C++ programming languages. types of data. main commands and instructions; data matrix; strings; algorithms for string sorting; algorithms for data matrix; examples for main programming structure used in food industry.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Foreign Language II (English/French/Spanish)	LE02	2	1	1	-	-

Course description (Syllabus): travel agencies and tour operators; a career in tourism; trends in tourism; where people go; travel agents; responsible tourism.

2nd Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Elements of Electrical Engineering Applied in Agri-Food Systems	EIE	4	2	-	2	-

Course description (Syllabus): understand electrical current, potential difference, power and energy, sources of electrical energy, resistance and its behavior with temperature, Ohm's Law and the Kirchhoff's Law, electric field, lines of force, electric field intensity, electric flux, flux density and permittivity, Capacitor, charging and discharging phenomena of capacitors and calculations of capacitance for capacitors connected in series and parallel circuits, magnetic field, Faradays Laws; Lenz's Law; Fleming's Rules.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physics II	FIZ 2	4	2	-	2	-

Course description (Syllabus): The static balance of perfect fluids, fluid kinematics, laminar movement of the viscous fluids, dimensional analysis, modeling and hydrodynamic similarity, flow of viscous fluids in laminar regime through forced pipes, thermal systems and processes, modes of heat transfer, heat transfer by phase change, mass transfer.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
General Microbiology	MG	5	2	-	2	-

Course description (Syllabus): origin and evolution of bacteria; morphology of bacteria; physiology of bacteria; the growth and multiplication of bacteria; bacterial ecology; pathogenic elements; microorganisms that can contaminate food.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Industry Processes and Operations I	OUIA1	5	2	-	2	-

Course description (syllabus): tools for investigating characteristic phenomena for mechanical unit operations: dimensional analysis, material balance, rheology, similarity theory, particle size analysis; methods and apparatus for obtaining heterogeneous mixtures, methods and apparatus for shredding materials with different textures.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food biochemistry	BCH	5	2	-	2	-

Course description (Syllabus): metabolism of nutrients and other compounds from the food matrix; vitamins, enzymes involved in metabolic processes and in food industry; metabolic generation and utilization of bond energy; metabolic pathways for biosynthesis and catabolism of carbohydrates, fatty acids, proteins; metabolic relationships between the carbohydrates, fatty acids, proteins; biochemical transformations of food.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food chemistry	CA	5	2	-	2	-

Course description (Syllabus): deals with the chemical, physical and functional properties of food constituents (vitamins, enzymes, lipids, carbohydrates, proteins) and the chemical changes these constituents undergo during handling, processing and storage including those that limit food shelf life.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Enzymatic and immunological methods of analysis	MEIA	5	2	-	2	-

Course description (Syllabus): Introduction, enzymes, the use of enzymes in analytical determinations, antigens and antibodies, classification of immunological reactions, serological methods for identifying pathogenic microorganisms RIA, IRMA and ELISA methods and their applications in the food industry, IMS method, Reference materials for analytical determinations, validation of analytical methods.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Foreign Language (English/French/Spanish)	LEI03	2	1	1	-	-

Course description (Syllabus): promoting a destination; hotel facilities; things to do; marketing the past; business travel; service and safety.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical education	EF03	1	-	1	-	-

Course description (Syllabus): various physical education activities with the aim to contribute to the development of mobility and motricity of the human body.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Consumer behaviour	COCO	5	2	-	2	-

Course description (Syllabus): introduction to consumer behavior, factors influencing consumer behavior, springs and motivational theories of consumer behavior, consumer segmentation, purchasing decision and decision-making stages, knowing the consumer as an essential element in achieving a marketing strategy, ad-hoc measurement systems values - VALS typology, consumer and consumerism, consumer loyalty to the brand - differences between brand and lovemark concepts, consumer behavior in the online environment - opportunities and difficulties in terms of consumer knowledge and persuasion.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Hygiene in food industry	ISIA	4	2	-	2	-

