



Erasmus+

Erasmus+ Programme – Strategic Partnership

BETTER BAKERS READY FOR AN EUROPEAN MARKET

Project Nr: 2017-1-RO01-KA202-037394



IMPROVED Curricula for the training course of BAKERS



Co-funded by the
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of the European Union

INTRODUCTION

This material was created as a result within Erasmus+ Programme – Strategic Partnership project Nr: 2017-1-RO01-KA202-037394 with the title «Better Bakers Ready For An European Market» co-funded by the Erasmus+ Programme of the European Union.

Nowadays technology has changed so much that no matter which bakery you enter, Italian one, Greek or Turkish, it looks absolutely the same. There are several bakery equipment manufacturers in Europe and all the bakeries buy their equipment from them. On the other side the training in the domain of bakery has not changed in all European countries and by training we mean curricula, the programme, the methods, the content of the curricula chapters and the training of the trainers. According to the bakeries and bakery equipment manufacturer, bakers in today's bakeries need more IT skills and competences because the most of the work is done by the machines, which they need to know how to operate. With the same problem confronted our partners from Latvia and Slovenia, while Italian Greek and Turkish partner consider they can use improvements to make their curricula more interactive and attractive to the trainees and to increase the numbers of employment in their area.

In this project we want to improve the existing curriculum for the bakers qualification and especially the part which refers to the equipment used in the domain of bakery.

This material contains all the improvements we propose for the curricula of the training course of Bakers in all participant countries.

At this work participated all the partner organisations of our project:

- Asociatia Socio-Culturala "Sfantul Ioan Botezatorul", Berbesti Romania;
- Akhisar Halk Egitim Merkezi ve Aksam Sanat Okulu, Turkey;
- SIA "Manteifels projekti", Latvia;
- EURELATIONS GEIE, Italy;
- Ariadne, Greece ;
- Ljudska univerza Zavod za izobrazevanje odraslih in mladine Lendava, Slovenia;
- SC TECHNOG SRL, Sibiu, Romania.

I. ROMANIAN CURRICULUM IN BAKERS' QUALIFICATION COURSE

IMPROVEMENTS FOR THE CURRICULUM

for the qualification of Bakers and Pastry makers

LEVEL 2

Training domain : FOOD INDUSTRY

Introductory Note

This curriculum is based on the standard of vocational training for the qualification of Bakers and Pastry makers.

The curriculum has the following structure:

Module 1 – Health and safety at work and environmental protection in the food industry

Module 2 – Microbiology and hygiene in the food industry

Module 3 – Operations and equipment in food industry

Module 4 – Manufacture of bakery products

Module 5 – Pastry products manufacture

Module 6 – Manufacture of other flour products

Module 1 – Health and safety at work and environmental protection in the food industry

The module "Safety and health at work and environmental protection in the food industry" is part of the specialized culture related to the general training field Food Industry.

The module goes in parallel with the other modules in the curriculum.

The module "Health and Safety at Work and Environmental Protection in the Food Industry" focuses on learning outcomes and aims at acquiring skills specific to the general food industry, with a view to using all procurement (knowledge, abilities, attitudes) in practicing level qualifications 2 in the field.

This module contains the following learning contents:

1. Legislation and rules on safety and health at work, Prevention and firefighting and environmental protection in the food industry
2. Training of staff in the food industry. Types of training
3. Personal protective equipment and fire extinguishing equipment
4. Risk Factors in the Food Industry. Classification of risk factors. Effects of risk factors. Measures to prevent risk factors
5. Occupational accidents and occupational diseases – definitions – classification - preventive measures
6. First aid measures in case of accident
7. Emergency and evacuation measures specific to the workplace in case of: fire, flood, earthquake
8. Waste and waste circuit of the food industry
9. Collection, storage and disposal of waste and residues
10. Sources of pollution in the food industry. Classification of sources of pollution. Measures to prevent and combat pollution

Module 2 – Microbiology and hygiene in the food industry

1. Characterization of microorganisms
 - Microorganisms: Bacteria, yeasts, molds
 - Morphology of microorganisms: shape, dimensions,
 - Physiology of microorganisms: nutrition, multiplication
2. Techniques for making wet and dry preparations. Microscope: component parts, use. Wet and dry microscopic preparations: utensils, preparation, simple and double coloring
3. The action of external factors on microorganisms. Influence of physical factors (temperature, humidity, osmotic pressure, external pressure). Influence of mechanical factors (agitation). The influence of chemical factors (pH, chemicals)
4. Ways of spreading microorganisms in nature. Soil microflora: bacteria, actinomycetes, fungi, pathogenic microorganisms. Water microflora: sulphurous, ferruginous, rotting, butyric bacteria, cellulose-fermenting bacteria. Air microflora: bacteria, molds (sporulated forms).
5. Useful and harmful microorganisms in the food industry. Useful microorganisms: bacteria (lactic, acetic), yeast (beer), mold ("noble") used in the food industry. Harmful microorganisms: pathogenic (viruses, bacteria) and alteration (viruses, bacteria, yeasts, molds).

6. Individual hygiene rules in the food industry. Individual hygiene rules: according to the rules and procedures in law. Consequences of non-compliance with hygiene rules.
7. Methods of hygiene of food industry premises and equipment. Hygiene rules: of premises and equipment. Cleaning and sanitation materials.
8. Diseases due to the consumption of contaminated food. Characterization of pathogens. Classification of diseases due to contaminated food consumption.
9. Factors that lead to food contamination. Contamination at manufacturing. Contamination during transportation. Contaminated storage. Measures to prevent food contamination.

Module 3 – Operations and equipment in food industry

Storage of the flour and equipment used for storage:

- **Types of silos**
1. Specific terms of a technological process:
 - unit operations,
 - raw materials,
 - by-products,
 - finished product,
 - waste,
 - technological process,
 - manufacturing scheme.
 2. Material balance:
 - total,
 - partial.
 3. Transport of materials: classification of means of transport.
 - **Transport of liquid and gaseous materials:**
 - i. characterization of the fluid state,
 - ii. Physical properties of fluids.
 - Types of pumps for fluid transport (construction, operation):
 - centrifugal pump,
 - gear pump,
 - pump rotary piston pump,
 - the injector.
 - **Transport of solid materials:**
 - i. characterization of conveyors for solid materials,
 - ii. Classification of conveyors for solid materials.
 - Conveyor types for solid materials (construction, operation):
 - a. gravitational transporters (slide, gutter, inclined plane),
 - b. conveyor belt,
 - c. elevatorul,
 - d. Helical conveyor.
 4. Pneumatic transport:
 - the principle of achieving pneumatic transport.

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- Pneumatic transport installations (construction, operation): by aspiration, from discharge.
- 5. Grinding of the materials:
 - principles underlying the operation (definition, purpose, factors of influence),
 - methods and shredding processes
 - classification of grinding machines.
 - Shredders (construction, operation):
 - i. Machines for grinding high-hard materials: crusher, cylindrical, hammer mill;
 - ii. machines for grinding of medium hardness materials: automatic roller;
 - iii. Machines for grinding high consistency materials: vegetable cutting machine, volf, cutter.
- 6. Separating solid materials by sorting:
 - principles underlying the operation (definition, generalities, factors of influence).
 - Equipment used for sorting solid materials (construction, operation):
 - i. Dosing mashines**
 - ii. Volumetric dough divider**
- 7. Separation of heterogeneous mixtures:
 - principles underlying the operation (definition, purpose, factors of influence).
 - Equipment used for the separation of heterogeneous mixtures (construction, operation):
 - i. dehumidifying chamber with baffles,
 - ii. the horizontal decoder,
 - iii. plain Florentine waist,
 - iv. the bag filter,
 - v. open filter with agitator,
 - vi. filter with frames and plates,
 - vii. Vertical decanter centrifuge with tray,
 - viii. Horizontal filter centrifuge.
- 8. Mixing of solid, pasty and liquid materials:
 - principles underlying the operation (definition, purpose, factors of influence).
 - Mixing equipment (construction, operation):
 - i. agitator,
 - ii. double drum mixer,
 - iii. branch and propeller mixers;
 - iv. pneumatic spraying mixer.
 - v. Spiral mixers**
 - vi. Planetary mixers**
- 9. Heat Transfer Operations:
 - Heat Transfer Modes: Conduction, Convection, Radiation, Mixed;
 - thermal heaters: heating, cooling;
- 10. Heating and cooling:
 - principles underlying the operation (definition, generalities, factors of influence).
 - Heating and cooling equipment (construction, operation):
 - i. the jacket heat exchanger,
 - ii. the coil heat exchanger,

iii. Multi-tubular heat exchanger.

