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Project “Improving skills in laboratory practice for agro-food specialists in eastern Europe» (Ag-Lab)

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Objectives:

- to complete the diploma in food technologies with the knowledge and skills necessary for the work at laboratory according to the elaborated references / professional competences;
- to provide the comprehension of laboratories organisation and activities;
- to provide the knowledge of actual laboratory methods and national and international norms related to the laboratory practice and to develop the capacity for the permanent up-grading of professional knowledge;
- to reinforce relations between universities and laboratories in agro-food sector and to create the conditions for the sustainable cooperation through the web-portal and other means.

Methods:

- the theoretical and practical classes in form of modules integrated into curricula (30% of the general curriculum);
- the practical trainings and study visits to laboratories of national and foreign institutions ;
- the on-line lectures;
- case-studies.

Quality assurance:

- the examination in the end of every course with the results reflected into the supplement to the diploma (modules, number of hours and notes);
- the tests of knowledge before the training study visit and after it;
- the evaluation of the provided training quality by students (clearness, completeness, practical usefulness etc.) with the further work for the improvement;
- the questioners for unit heads of the laboratories after receiving students for the practical training;
- the report of the common lectures and trainings with universities;
- further feedback of graduators launching their professional activities at laboratories.

Modules for the specialization “Laboratory practice in food technologies”

Module / Subject
Module 1. General organization of the laboratory practice
Subject 1. Activity organization and metrological provision of laboratory

Topic 1. Organization and functioning of laboratories (general requirements for laboratories): GPL – good laboratory practice, certification and accreditation of laboratories, metrological provision, international standards ISO 17025, ISO 9001, ISO 14001, ISO 45001, biosecurity levels in laboratory, European regulation related to the laboratory practice).
Topic 2. Procedures for confirmation of laboratory diagnostic efficiency (internal and cross audit, verification), quality assurance of laboratory researches (intra and inter-laboratory control). Validation of analytical methods.
Topic 3. Rules of the laboratory biosafety and use of biological materials and samples. Organization of measures for recycling of laboratory wastes, used samples, materials and chemical agents.
Topic 4. Measures for laboratory researches quality assurance at pre-analytical, analytical and post-analytical stages. Procedures for calibration and verification of measurement equipment.
Topic 5. Documents management at food enterprise and food stuffs control laboratory (necessary documents, software for documents management and registration, registers, experts' conclusions).
Module 2. Laboratory analysis methods in food industry
Topic 1. Modern methods of foodstuffs quality evaluation. Overview of instrumental research methods.
Topic 2. Techno-chemical and microbiological control in food industry. Techno-chemical and microbiological analysis of food stuffs.
Topic 3. Methods of detection of toxic matters in foodstuffs. Express-methods of control of foodstuffs quality. Sensory analysis methods of food raw materials and food stuffs.
Topic 4. Chromatography methods. Gas chromatography. Method. Separation and definition of chemical compounds.
Topic 5. Liquid chromatography. Method. Equipment. Obtaining and treatment of results.
Topic 6. Polymerase chain reaction (PCR). Principle of action (necessary components, primers, reaction running). Methods and use. Amplification and definition of ADN number.
Topic 7. ELIZA test. General principle and significance of the method. Application and stages of analysis.
Module 3. Quality management of foodstuffs
Topic 1. Management of foodstuffs quality. Technological expertise of food industry.
Topic 2. Methods for the falsification determination of food raw materials and food stuffs.
Topic 3. Requirements of EU hygienic package, EU regulation and Codex alimentarius, national legislation relative to Maximum tolerable levels, to control toxic matters and contaminants in foodstuffs.
Topic 4. Biological, chemical and physical risks along food chain, monitoring system for every critical point of control at foodstuffs production; risks assessment. Strategies for obtaining secure products of animal and plant origin, for production, transport and selling surveillance and control according to HACCP system