Course description (Syllabus): the range of microbial risks in food processing; biofilm risks pathogen resistance to sanitizers; aerosols as a contamination risk; improving design: improving building design; improving zoning within food processing plants; risk assessment in hygiene management; good manufacturing practice (gmp) in the food industry; the use of standard operating procedures (sops); improving hygiene in food transportation; improving the control of insects in food processing; ozone decontamination in hygiene management; testing surface cleanability in food processing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Human nutrition principles	PNU	3	2	-	2	-

Course description (syllabus): overview on nutrition, brief history, food, nutrition and food hygiene; principal classes of biochemical compounds in food; milk and milk products consumption needs and risks; meat and meat products, consumer needs and risks; fish, and eggs, consumer needs and risks; honey and spices; fresh fruits and vegetables; cereals and cereal products, dried legumes, consumption and health effects; refined sweets and soft drinks; alcohol and alcoholic beverages; fats in food; food preservation and processing technology influence the nutritional values; foods and immunity; the nutritional value of food.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Special Microbiology	MS	5	2	-	2	-

Course description (Syllabus): microbiology of milk and milk products; microbiology of meat and meat products; microbiology of poultry meat and poultry meat products; microbiology of meat of fish, crustaceans and molluscs; microbiology of egg and egg products; microbiology of honey; microbiology of vegetable foods; microbiology of water used in food processing; microbiology of air, surfaces and hands of those working in the food industry.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Industry Processes and Operations II	OUIA2	4	2	-	2	-

Course description (Syllabus): Characteristic phenomena occurring in the conduct of unit operations such as mechanical and hydrodynamic (sedimentation, filtration, centrifugation, sieving, electrostatic separation, separation in magnetic field). Within each chapter are presented the theoretical aspects of phenomenology that each operation based factors influence their actions and representative types of installations running operation.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Computer Aided Design	GAC	3	2	-	2	-

Course description (Syllabus): basic concepts in computer aided design; technical drawing elements; 3 D transformations; projections; surfaces modeling; solids modeling.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Foreign Language (English/Franch/Spanish)	LE04	2	1	1	-	-

Course description (Syllabus): promoting a destination; hotel facilities; things to do; marketing the past; business travel; service and safety.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Technological Work Placement	PD	4	90 hours			

Course description (Syllabus): the students are assigned to certain institutions related to food industry and are allowed to work together with employers in several areas of the factories in order to achieve specific skills.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Physical education	EF04	1	-	1	-	-

Course description (Syllabus): various physical education activities with the aim to contribute to the development of mobility and motricity of the human body.

3rd Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Control and Quality Assurance	CSVSA	4	2	-	2	-

Course description (Syllabus): introduction; fundamental concepts for quality products and services; standards – standards; certification and quality guarantee; compliance certification quality products and services; quality science.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Epidemiology and public health	ESP	4	2	-	2	-

Course description (Syllabus): the course focuses on teaching students to apply basic concepts of epidemiology to multiple domains of public health. Several practices using epidemiology to better understand, characterize, and promote health at a population level are analyzed and explained. The class will engage the students in active and collaborative learning through team activities, individual projects, case studies, group discussion, and individual projects.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
General Food Technologies I	TGIA1	4	2	-	2	-

Course description (Syllabus): main processes, the physical basis for chemical, biochemical and microbiological characteristics; changes that nutritionally supports the food; bread, meal, milk, winw, bear etc. technologies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food products analysis I	APA 1	4	2	-	2	-

Course description (Syllabus): Units and measurements, constants, measurement errors, measurement quantities, methods and means of measurement, instruments and apparatus for measuring temperature, instruments and apparatus for measuring mass, instruments and apparatus for measuring density, instruments and apparatus for measuring viscosity of liquids, instruments and apparatus for measuring humidity, instruments and apparatus for measuring pressure, instruments and apparatus for measuring flow, instruments and apparatus for measuring the level of liquids, granular and powdery materials, instruments and apparatus for measuring pH, measuring and control apparatus used in the fermentation industry, measuring and control apparatus used in the meat and milk industry, measuring and control apparatus used in the sugar and bakery industry.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Sensorial Analyses I	AS 1	4	2	-	1	-