11. Pasteurization:

- the underlying principles of carrying out the operation (definition, purpose, factors of influence).
- devices used for pasteurization (construction, operation):
 - i. heat exchanger with plates.

12. Sterilization:

- the underlying principles of carrying out the operation (definition, purpose, factors of influence).
- devices used for sterilization (construction, operation):
 - i. autoclave.

13. Refrigeration:

- principles underlying the conduct of operation (definition, purpose, factors of influence),
- refrigeration methods

14. Freezing:

- principles underlying the conduct of operation (definition, purpose, factors of influence),
- freezing methods
- **shock freezers**

15. Operations that ensure conservation by reducing humidity:

- the classification of the purposes of the operation of conservation by reducing moisture
- Concentration through vaporization: principles underlying the conduct of operation (definition, purpose, factors of influence).
- Machines used for concentration (construction, operation): concentration plant with simple installation, concentration-effect with multiple.

16. Drying:

- principles underlying the conduct of operation (definition, purpose, factors of influence).
- Drying equipment (construction, operation):
 - i. Tower drier.
 - ii. Cooling line**

17. Condensation:

- principles underlying the conduct of operation (definition, purpose, factors of influence).
- devices used for condensation (construction, operation):
 - i. capacitor altimeter with trays

18. Distillation:

- principles underlying the conduct of operation (definition, purpose, factors of influence).
- Installations used for distillation (construction, operation):
 - i. distillation plant with discontinuous operation,
 - ii. the continuous distillation.

In this module we propose to introduce the use of the created Output 3 and Output 4 by the trainers and by the students:

- **IO3 - Methodology for trainers how to teach using the new technological equipments in bakery**
- **IO4 - Miniguide for trainees about modern equipments used in bakeries**

We also propose to restructure the whole module, to focus more on the equipment used in bakeries and to spend this module in practicing the equipment on site.

Module 4 – Manufacture of bakery products

1. Raw materials and auxiliaries used in physical and technological. Features of flour
2. Technological process of manufacture of bakery products.
 - a. Machinery and equipment used in the manufacture of bakery products
 - b. Sanitizing utensils, vessels, machinery and installations used in the manufacture of bakery products
 - c. methods of preparation of the dough
2. Classification of ovens (by mode of operation, after the fuel used, by number of winds) of bakery
3. Preparing finished products for packaging. Ways of packaging and labeling finished products.
4. Hygiene and OSH standards specific to bakery products
5. Traditional bread products specific to different geographical areas

Module 5 – Pastry products manufacture

1. Raw and auxiliary materials used in pastry
2. Calculation of the recipe for the pastry
3. Technological schemes for obtaining pastry products from different types of dough
4. Classification of semipreparations used in pastry
5. Preparation of semipreparations used in pastry
6. Quality indices of pastries used in pastry
7. The technological process of obtaining pastry products from leavened dough
8. Quality indices of pastry dough products
9. The technological process of obtaining dough pastry products
10. Quality indices of dough pastry products
11. Preparation of different types of pie

12. Production defects of the pie
13. Measures of remedy the defects of the pie
14. Preparation of pie pastry products
15. Preparation of pie dough
16. Preparation of dough pastry products
17. Preparation of sheet dough pastry products
18. Means of presentation of pastries
19. Equipment and specific equipment used in pastry
20. Hygiene, SSH and environmental protection standards for pastry products

Module 6 – Manufacture of other flour products

1. Raw and auxiliary materials used in the manufacture of nuts
2. Classification of pasta products
3. Technological schemes to obtain:
 - a. biscuits,
 - b. sticks
 - c. sweet cake
2. The manufacturing process of:
 - a. biscuits,
 - b. sticks
 - c. wafers
 - d. pasta
3. Packaging of pasta products
4. Machinery, aggregates and installations specific to the manufacture of pasta

II. ITALIAN CURRICULUM IN BAKERS' QUALIFICATION COURSE

Bakery Curriculum

ITALY

(the modified version)

Introduction

The Italian educational and training system is structured on the principles of subsidiarity and autonomy of educational institutions. The State has exclusive legislative jurisdiction on the “general laws of education” and for establishing the basic level of performances that have to be ensured in all the national territory.

The State, moreover, set the fundamental principles that regions have to respect, while managing their specific powers. The regions have concurrent legislative competences in educational sector while they have exclusive competences on vocational and educational training.

The national educational institutions have autonomy in education, organisation and research, experimentation and development.

Mandatory education and vocational training

Mandatory education lasts for 10 years, from 6 to 16 years old, and entails eight years of the first cycle and the first two years of the second cycle (law 296 of 2006) that can be attended either in the secondary state school or in the regional vocational and educational training courses. At the end of the mandatory educational cycle, it is possible to go ahead with the studies or to apply for training courses that provide qualification and certificates suitable for an dependent or independent job. The baker qualification is included in the vocational training.

To get qualified as baker it is needed:

To attend a vocational training course organised by a trade association or a private body: a course of professional baker, to whom wants to get sectoral competences and practical and operational skills about the preparation of baked goods, allows to learn the job and to work as a baker in the sector of commercial food service, both as entrepreneur or employee.

Normally the participation to the courses entail to get a certification:

- HACCP certification – mandatory to undertake any job in the food sector
- Certification about the “safety in the work places”
- Certification of professional qualification “qualified baker” valid at national and EU level.

To complete an apprenticeship program:

First level apprenticeship for qualification or diploma. In some regions it is foreseen a three or four years apprenticeship, according to education cycles. The participation to the program results in a certification or a diploma to enter the job market.

Apprenticeship for youth between 18 and 29 years with professional qualification. The apprenticeship contract lasts, at the most, 60 months.

Professional profile description

The baker makes baked good and fresh pastry goods. He/She carries out both manual activities and through machines and equipment. Most of the working activities are the same for baker and the pastry maker. Some activities are carried out more specifically by the baker (automatic moulding) or pastry maker (filling and adornment). The baker elaborates recipes and modify the ingredients according to the needs, he/she takes care of the appearance and the exhibition of the products.

The Italian working group noted that the bakery system in modern society has been profoundly changed in recent years, moving from an elementary system based almost exclusively on the concept “ bread as nourishment” to more complex systems that introduce innovative research, particularly on systems and production techniques aimed at improving production capacities, and anthropological research to rediscover the human approach to disappeared ingredients and flavors. This imposes to review the profile of the current baker through an update / improvement of the training course for the achievement of qualifications.

The common requirement also for the other partner countries, underlines that in this phase an increase in the hours (30) can be foreseen for the internships / practical exercises in the area 3 of the Curriculum and the increase of hours (20) of practice in the use / introduction of modern equipment (area 4).

Following these updates, the Italian bakers curricula is modified in this way:

600 h – theory;

1000 h practice of which:

- 300 internal practical exercises

- visit to laboratories of primary importance: 150 h

- Internships in national and, if possible, international companies h 550

Context

The baker can work as employee within a bakery or pastry-making and he/she can, after getting the qualification, open his/her own business as artisanal entrepreneur.

Complexity

In the last years, the baker profession undertook a major change due to technological innovation. Nowadays, basic IT skills are required for the use of equipment software and for the management of companies' processes.

Moreover the work is done standing and in a hot and humid environment. The availability to the night work and a good health state, without respiratory diseases or allergies, are essential.

Attitudes

Many skills are required in this field, such as: precision, responsibility at work, power of observation, manual skills, finger dexterity, technical understanding. It is required good taste and smell and aesthetic sense. Moreover, it is required mathematical ability and a good oral communication. Finally, it is essential to have the ability to handle heavy workloads and operate effectively under stressful conditions.

References

Istat 2001 - NUP

6.5.1.2.4 Baker

6.5.1.3.23 Pastry maker

(Ateco 2007)

10.71.1 Production of fresh baked goods

10.71.2 Production of fresh pastry goods

10.72.0 Production of biscuits and pastry goods

EQF Level

III

List of activity areas:

1. Supply definition
2. Provision, delivery, storage and preservation of foods
3. Dough preparation
4. Dough moulding (manual or automatic)
5. Leavening
6. Cooking
7. Filling and decoration
8. Packaging and distribution
9. Environmental and personal hygiene
10. Lab arrangement

1) Supply definition

To set the main selection list

To plan the selection according to region, season and recurring events

To realise the standard recipes

Competences

To collaborate to the definition of basic variety of bread/fresh pastries and of specific variety referred to region season and recurring events.

To collaborate to the preparation of standard recipes, both for basic and specific variety.

Abilities

Define the basic variety

To implement regional, seasonal and events criteria to the specific variety.

To implement criteria for the definition of standard recipes

Knowledge

Typologies and features of bread and fresh pastries

Typology features and selling period of regional seasonal and events' specialities

Physical, chemical, biological and nutritional features of raw materials and products used for bread and fresh pastries

Professional calculus : to calculate blend ratios.

Features of bread and pastries recipes

2) Provision, delivery, storage and preservation of foods

To prearrange the products' list

To check quality and quantity of products

To distribute the foods

To storage foods

To store correctly the foods

To check the best-before date

Competence

To manage the supply, delivery, stock and conservation of foods according to production timeline.

Abilities

To foresee needs of supplying,

To make the order of products

To verify the consistency between order and products delivered

To adopt principles food storage

To adopt criteria for food conservation

To monitor best-before dates.

Knowledge

Raw materials:

Principles of food conservation
Principles of food storage
Rules of hygiene and food safety

3) Dough preparation

To select dough ingredients
To weigh the ingredients
To insert the ingredients in the dough machine
To set time and speed
To check the dough progress during the different phases
To prepare the dough for specific kind of bread

Competences

To realise the bread/pastry dough, using appropriate tools and mixer machine, on the base of recipe specifications.

Abilities

To weigh the ingredients
To implement the steps of dough preparation
To use the kneading machine
To monitor dough consistency
To verify dough features
To adopt a behaviour oriented to hygiene and safety

Knowledge

Ingredients: typology and ingredients of flours
Features and use of ingredient dosage tools
Stages of dough preparation
Features of dough products
Rules of safety and hygiene

4) Dough moulding (manual or automatic)

Manually

To prepare the process
To prearrange the equipment and the instruments
To prepare the dough
To mould the dough
To place on the trays the prepared dough
To check the dough process
To check the results
To plan the selection according to region, season and recurring events
To realise the standard recipes

Automated

To prearrange the machine for the process
To load the machine
To start the machine

To unload the formed pieces
To check the correct cycle performance
To check the result
To remove the uneven pieces

Competences

To realise the manual shaping of semi-finished products of bread and pastry goods according to receipt specifications.

Abilities

To use equipment and tools for the shaping
To implement techniques and procedures, from dough to semi-finished products
To verify the results
To report about problems and anomalies
To adopt a behaviour oriented to hygiene and safety

Knowledge

Handling of dough and shaping techniques
Typology, features and use of tools for handling and shaping
Features of semi-finished shaping products
Rules of hygiene and food safety

5) Leavening

To set the leavening program
To check temperature and humidity of the cell
To check the leavening process of the goods

Competences

Managing the leavening process according to the dough and to the requested product

Abilities

To determine the location of leavening cells
To determine the overall leavening time
To determine physical and chemical product transformation
To determine product consistency
To detect anomalies of cells or leavening process
To report anomalies

Knowledge

Microbiological and physical chemical reactions linked to leavening and fermentation
Bread yeast and leavened products in pastry
Features, functioning and use of leavening cells
Temperature and humidity of leavening for different products
Features of semi-finished leavened products
Rules of hygiene and food safety

6) Cooking

- To set time and temperature of the cooking chamber
- To check the cooking process
- To check the final product

Competences

To handle the cooking process of bakery and pastry products, using tools and equipment, according to recipe

Abilities

- To implement criteria for standard recipes formulations
- To use fixed and convection ovens
- To assess process and state of the cooking
- To detect anomalies
- To report anomalies

Knowledge

Features, functioning and use of ovens,
Features and parameters of fresh bakery and pastry
Reaction during the cooking process

7) Filling and decoration

- To prearrange the equipment
- To organise material for filling, syrup, the bases to be filled
- Filling the pastry goods
- To glaze the pastry goods
- To adorn the pastry goods
- To check the final product
- To storage the final product
- To preserve the goods

Competences

To make the filling and decoration of basic pastry products according to recipe specifics and/or pics/drawings.

Abilities

- To use tools and equipment for filling and decoration
- To implement techniques of filling and decoration
- To verify the products are suitable for filling and decoration
- To verify results.
- To report possible mistakes in the filling or decoration

Knowledge

Typology, features and realisation of filling and decoration
Fundamentals of professional drawing
Decoration techniques

8) Packaging and distribution

- To package the product
- To label the product
- To plan the distribution
- To transfer the product
- To deliver the product to the stores

Competences

To make the packaging and labelling of products according to the specific rules for food packaging and labelling

Abilities

- To implement packaging techniques for bakeries and pastries.
- To adopt criteria for food product labelling
- To adopt a behaviour oriented to hygiene and safety

Knowledge

Packaging techniques for bakery and pastry products
Rules for food product labelling
Hygiene and food safety

9) Environmental and personal hygiene

- To take care of the working environment
- To clean equipment and environment

Competences

To tidy and clean up the bakery and pastry laboratory ensuring personal, equipment and working environment hygiene

Abilities

- To organise the laboratory
- To apply Cleaning techniques
- To apply Cleaning techniques of tools and equipment
- To adopt a behaviour oriented to hygiene and safety

Knowledge

Fundamentals of organisation of food lab
Cleaning techniques of food lab
Cleaning techniques of tools and equipment
Rules of hygiene and food safety

10) Lab arrangement

- To prearrange the equipment
- To organise the working tools (shelves, trays, casseroles etc)

To prepare raw materials.

Competences

To prepare equipment and tools of bakery and pastry lab according to requested products

Abilities

To apply fundamentals of lab organisations

To apply fundamentals of tools preparation

Knowledge

Fundamentals of pastry and bakery organisation

Planning the productive process of food lab

Program of daily production of bakery and pastry lab.

III. LATVIAN CURRICULUM IN BAKERS' QUALIFICATION COURSE

AGREED

In a meeting of vocational education and
employment on 30 April 2019, Protocol No.2

Occupational Standard of a Baker

1. General Provisions

1. Title of the occupation – a baker.
2. Occupational code – 7412 01.

2. Description of Employment

1. Vocational qualification level – the second vocational qualification level
2. Summary of the basic tasks of professional activities:
– a baker is an employee in the sector of food production who works for the bread production merchant where he or she cooks bread from wheat or rye in large quantities. He or she has the following duties: to manage the technological process of bread production and to perform a skilled job to obtain a quality final product, as well as to participate in introduction of new products.