Course description (Syllabus): general on sensory analysis of food-historical importance as a complementary method to control and food expertise; the role of sense organs near the sensory characteristics of food; sensory analysis of dairy; sensory analysis of meat and meat preparations; sensory analysis of fish, crustaceans and molluscs; sensory analysis of honey; sensory analysis of fruits and vegetables; sensory analysis of alcoholic beverages; sensory analysis of confectionery; sensory analysis of canned; partially preserved and processed foods sensory analysis of food; sensory analysis of food fats; conditions are imposed in sensory analysis of food; sensory analysis of eggs and derivatives.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Industry Machinery and Equipment I	UIA1	4	2	-	2	-

Course description (Syllabus): conditioning of vegetal products; cereals drying; production of starch from cereals; production of glucose; food alcohol production; fruit and vegetable processing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Industry Machinery and Equipment I - project	UIA1 - project	2	-	-	-	2

Course description (Syllabus): conditioning of vegetal products; cereals drying; production of starch from cereals; production of glucose; food alcohol production; fruit and vegetable processing.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food additives and ingredients	AIA	4	2	-	1	1

Course description (Syllabus): The objective of the discipline is to bring contributions from the field of food additives to knowledge, understanding basic concepts, theories, and methods of chemical engineering, particularly extracts, and natural food additives, and their appropriate use in professional communication and use basic knowledge for explaining and interpreting various types of concepts, situations, processes, projects etc. associated with the domain.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Minimal athermal and thermal processing of food products	PMATA	4	2	-	1	-

Course description (Syllabus): design, organization and management of production systems in food industry, applying the values and ethics of the engineering profession and the responsible execution of professional tasks, in conditions of limited autonomy and qualified assistance. Promoting logical, convergent and divergent reasoning, practical applicability, evaluation and self-evaluation in decision making.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Packaging, labelling and design in food industry	ADIA	4	2	-	1	1

Course description (Syllabus): The aim of the course is the students to understand the basic principles of packaging and to use it in the processing, preservation, distribution and promotion of food products, to familiarize themselves with the available packaging materials, to understand how to link materials to safety, quality and shelf life of foods and to compare packaging materials to each other and understand their differences and similarities. After finishing the lectures, students will be able to choose the appropriate packaging materials and types in relation to the food that is to be packaged as well as to understand any problems that may occur due to inappropriate packaging.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
General Food Technologies II	TGIA2	3	2	-	2	-

Course description (Syllabus): main processes, the physical basis for chemical, biochemical and microbiological characteristics; changes that nutritionally supports the food; bread, milling, sugar, wine, beer etc. technologies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Industry Machinery and Equipment II	UIA2	3	2	-	2	-

Course description (Syllabus): plants for cooling milk immediately after milking; machinery and transport equipment for cooled milk; theoretical basis of milk filtration, filtration equipment and facilities for the reception of milk; pasteurization of milk, pasteurization theoretical basis, pasteurization plant; sterilization of milk, milk theoretical bases of sterilization, sterilization facilities in flux; specific equipment and installation phase extraction of milk fat; reception animals for slaughter, meat quality conditions and requirements depending on the state of preparation of animals prior to slaughter; machines for cutting coarse meat; fine shredding machine meat (cutters); mixing machines and mixing specific compositions meat processing; machines for filled membranes and recovery of products obtained.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Industry Machinery and Equipment II - project	UIA2 - project	2	-	-	-	1