3. Professional Competences Necessary for Performing Professional

Activities

1. Ability to understand hygiene requirements in food production.
2. Ability to perform work accordingly to the given task.
3. Ability to determine the quality of raw materials and their organoleptic indicators.
4. Ability to perform preparation of raw materials for the production.
5. Ability to understand the technological process of product preparation and comply with it, and to make the necessary calculations.
6. Ability to understand the exploitation and maintenance of the equipment.
7. Ability to understand the technical documentation.
8. Ability to work with technical equipment in accordance with the exploitation rules.
9. Ability to understand work safety and fire safety rules and to comply with them.
10. Ability to comply with work ethics principles.
11. Ability to comply with basic principles of good production and hygiene practice.
12. Ability to follow and learn the latest information in the sector.
13. Ability to protect environment.
14. Ability to communicate in the official language and in one foreign language.
15. Ability to use professional terms in a foreign language.
- 16. Ability to make market research.**
17. Ability to work independently and cooperate in a team.
18. Ability to follow the latest news in the sector by using all accessible information sources.
- 19. Ability to use information technologies.**
- 20. Ability to choose proper equipment.**

4. Skills Necessary for Performing Basic Tasks of a Professional Activity

1. Prepare the work place according to the instructions.
2. Comply with the labour protection, fire and electrical safety rules.
3. Be able to provide the first aid.
4. Use technological documentation.
5. Fulfil the requirements of the food production technological cycles prescribed by the laws and regulations.
6. Comply with the sequence of the technological process.
7. Prepare the raw materials for processing according to the recipe requirements.
8. Perform the necessary actions to ensure the technological process at any time.
9. Count the ready production.
10. Analyse the results of his or her own work.
11. Be able to use the latest information and production technologies.
- 12. Be able to make market research.**
13. Improve his or her knowledge about the innovations in the sector.

14. Perform basic principles of good hygiene and production practice.
15. Master the laws and regulations regarding the food products circulation and self-control.
16. Comply with the basic principles of work ethics.
17. Communicate in the official language and one foreign language.
18. Be able to work independently and in a team.
19. Protect the environment.
- 20. Be able to choose proper equipment.**

5. Knowledge Necessary for Performing Basic Tasks of a Professional Activity

1. Knowledge necessary for performing basic tasks of a professional activity at the level of notion:
 - 1.1. employment legal relationships;
 - 1.2. labour protection requirements;
 - 1.3. environment protection requirements;
 - 1.4. basics of business;
 - 1.5. market research;**
 - 1.6. basics of communication.

2. Knowledge necessary for performing basic tasks of a professional activity at the level of understanding:
 - 2.1. basic principles of risk analysis critical points;
 - 2.2. general hygiene requirements;
 - 2.3. basics of chemistry;
 - 2.4. the basic principles of cleaning, washing and disinfection;
 - 2.5. basic knowledge of the technical drawing;
 - 2.6. technical designations;
 - 2.7. regulated parameters;
 - 2.8. electrical safety requirements for the equipment;
 - 2.9. fire safety rules;
 - 2.10. importance of records in a quality management system;
 - 2.11. basics of business;
 - 2.12. market research;**
 - 2.13. loss of raw materials and the reasons for it;
 - 2.14. professional development opportunities.

3. Knowledge necessary for performing the basic tasks of the professional activity at the level of use:

- 3.1. bread production technology;
- 3.2. personal hygiene;
- 3.3. basic operation principles and exploitation of the technological equipment;
- 3.4. knowledge about certain raw material requirements;
- 3.5. basics of microbiology;
- 3.6. official language;
- 3.7. professional terminology in the official language and one foreign language;
- 3.9. information technologies;
- 3.10. first aid.

Obligations and Tasks

Obligations	Tasks
1. Preparation for work	<ul style="list-style-type: none"> 1.1. prepare working place; 1.2. choose an inventory appropriate for the work; 1.3. comply with the rules of sanitation and hygiene; 1.4. use appropriate equipment; 1.5. comply with the rules of work safety.
2. Preparation of raw materials	<ul style="list-style-type: none"> 2.1. accept raw materials according to the requirements of the sector; 2.2. prepare raw materials and ancillary materials; 2.3. determine the quantity of raw materials necessary for the production of a product; 2.4. comply with the fire safety rules; 2.5. comply with the electric safety rules.

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<p>3. Ensuring the technological process for production of bakery products</p>	<p>3.1. prepare yeast dough using the technique of mash; 3.2. prepare yeast dough using the technique without mash; 3.3. prepare yeast dough using various types of food additives; 3.4. prepare simple rye starter culture and dough; 3.5. know how to renew rye starter cultures (pregelatinized flour) and dough; 3.6. determine the readiness of dough organoleptically; 3.7. divide dough stock; 3.8. prepare dough stocks according to the type of product; 3.9. comply with the regimes of lagering; 3.10. perform the surface treatment of products before baking; 3.11. comply with the baking regimes; 3.12. evaluate the quality of the ready bread organoleptically; 3.13. protect the environment; 3.14. provide first aid; 3.15. comply with the electrical safety rules of equipment.</p>
<p>4. Performing accounting of production documentation</p>	<p>4.1. use the technological recipes; 4.2. perform the calculation of a product; 4.3. draw up documents of accepting raw materials and sale of finished products; 4.4. use appropriate software;</p>
<p>5. Complying with the basics of communication</p>	<p>5.1. work in a group; 5.2. be able to argue his or her opinion; 5.3. communicate in the official language; 5.4. communicate in a foreign language; 5.5. master the necessary professional terminology;</p>

6. Improvement of professional skills	6.1. follow the latest information in the sector; 6.2. improve his or her knowledge about the innovations in the sector on a regular basis; 6.3. acquire new technologies; 6.4. use the professional experience of other colleagues at work.
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IV. TURKISH CURRICULUM IN BAKERS' QUALIFICATION COURSE

The Duration of Theoretical and Practical Stages of the Bakery Curriculum of Turkey (the modified version)

The Bakery Curriculum contains 7 main titles – 7 different modules. These are :

the Food Technology (I),

the Bread Dough Preparation (II),

the Bread Fermentation (III),

the Baking Bread (IV),

The Production of Different Bread Types (V),

the Preparing Additive Bread (VI) and,

the Preparing Products with Fermented Dough (VII).

In the formal, current version of Turkish Bakery Curriculum, the duration of the practical and the theoretical stages are as following :

MODULES	THEOROTICAL STAGE	PRACTICAL STAGE
Food Technology	60 hrs	30 hrs
Bread Dough Preparation	40 hrs	40 hrs
Bread Fermentation	50 hrs	30 hrs
Baking Bread	60 hrs	50 hrs
Production of Different Bread Types	50 hrs	40 hrs
Preparing Additive Bread	50 hrs	50 hrs
Preparing Products with Fermented Dough	50 hrs	40 hrs
The Total Time	360 hours	280 hours

In the modified version of the curriculum, the duration of the practical and the theoretical stages are proposed to be implemented as follows :

MODULES	THEOROTICAL STAGE	PRACTICAL STAGE
Food Technology	60 hrs	30 hrs
Bread Dough Preparation	40 hrs	60 hrs
Bread Fermentation	30 hrs	30 hrs
Baking Bread	30 hrs	60 hrs
Production of Different Bread Types	30 hrs	70 hrs
Preparing Additive Bread	30 hrs	70 hrs
Preparing Products with Fermented Dough	30 hrs	70 hrs
The Total Time	250 hours	390 hours

In the first module, the Food Technology, it includes some subtitles. The first subtitle is about staff hygiene. In this part there are explanations about hygiene and sanitation, personnel cabinets (dressing rooms for the staff) and their features, the tools required in staff cabinets, working clothes and protective materials, the matters to be considered when wearing working clothes, cleaning and maintenance of working clothes. The second subtitle of the module is on personal cleaning rules. In this part, it talks about the body cleaning of the workers in point of many aspects of view in detail. The third part of the module is about toilets, bathrooms and hand washing areas in enterprises. **This module of the Curriculum needs to be studied in much more theoretical way by trainees because there exist many subjects related to introductive part of the Bakery Curriculum. Correspondingly, trainees don't need to spend that much time comparatively on practical studying for the module. They get 60 hours of theoretical study in classroom and 30 hours of practical study in the lab.**

In the second module, there is mention about the Bread Dough Preparation. And this module also contains three articles and their subtitles. The first article is about basic components in bread production like flour, salt, water and yeast and the preparation of basic components according to formulation and production quality. The second one is about auxiliary components in bread production like antimicrobial substances, sweeteners, oxidants, enzymes, oils, stabilizers, gels and thickeners and so on, and the calculation and preparation of the components according to formulation. The last article is about different kinds of dough making methods and kneading dough processing. **The trainees need to have theoretical study of what the basic components are included in dough preparation and of different methods of dough making for 40 hours, and then they do practical working in the lab for 60 hours.**

The third module is about the Bread Fermentation. It has two subtitles. The first one mentions about mass fermentation on dough processing detail such as its purpose and function and, machinery and equipments used in the process. The second subtitle is about final fermentation and its purpose, functions, features and types. **The theoretical stage of the module lasts for 30 hours and practical stage for 30 hours.**

The fourth module of the Curriculum tells about the Baking Bread. When mentioning about this subject, this module also refers to some other matters concerning baking bread. For instance, considering making bread dough, it explains about commonly used oven types and their properties and, all stages of baking bread dough. In addition to this, there is an article on cooling and packaging the bread. The last article of this module tells the bread defects and diseases. **Throughout this module, the trainees study for the content of the theoretical part of the module for 30 hours and work for the practical parts in the lab for 60 hours.**

The fifth part of the Curriculum is about the Production of Bread Types such as francala bread, whole wheat bread, rye bread, corn bread and, their definitions, properties, formulation, and how to bake all these kinds of breads and their sales methods.

The sixth module of the Curriculum is about the Preparing Additive Bread. When it mentions about this subject, it describes the tools and materials used in preparation, the properties and

quantities of sample additives included to breads such as bird grapes, cinnamon, anise, sesame, walnut, sunflower seed and other mostly known and used additives like milk, yoghurt, cheese, potato, olive, parsley etc. It also explains about the preparation process, forming the dough and baking stages.

The seventh and the last part of the Curriculum tells about the Preparing Products with Fermented Dough. This module focuses firstly on preparation of fermented dough, the effect of yeast on dough, the methods of fermentation with different types of yeasts. Then it tells about preparing regional products from fermented dough like pies, biscuits, cookies, buns, muffins, cakes, and international products like bagels, donuts, berliners, pancakes, croissants and pizzas.

As the last three modules of Bakery require the trainees concentrating on practising much more in the lab after they have theoretical study of the content of those modules adequately, they are promoted to work mostly on getting much more experience of producing end products. Accordingly they do much more practical work in the lab than they have theoretical study in the classroom which involve 30 hours of theoretical stage and 70 hours of practical stage during each three modules.

V. SLOVENIAN CURRICULUM IN BAKERS' QUALIFICATION COURSE

PROGRAM FOR BREAD AND PASTRY MAKER - SLOVENIA - LENDAVA

Duration of program: 300 hours

Theoretical stage: 60 hours

Practical stage: 240 hours

Conditions for inclusion in the program: Age 18 years, finished primary school, medical exam.

Before starting the theoretical stage of program: HACCAP exam and exam of work safety.

The program is made on the standards of knowledge, which are needed to become the national vocational classification for Bread and pastry maker. The exam (validation) take place in front of national commission.

During the guidance process the candidate prepares a personal portfolio, which is assessed by a commission. If the portfolio submitted by the candidate contains authentic, valid and adequate proof of the knowledge, skills and competences provided in the occupational standard, the commission may:

- validate the contents of the occupational standard in full,
- validate the contents of the occupational standard in part and define the knowledge, skills and competences to be verified.

THEORETICAL STAGE OF PROGRAM

1. BASICS OF BIOTEHNOLOGY (12 hours)

- a) **BASICS OF FOOD CHEMISTRY:** composition of individual foods, chemical ingredients in food, nutrition supplements, additives in food, chemical reactions during the preparation of different types of bread (food), the importance of enzymes for digestion and cellular metabolism, types of enzymes.
- b) **NUTRITIONS IN FOOD:** nutrients in food, the importance of individual nutrients for people, types of foods, depending on the prevailing nutrient, calculations the energy value of foods, principles of healthy nutrition, diseases associated with improper diet.
- c) **MICROBIOLOGY:** basics of the systematics of microorganisms, beneficial and harmful microorganisms and their importance, methods of transmission and spread of micro-organisms, negative effects of microorganisms, protective measures against unwanted microorganisms, changes in foods caused by microorganisms.

2. FOOD TECHNOLOGY (12 hours)

- a) **RESPONSIBILITIES OF BAKER:** the importance of protecting health and the environment, the rational use of energy, material and time, basics of hygiene, basics of work safety, regulations in food industry, basics of cleaning, the prescribed documentation in food industry, the traceability of food (documentation).

- b) LOGISTIC AND SALES IN THE FOOD INDUSTRY: packaging materials, the influence of air, water and salt on the durability of individual materials, packaging techniques, regulations on food packaging, types of warehouses, principles of storage, types of external and internal transport, regulation of retail food products.
 - c) TECHNOLOGICAL PROCESSES IN THE FOOD INDUSTRY: types of changes in foods, types and causes of food spoilage, physical processes of food preservation, importance of the principles and methods of cooling, freezing and thawing, dehydration and dehydration methods, chemical preservation processes, microbiological food preservation processes, modern food preservation processes.
 - d) SENSORY EVALUATION OF FOOD: sensors involved in sensory evaluation, the importance of the senses for sensory evaluation, the basics of sensory assessment, the properties that are sensorial assessed.
- 3. THE BASICS OF ENTERPRENURSHIP AND SALES (10 hours)**
- a) MARKET RESEARCH AND NEEDS: the importance and role of entrepreneurship, design methods and the search for ideas, legal regulation of business subjects, development guidelines in the EU, market and marketing, market research, definition and knowledge of competition.
 - b) SALES OF PRODUCTS: direct and indirect sales, product features that contribute to successful sales, the importance of the trademark, the importance of ensuring the quality of services, the rights of customers and users of services.
 - c) CALCULATION AND PREPARATION OF THE BASIC PLAN: the purpose of planning in the organization, the importance of good organization, elements of a business process, revenues and expenses, fixed and variable costs, depreciation and pricing.
- 4. BASIC TYPES OF BREADS AND PASTRIES (16 hours)**
- a) RAW MATERIALS FOR THE PRODUCTION OF BASIC TYPES OF BREAD AND PASTRIES: types and characteristics of basic and additional raw materials for the production of bread and pastry, preparation and use of individual raw materials, the importance of adding bread and cakes additives, types and characteristics of bread and cakes, conditions for storing raw materials, basic recipes, calculating the basic recipe according to needs.
 - b) KNEADING DOUGH FOR BASIC TYPES OF BREAD AND PASTRY: methods of kneading, *dosing device in bakery, usage of a dosing device for raw materials, machines and devices for kneading, usage of devices for kneading* (this 4 themes are added to previous program – for those we will use the new manual), the characteristics of the different doughs.
 - c) FORMING BASIC TYPES OF BREAD AND PASTRY: dividing, creating and final designing of dough for bread and pastry, *device for dividing dough, usage of a dividing machine, usage of a dough forming machine* (this 4 themes are added to previous program – for those we will use new manual), different ways of final dough design (before baking).
 - d) BAKING THE BASIC TYPES OF BREAD AND PASTRY: ways of raising *and raising devices - proofers* (this is the added content to previous program), various procedures and conditions of the baking, *different types of baking devices and usage*

- of ovens* (this is the added content to previous program), correct cooling of products after baking, *use of cooling device* (new content, added to previous program).
- e) SENSORY ASESMENT OF PRODUCTS: properties that are sensitively evaluated in bread and pastry, mistakes in bread and pastry (visible).
- f) PACKAGING AND STORAGE OF BASIC TYPES OF BREAD AND PASTRY: different ways and materials for packing bread and pastry, *devices for packing bread and pastry* (added content to previous program), conditions for the storage of bread and pastry.
- 5. SPECIAL TYPES OF BREADS AND PASTRIES (6 hours)**
- a) RAW MATERIALS FOR MAKING SPECIALTYPES OF BREAD AND PASTRY: types and characteristics of basic and additional raw materials for the production of special types of bread and pastry, the use of individual raw materials, bread and pastry supplements, recipes for the preparation of special types of bread and pastry.
- b) KNEADING SPECIAL TYPSE OF BREAD AND PASTRY: methods of kneading, where and how we can use the kneading machines.
- c) MODERN TECHNIQUES IN BAKERY: refrigeration techniques, slowed down and interrupted fermentation, frozen products, raised products, partly baked products.
- 6. COMPLEX BAKERY PRODUCTS (4 hours)**
- a) TYPES OF COMPLEX BAKERY PRODUCTS: typical Slovenian breads and pastry, preparation of dough, various fillings in pastry (potica), particularities of preparation and baking of complex bakery products.
- b) RECEPIE PREPARATION AND CALCULATION OF WEIGHT FOR FIXED ARTICLES: exercises (calculations).