Course description (Syllabus): plants for cooling milk immediately after milking; machinery and transport equipment for cooled milk; theoretical basis of milk filtration, filtration equipment and facilities for the reception of milk; pasteurization of milk, pasteurization theoretical basis, pasteurization plant; sterilization of milk, milk theoretical bases of sterilization, sterilization facilities in flux; specific equipment and installation phase extraction of milk fat; reception animals for slaughter, meat quality conditions and requirements depending on the state of preparation of animals prior to slaughter; machines for cutting coarse meat; fine shredding machine meat (cutters); mixing machines and mixing specific compositions meat processing; machines for filled membranes and recovery of products obtained.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food products analysis II	APA 2	4	2	-	2	-

Course description (Syllabus): Alcoholic beverages. generalities, classification, relapses, classification, sensory characteristics, methods of analysis of wines, wine, methods of analysis, beer, methods of analysis, non-alcoholic beverages, generalities, classification, drinking water, technical quality conditions, mineral water, technical conditions of quality, fruit juices, generalities, technology, classifications, methods of analysis, fruit syrups, technical quality conditions, soft drinks, methods of quality analysis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Methods and Techniques for Instrumental Analysis I	MTAI 1	4	2	-	2	-

Course description (Syllabus): Chemical methods of analysis - interferences with instrumental analysis; Electrochemical methods; Thermo methods of analysis; Optical methods of analysis; Absorption spectrophotometry in UV-VIS; Absorption spectrophotometry in IR; Analysis through atomic absorption (AA); Emission spectrometry; Refractometry and polarimetry; Metode cromatografice; Chromatography of gases (GC); High performance liquids chromatography (HPLC); Ionic cromatography (IC).

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Chromatographic and electrophoretic methods of food analysis I	MCEAA 1	4	2	-	2	-

Course description (Syllabus): Teaching the methods of analysis of food products, theoretical principles, equipment, main operational parameters, advantages and limitations of methods and especially their applications in the analysis and control of food products. Development of modern methods of analysis of food products.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Functional Food Products	AF	3	2	-	2	-

Course description (Syllabus): functional foods, introduction, definitions, the role of functional foods, bioactive components of foods, technologies used to optimize functional biocomponents, functional dairy products, the effects of fermented dairy products on health, meat, functional food, fish, functional food, dietary fiber, functional foods from cereals, technology of germinated cereals, current trends in the field of functional oils and fats, fruits and vegetables as protective foods, fortified foods, specific trends and technologies.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food legislation	LIA	3	2	1	-	-

Course description (Syllabus): The discipline aims at assimilating by students the following: International policies and strategies regarding food security, the legislative framework in this field, Codex Alimentarius, White Book Agenda on food safety, Consumer protection policies, Notions of identification, evaluation and management of risk in the field.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food products inocuity I	IPA 1	3	2	1	-	-

Course description (Syllabus): Identification, description and usage of appropriate notions specific to food science and food safety. Carrying out management and marketing activities on the agri-food chain. Applying strategies of perseverance, rigor, efficiency and responsibility at work, punctuality and taking responsibility for the results of personal activity, creativity, common sense, analytical and critical thinking, problem solving, etc., based on the

principles, norms and values of the code professional ethics in food. Application of interrelationship techniques in a team; amplifying and refining the empathic capacities of interpersonal communication and of assuming some attributions appropriate in carrying out group activity in order to deal/ resolve individual/ group conflicts, as well as optimal time management.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Technological Work Placement	PRAC	4	90 hours			

Course description (Syllabus): the students are assigned to certain institutions related to food industry and are allowed to work together with employers in several areas of the factories in order to achieve specific skills.