PRACTICAL STAGE OF PROGRAM

The practical stage of education is always supervised by mentor. Mentor needs to show to participants all steps by each task. After presentation, participants need to repeat the process by themselves.

KEY TASKS BY PRACTICAL PART OF EDUCATION (240 hours):

- work safety and health regulations,
- principles of good hygiene,
- preparation of raw materials,
- sifting flour or supervising the automatic transport and sifting of flour,
- manually or mechanically weighing raw materials,
- *operating the manual or electronic weighting machine,*
- combining certain types of flour, soaking seeds and cereal,
- preparing leaven and sourdough with cultures in indirect methods,
- adding water and other liquids,
- adjusting water quantity according to flour quality and other conditions that affect the product,
- regulating water temperature according to the desired dough temperature by considering the temperature of raw materials and the surrounding environment,

- adding yeast,
- **operating the proofer,**
- controlling and adding other raw materials (salt, sugar, fats, eggs, milk, spices...),
- kneading various types of bread and pastry dough,
- regulating kneading processes according to flour quality - quality of gluten,
- appropriate handling of allergenic ingredients,
- **operating the kneading machines,**
- different kneading methods according to the type of product,
- supervising dough maturation and rekneading dough,
- use of ingredients for various types of bread and pastry dough,
- selection of a recipe according to the desired product,
- fermentation process,
- kneading duration according to the final product,
- recognition of the appropriate temperature of dough and the surrounding environment in which the dough rises,
- separating and shaping of dough, controlling its leavening, manually or mechanically separating dough,
- **operating the device for dough dividing,**
- controlling mass on a manual scale or by using an automatic scale,
- manually or mechanically shaping dough,
- techniques piercing, cutting, coating, sprinkling of dough pieces
- **operating the dough forming device,**
- introduction different dough proofers and how to correctly use them,
- introduction of different baking oven types,
- **operating different types of proofers,**
- regulating the baking of products,
- determination of baking duration,
- **operating different types of ovens,**
- defects occurring during baking,
- calculating the baking loss of products
- manually or mechanically removing products from the oven,
- transporting baked products,
- **operating the cooler,**
- supervising the cooling of baked products,
- supervising the freezing or pasteurization of special products,
- ensuring the quality and appropriate preparation of products for storage,
- cooling, freezing and defrosting pastries,
- cutting, packaging and storing products cutting or supervising the automatic cutting of products,
- how to cut and package products,
- **operating the slicing machine,**
- manually or mechanically weighing and packaging products,
- **operating the packaging machine,**

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- checking the mass of packed products,
- controlling and regulating conditions in warehouses,
- storage methods according to the estimated time of storage and type of product.

All the contains, which are bold, we added to previous program.

The practical stage of education is running in bakeries, according to number of hours, our participants needs to work in the bakery for 30 days.

When the participants complete the theoretical and practical part of education and finish the portfolio map, he can take the part by national examen.

VI. GREEK CURRICULUM IN BAKERS' QUALIFICATION COURSE

1. General Information

The present Study Guide concerns the Specialty "**Bakery – Pastry Technician**" of the initial Vocational Training provided by the Institutes of Vocational Training (I.E.K.) according to **Law N.4186/2013 "Reformation of Secondary Education and Other provisions"** (Official Journal of the Hellenic Republic – Φ.Ε.Κ Α' 193/17-9-2013), as applicable, to Graduates of Secondary Education and Graduates of Vocational Training Schools (S.E.K.).

1.1.Name of Specialty

"**Bakery – Pastry Technician**"

1.2.Orientation Group

The Specialty belongs to the Orientation Group: "**Professions of the Tourism and Hospitality Industries**".

1.3.Registration Requirements

The prerequisite of registration of those interested in the Specialty "**Bakery – Pastry Technician**" is that they are holders of a Secondary Education Certificate, structures of non-compulsory Secondary Education are as follows:

General Upper Secondary School (G.E.L.), Technical Professional Upper Secondary School (T.E.L.), Unified Polycyclic Upper Secondary School (E.P.L.), Technical Professional School (T.E.E.) 2nd Cycle of Study, Professional Upper Secondary School (E.P.A.L.), Vocational Training School (E.P.A.S.) and Vocational Training School (S.E.K.). The general conditions for registration in the Institutes of Vocational Training (I.E.K.) are regulated in the Ministerial Decision Y.A. 5954 – "Regulations for the Operation of the Institutes of Vocational Training (I.E.K.) under the General Secretariat for Lifelong Learning and Youth".

1.4. Diplomas – Certifications – Certificates

Upon the successful completion of their training at the Institute of Vocational Training (I.E.K.) Graduates of the Specialty "**Bakery – Pastry Technician**" initially receive a "Certificate of Vocational Training (B.E.K.)" and after their successful participation in the initial Vocational Training Certification Examinations conducted by the National Organisation for the Certification of Qualifications and Vocational Guidance (E.O.P.P.E.P., www.eoppep.gr) receive a Diploma of Professional Specialty, Education and Training of Level 5. Graduates of IEK who have successfully completed the initial Vocational Training Certification Examinations conducted by E.O.P.P.E.P. receive a "Certificate of Qualifications of Vocational Training" until the issue of their Diploma.

1.5. Duration of Studies

According to the approved Programs of Study, the study period at IEK is five (5) **Semesters in total**, divided into four (4) Semesters of Theoretical and Laboratory Training of a total duration of up to **1,200 Academic hours** for Specialisation, plus (1) Semester of **Practical Training or Apprenticeship** of a total duration of up to **960 hours**.

1.6. The Hellenic Qualifications Framework

"The Hellenic Qualifications Framework" classifies the Titles of Study that are acquired in Greece in 8 Levels. The Diploma of Professional Specialty, Education and Training in the Specialty is granted to IEK Graduates who have successfully completed both parts of the Certification Examination that corresponds with the 5th out of 8 levels.

The remaining Titles of Study granted by the Greek Educational Institutions are classified in the following levels:

Level 1: Primary School Certificate of Graduation (compulsory).

Level 2: Lower Secondary Education Certificate of Graduation (compulsory).

Level 3: Certificate of Professional Specialty granted by Vocational Training Schools (SEK).

Level 4: General Upper Secondary School Certificate, Certificate of Vocational Training Schools (EPAS). Certificate of Professional Upper Secondary School (EPAL) and Certificate of Professional Specialty granted to Graduates of the 3rd Grade of Professional Upper Secondary School (EPAL).

Level 5: Diploma of Professional Specialty, Education and Training that is granted to Graduates of the Apprenticeship Class of Professional Upper Secondary School (EPAL) after successful certification.

Level 6: Bachelor's Degree of Higher Education (AEI-Universities and ATEI-Technological Educational Institutions).

Level 7: Master's Degree (MSc).

Level 8: Doctorate Degree (PhD).

1.7.Credit Units

Credit Units will be fulfilled when the National System of Credit Units for the Professional Education and Training is being developed.

1.8.Relevant Legislation

1. Law N.3879/2010 – “Development of Lifelong Learning and Other provisions” (Official Journal of the Hellenic Republic – Φ.Ε.Κ Α’ 163/21-09-2010), as applicable.
2. Law N.4186/2013 – “Reformation of Secondary Education and Other provisions” (Official Journal of the Hellenic Republic – Φ.Ε.Κ Α’ 193/17-9-2013), as applicable.
3. Ministerial Decision Y.A. 5954 – “Regulations for the Operation of the Institutes of Vocational Training (I.E.K.) under the General Secretariat for Lifelong Learning and Youth” (Official Journal of the Hellenic Republic – Φ.Ε.Κ. Β’ 1807/2-7-2014).