4th Year

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Marketing	MAR	4	2	1	-	1

Course description (Syllabus) : Marketing – general issues; The market of agri-foods products; The product policy in agri-food marketing: nutritional value of agri-food products; packing of agri-food products; standardization and certification in the field of agri-food products; The price policy in agri-food marketing: quality-price dependence; the price depending on the seasonality of the products; the price- nutritional value dependence; The distribution policy in agri-food marketing; distribution channels; The promotion policy in agri-food systems: the package and label- main vectors; advertising; merchandising; The promotion policy for ecological products.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Quality control of vegetable products	CCPV	5	2	-	2	-

Course description (Syllabus): understanding and knowledge of the legal requirements in relation to food standards and their application to food and an understanding of how food affects health and well-being. The rationale behind regulatory controls and the legal framework in respect of food and food products in the UK and EC, the law relating to the composition, labelling and advertising of food and food products sold for human consumption, the responsibilities and liabilities of food producers, manufacturers, distributors, retailers, importers, primary producers and suppliers of food and food products.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Control of Agri-Foods of Animal Origin	CCPA	5	2	-	2	-

Course description (Syllabus): definition and animal food control objectives, short historical trade and theoretical and practical importance of this discipline; control milk and milk products; control of meat and meat preparations; control of poultry; control fish and eggs; control eggs and derivatives; control of honey, preserves and partially preserved infectious diseases transmitted by food and food; parasitic diseases transmitted by food and food; altered food; control of hunted meat intended for human consumption; control of aquaculture products, fresh and froze; refrigeration and freezing salting smoking meats intended for human consumption.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Expertise and Safety	ESA	4	2	-	2	-

Course description (Syllabus): elements of national legislation in the field and; networking with EU regulations and the main foreign trade partners; intellectual property protection issues and industrial; issues related expertise; study technical circuit of goods in connection with product quality changes; stages of litigation generating circuit as a source of expertise.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Methods and Techniques for Instrumental Analysis II	MTAI 2	4	2	-	2	-

Course description (Syllabus): Development and operation of pollutant monitoring systems. Environmental quality control, impact and risk assessment and development of technological variants with low impact on the environment in accordance with BAT / BREF requirements and with the current legislation. Identifying and respecting the norms of ethics and professional ethics, assuming the responsibilities for the decisions taken and the related risks. Identifying roles and responsibilities in a multidisciplinary team and applying relationship techniques and efficient work within the team.

Efficient use of information sources and resources of communication and assisted professional training (portals, Internet, specialized software applications, databases, online courses, etc.) both in Romanian and in an international circulation language).

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Chromatographic and electrophoretic methods of food analysis II	MCEAA 2	4	2	-	2	-

Course description (Syllabus): Usage of the latest techniques for the isolation and extraction of food products from both forms of presentation and biological fluids. Training working skills with modern equipment used for food products analysis. Understanding the ways of combining modern food products analysis techniques.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Principles and Methods of Food Conservation	PCPA	4	2	-	2	-

Course description (Syllabus): general principles of food preservation; methods of preservation; food preservation by cold; food preservation by dehydration; conservation by thermosterilisation and pasteurization; preservation by salting; conservation by natural or artificial acidification; preservation of food by smoke; technological lines for production of canned food.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food products inocuity II	IPA 2	4	2	-	2	-

Course description (Syllabus): Understanding of basic concepts, theories and methods involved in the field; their correct use in professional communication. Acquisition of skills of an applicative/ practical nature regarding food safety, in correlation with the knowledge of the elements of general and special food toxicology. Ability to appeal and use methods of evaluation, integration and application of the most effective methods of toxicological expertise in a timely manner. Prompt application of all measures to prevent and combat food / feed contamination, according to the standards/ procedures/ protocols specific to each case/ situation. Knowledge and observance of the competencies in the establishment of the toxicological investigation and of the measures of prevention, respectively of control in the approach of the case. Understanding and awareness of the imperative need of continuous improvement and improvement of the level of training, in accordance with the introduction/ recommendation of new methods/ intervention techniques/ measures for toxicological surveillance of animal and plant foods and combating food/ feed contamination.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food control and quality assurance II	CSVSA II	4	2	-	2	-