2. Short Description of Professional Activities

(Profile of the Profession)

Professional Profile of Specialty

The branch of bakery-pastry making is one of the most dynamic pillars of the food service industry. Bread is a basic accompaniment to every meal, while the dessert completes our daily menu deliciously. The fundamental role of baking-pastry products in our daily dietary habits has imposed the need for specialised professionals, significantly increasing both the demand and the economic benefits of the industry.

The IEK Graduates of the Specialty "**Bakery – Pastry Technician**" with the specialised knowledge and skills acquired during their education, deal with the preparation of bread, pastries, sweets and dishes of all kinds and forms, organize their production into the necessary quantities, in accordance with market and health rules.

Besides classical bakery, which offers plenty of jobs in bakeries, patisseries, catering companies, etc., a specialised Bakery – Pastry Technician has the ability to work in the Tourism Industry both in Greece and abroad.

Areas of Employment

The IEK graduate of the Specialty "**Bakery – Pastry Technician**" with the specialised knowledge and skills acquired during his/her education can work in Hotel and Catering Enterprises of any form and structure, both in the Private and the Public sector, in the jobs related to his/her subject matter.

Bakers – Pastry Chefs work as freelancers in their own businesses, whether they are employed as employees in other small or Large Enterprises in the Food Service Industry or Hotel – Tourism sector, or in particular in recent years in the growing Bread Industry, as well as in large Confectionery chains in Retail Trade. Concerning Small businesses which are mostly family-run, there are no significant restrictions to access the profession. The Bakery – Pastry Industry offers employment to a large number of employees as well as in related professions (such as producers and suppliers of raw materials, machinery, flour industries, etc.) that give the Greek economy in proportion to its share, a strong dynamic of independence and self-sufficiency.

Professional Qualifications

The professional qualifications obtained by the graduate of this Specialty according to the relevant profile of E.O.P.P.E.P. (the National Organisation for the Certification of Qualifications and Vocational Guidance) to which the Specialty corresponds consist of the following:

1. Bread making, bakery products and pastries.

- Preparation of yeast.
- Shaping of dough.
- Baking.

2. Production of types of pastry making based on flour.

- Preparation of dough.
- Shaping of pastry - Rolling out of pastry.
- Baking.

3. Production of types of pastry making based on Sugar, Chocolate, Dairy products, etc.

- Creation of mixtures of any kind based on the above raw materials and auxiliaries.
- Shaping them into different sizes and shapes.
- Decoration of each preparation.

4. Organisation and management of the Bakery – Patisserie.

- Financial Management.

- Food and Beverage Management

- Warehouse Organisation and Stock Management.

- Capital Management (physical and intangible)

Professional Tasks

The tasks that will be assigned to the Graduates of the Specialty are as follow:

- Baker – Pastry Chef.
- Entrepreneur.
- Executive of an existing craft unit.
- Executive in the food service industry.
- Production Team Manager.
- Supervisor of a Laboratory for Production of testing samples.
- Executive of a Chain of Stores.
- Production Manager in an Industry of raw materials.
- Supervisor of a Laboratory for raw materials testing.
- Executive Promoter of raw and auxiliary materials.
- Department store Chain Manager.
- Supervisor of a Production Laboratory.
- Production Planning Manager.
- Supply Manager.
- Selection and practical Quality control of raw and auxiliary materials and their supply.
- Production and Quality control of products.
- Products display and distribution.
- Furthermore, these Executives should be able to be in a position to proceed in:
 - Improvement of the existing Products.
 - Development and production of new Products.
 - Financial evaluation of Products, analysis of cost elements and determination of the sale price.
 - Production planning and utilization of economies of scale.

3. Analytic Description of Training Results

(Required Knowledge, Skills and Abilities for the specific Specialty)

3.1. General Knowledge, Skills and Abilities

General Knowledge consists of the following:

- Greek Language.
- Principles of Finance.
- Basic laws of Physics and Chemistry.
- Basic Nutrition Principles.
- General knowledge of English or French Language.
- Principles of Entrepreneurship.

General Skills consist of the following:

- **Technical skill:** The ability to handle the technical means at its disposal, to the maximum extent possible.
- **Equipment Maintenance skill:** The ability to effectively maintain the equipment in order to keep it in good condition.
- **Terminology skill:** The ability to perceive terminology and incorporate it into the production process in the most advantageous way.
- **Social skill:** The ability to work in different environments, respecting their particular characteristics.
- **Organisational skill:** The ability to choose the best organisation of space, material and partners.
- **Business skill:** The ability to organize the main aspects of their professional activity in such a way as to ensure better use of available resources and better quality of the finished product.
- **Additionally,** the ability to effectively promote their job and to maximize the benefit.

General Abilities consist of the following:

- **Numeracy capability:** The ability to develop and use mathematical reasoning to solve a series of problems in everyday situations. Mathematical competence also includes the ability and availability of the use of mathematical modes of logical and spatial thinking.

- **Space-perceptual capability:** The ability to perceive space and time and adapt its work to the prevailing circumstances.
- **Creative capability:** The ability to create, in order to make the produced products aesthetically appealing.
- **Initiative and Entrepreneurship:** A person's ability to turn his/her ideas into action. It includes creativity, innovation and risk-taking, as well as planning capability in order to achieve specific goals.

3.2. Professional Knowledge, Skills and Abilities

Professional knowledge, skills and abilities consist of the following:

- Microbiology Elements (in bakery and patisserie).
- Nutrition – Dietetics.
- Pricing of Preparations.
- Bakery products preparation of any form and variety.
- Patisserie products preparation of any kind and variety.
- Facilities and Equipment specifications of Bakery and Patisserie laboratories.
- Basic Principles of Engineering.
- Hygiene and Safety in the work place.
- Decoration of Bakery and Pastry preparations.
- Basic Principles of Food Chemistry.
- Bakery and Pastry raw materials and Food Technology.
- Basic knowledge of organic Products.
- Food Quality Management Systems – Quality Control.

4. Equivalence of Specialty

The Specialty "**Bakery – Pastry Technician**" of IEK is equivalent to the following Specialties of the Professional Education and Training Schools below:

EP.A.S. Vocational Training Schools
Organisation of Employment of Workforce (O.A.E.D.) BAKERY – PASTRY MAKING
Organisation of Tourism Education and Training (O.T.E.K.) THE ART OF PASTRY MAKING
I.E.K. Institutes of Vocational Training
BAKERY – PASTRY TECHNICIAN

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(according to the Law N.2009/92)

5. Registrations in the 3rd Semester of Training (as Classifications)

Graduate holders of EPAS Vocational Training Schools Diploma of the following specialisations are eligible to be enrolled in the 3rd Semester of Training (as classifications) in the Specialty "**Bakery – Pastry Technician**" of IEK.

EPAS
Vocational Training Schools
Organisation of Employment of Workforce (OAED) BAKERY – PASTRY MAKING
Organisation of Tourism Education and Training (OTEK) THE ART OF PASTRY MAKING

6. Training Program per Semester

6.1. Training Program per Hour

S/N	SEMESTER LESSONS	A			B			C			D		
		Th	La b	Tot	Th	La b	Tot	Th	La b	Tot	Th	La b	Tot
1	PRINCIPLES OF ECONOMICS	2		2									
2	FRENCH	2		2	2		2	2		2	2		2
3	TECHNICAL FACILITIES – EQUIPMENT	2		2									
4	MERCHANDISE CONTROL	3		3									
5	RAW MATERIALS & BAKERY – PASTRY PRODUCTS	3		3									
6	ART OF PASTRY MAKING	1	4	5	1	4	5	1	4	5		5	5
7	PRACTICAL APPLICATION OF THE SPECIALTY		3	3		3	3		3	3			
8	ART OF BAKING				1	4	5	1	4	5		5	5
9	HEALTH, HYGIENE & SAFETY				1		1						
10	COST ACCOUNTING OF PREPARATIONS				2		2						
11	FOOD QUALITY MANAGEMENT SYSTEMS (HACCP - Hazard Analysis and Critical Control Points)				2		2						
12	DIETETICS							2		2			
13	PRINCIPLES OF FOOD & PROFESSIONAL LEGISLATION							1		1			
14	ENGLISH							2		2	2		2
15	PRACTICAL TRAINING (*)											6	6
	TOTAL	13	7	20	9	11	20	9	11	20	4	16	20

(*) The hours of Practical Training will be carried out cumulatively after the 7th week of the 4th semester, after the completion of the Material of the remaining lessons of the semester.