Course description (Syllabus): Responsible application of the principles, norms and values of professional ethics in the performance of professional tasks and identification of objectives to be achieved, available resources, stages of work,

durations of execution, deadlines and related risks. Identifying roles and responsibilities in a multidisciplinary team and applying effective relationship and work techniques within the team. Identifying opportunities for continuous training and efficient use, for one's own development, of information sources and of communication resources and assisted professional training (Internet portals, specialized software applications, databases, online courses, etc.) both in Romanian, as well as in an international circulation language.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Management	MNG	3	2	1	-	-

Course description (Syllabus): quality, quality control, quality assurance, total quality management; the quality management system, quality manual; the quality system procedures - preliminary program; quality documents; safety systems in quality management; food quality components; official quality marks.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Sensorial Analyses II	AS2	4	2	-	2	-

Course description (Syllabus): sensory properties of wine, evaluation of samples, attributes of the taster, tasting process, visual perception, olfactory sensations, taste and mouth-feel sensation, technical wine assessment, qualitative wine assessment, styles and types of wine, nature and origins of wine quality.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food Authentication and Falsification	AFA	3	2	-	2	-

Course description (Syllabus): Dividing of food authentication methods, advantages, disadvantages, precision. Ways and reasons for food adulteration. Authentication of fruit juices and alcoholic beverages. Authentication of fish and seafood. Authentication methods of meat and meat products, additives and other ingredients. Authenticity of milk and dairy products, cereals, edible fats and oils, honey products, from coffee, cocoa and tea, eggs and egg products, spices, flavourings and colorings, mineral water. The authenticity of food treated with ionizing radiation, genetically modified foods, foods for special purposes. Application of chemometric and immunological methods for food authentication. New methods in food authentication.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Spectroscopic methods in food analysis	MSAA	3	2	-	2	-

Course description (Syllabus): Considering the actual context, most instrumental analysis methods and techniques involved in quality and authenticity evaluation – chromatographic and spectrophotometric methods, are laborious, time demanding and require a significant ability for developing several actions connected. Therefore, there has been an increasing interest in simpler, faster, and reliable analytical methods for assessing food quality attributes. The determination of product quality and authenticity and the detection of adulteration are major issues in the food industry, causing concern among consumers and special attention among food manufacturers.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Quality management	MC	3	2	1	-	-

Course description (Syllabus): Quality assurance and Quality improvement tools, including Statistical Process Control (SPC) implementation, develop knowledge and professional skills in field of implementing Quality Management Systems (including SPC techniques) in order to assurance quality of oil and gas products.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Food rheology	RA	3	2	-	1	-

Course description (Syllabus): Introduction to rheology, Newtonian and non-Newtonian fluids. Viscoelastic behaviour, dynamic and constitutive equations. Mechanical models. Discussion of models for flow and deformation in polymers and treatment of measurable rheological properties.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
General economy	EG	3	2	1	-	1

Course description (Syllabus): fundamentals of economic activity; enterprise costs; diagnosis of processes; diagnosis of potential; financial diagnosis.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Communication	CO	3	2	1	-	1

Course description (Syllabus): fundamentals of communication, general principles, principles of communication in food industry.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
Special Biotechnologies	BS	3	2	-	1	-

Course description (Syllabus): Definition and history of food biotechnology; Nature and type of fermentation bacteria; About Lactic acid bacteria; About Lees; About Molds; About Enzymology; About Starter cultures; Types starter cultures.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
BSc Project Preparation	PD	4	-	4	-	-

Course description (Syllabus): students prepare their final research thesis, develop the practical work for the research, write and compare the results.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
BSc Practice	PRDI	4	60 hours			-

Course description (Syllabus): students prepare their final research thesis, develop the practical work for the research, write and compare the results.

Course title	Code	No. of credits	Number of hours per week			
			course	seminar	laboratory	project
BSc Project Presentation		10				

Course description (Syllabus): students present their work in front of a committee in order to get the final mark for their thesis.