Th = Theoretical Lessons

Lab = Laboratorial Lessons

Tot = Total hours of the specific Lesson

6.2. Training Program in Detail

Semester Courses

A' Semester – Hours – Training Results – Content

Lesson: Principles of Economics

Semester	Type of Lesson	Hours per week		
		Theory	Laboratory	Total
A'	Basic training	2	0	2

Objective – Learning results

The lesson aims to provide the Trainees with the necessary knowledge to be able to handle effectively key issues of Economic science, such as Economic Problems, Economic Systems, Pricing Mechanism, Legal Forms of Companies, Types of Money, Investments, Inflation, Domestic Product, Employment and Unemployment in the Food Industry.

Upon completion of the lesson the Trainees will be able to plan the Economic Policy of the Companies they work in, to control and correct their operation, to resolve issues related to economic operation and to apply basic economic principles in the daily operations of business or organizations in which they will work.

Content of the Lesson

Introductory Concepts

- Concept and subject of Economic Science.
- Purpose and usefulness of Economic Theory.
- Correlation between Economic Science and Specialisation.

Fundamental Economic Problem & Financial Systems

- The Economic Problem.
- Fundamental Economic Questions and Production Factors. Correlation with object of Specialisation.
- Market Economy. Correlation with object of Specialisation.
- Centrally controlled Economy. Correlation with object of Specialisation.
- Mixed Economy. Correlation with object of Specialisation.

Pricing Mechanism

- Demand / Elasticity function. Correlation with object of Specialisation.
- Offer function. Correlation with object of Specialisation.
- Market System and Balance of Prices. Correlation with object of Specialisation.
- The role of the State. Correlation with object of Specialisation.

Forms of Market Organisation

- Perfect Competition.
- Monopoly Market.
- Monopoly Competition.
- Oligopolistic Market.
- Collusions / Cartels.

Legal Forms of Companies

- Legal person / Company statute. Correlation with object of Specialisation.
- General partnership / Limited partnership. Correlation with object of Specialisation.
- Limited Liability Company. Correlation with object of Specialisation.
- Anonymous Company S.A. Correlation with object of Specialisation.
- Private Capital Company. Correlation with object of Specialisation.

The Types of Money

- Functions of money.
- Money Types / Checks.
- Credit / debit cards.

Investments

- Concept and Definition of Investments. Correlation with object of Specialisation.
- Discriminations of Investments.
- Favourable investment environment - Investment motives. Correlation with object of Specialisation.
- Financial Leasing. Correlation with object of Specialisation.

The Phenomenon of Inflation

- The forms of inflation.
- Measures to address inflation.
- Consumer Price Index.
- Market Value of Money.
- Deflation of Income.

Domestic Product

- Gross Domestic Product.
- Methods of measuring GDP.
- The weaknesses of GDP.
- Human Development Index.
- National Income and Tourism.

Employment and Unemployment

- Method of measuring unemployment.
- Forms of unemployment.
- Measures to tackle unemployment.

Lesson: French

Semester	Type of Lesson	Hours per week		
		Theory	Laboratory	Total
A'	Basic training	2	0	2

Objective – Learning results

The lesson aims to provide the Trainees with the necessary knowledge which will allow them to use effectively the French language and terminology in professional areas of Pastry and Bakery.

The Trainees upon completion of the lesson will be familiar with basic linguistics, introductory grammar and basic vocabulary of pastry and bakery, and will be able to make use of this basic knowledge in the daily operation of business or organization they will work in at the end of their studies. In addition, Trainees will be able to apply the knowledge they have gained in the operation of the business they work in and handle the basic skills of the French language that they need in the Specialty and the Profession.

Content of the Lesson

- Localisation dans l'espace.
- Saluer, se presenter.
- Identifier des choses, des personnes.
- Exprimer la relation (entre deux choses, ou deux personnes, ou un person et un chose).
- Localisation dans le temps.
- Demander quelque chose - exprimer un gout.

- Dire de faire, proposer.
- Décrire de choses.
- Livret d'exercices.
- Livret de cuisine.

Lesson: **Technical Facilities – Equipment**

Semester	Type of Lesson	Hours per week		
		Theory	Laboratory	Total
A'	Basic training	2	0	2

Objective – Learning results

The aim of this lesson is to acquire the knowledge needed in the issues concerning the Technical Facilities and **state-of-the-art** Equipment of a modern professional Bakery – Patisserie, such as storage systems, the legislation governing the facilities involved, the handling and maintenance of basic equipment, the space selection criteria and the design of facilities, the elements of professional space configuration, fire safety and fire protection.

Upon completion of the lesson the Trainees will be able to plan the operation of the facilities of the enterprises they work in, to control the equipment and its operation, to solve problems related to the use and maintenance of the machineries and to apply all of the above knowledge by acquiring adaptive skills in given circumstances and places.

Content of the Lesson

- **Greek Legislation and the Business of Catering**
 - Business categories.
- **Raw Material Storage Systems**
 - Storage and manufacturing facilities.
 - Description of storage systems, loading and unloading, handling of flour and other raw materials.
- **Bakery and Pastry Machineries**
 - Short description of the machines and appliances used in Bakery and Pastry.
 - Mixing machines.
 - Slow mixing kneading machines (types, description, operation, maintenance).
 - Rapid mixing kneading machines (types, description, operation, maintenance).

- o Pastry mixers.
- o Fermentation systems.
- o Rollers/Bread making (types, description, operation, maintenance).
- o Advantages - Disadvantages of different types.
- o Dough cutting machines (types, description, operation, maintenance).
- o Yeast forming machines (types, description, operation, maintenance).
- o Dough processing units.
- o Cabinets for storing, rising and maturing dough (types, description, operation, maintenance).
- o Bakery and Patisserie Ovens.
- o Types of furnaces (types, description, operation, maintenance).
- o Advantages – disadvantages – suitability of ovens depending on the product.
- o Pastry making mixers, mixer accessories, their uses (types, description, operation, maintenance).
- o Electrical or gas cooker.
- o Boilers – mixers for Ice cream making (types, description, operation, maintenance).
- o Bain Marie (types, description, operation, maintenance).
- o Electrical or gas fryer (types, description, operation, maintenance).
- o Heat chamber (types, description, operation, maintenance).
- o Scales of various sizes (types, description, operation, maintenance).
- o Dishwashers (types, description, operation, maintenance).
- o Freezing and deep freezing systems (types, description, operation, maintenance).
- o Principles of selection of tools, small appliances and utensils in Bakery and Pastry (types, description, operation, maintenance).
- **Elements of Technical Facilities**
 - o **Basic Principles of Design and Organisation of a Professional Kitchen**
 - o **Designing the space in a Bakery and Patisserie**
 - o **Facilities Description**
 - Hydraulic, Sewerage, Electrical (reference to the networks, their terminology and their purpose).
 - Pipes, fittings, valves, taps, batteries, boilers, siphons, cleaning nozzles etc.

- o **Central Heating**
 - Boilers, burners, circulators, piping networks, expansion vessel, radiators.
 - Maintenance of heating installations.
- o **Elevators for People and Goods**
 - Characteristics of elevators and in their operation (Calling methods, booths, booths safety).
 - Modular Plates, Conveyor-belt.
- o **Air Conditioning Units**
 - Air conditioners and machinery of a complete installation (cooling section, production, distribution devices).
- o **Fire Safety – Fire Detection**
 - Fire detection and fire protection systems.
 - In general about Fire Safety provisions.
 - Alarm and guidance systems.
 - Fire extinguishing principles.
 - The fire extinguisher and its operation.

HANDBOOK FOR THE USE OF EQUIPMENT

EQUIPMENT NAME: **SILO** Silos are used for storing flour.

EQUIPMENT NAME: **DOSMETRIC MACHINE** The dosing machine is used for the dosing of other raw materials

EQUIPMENT NAMES: **OGCOMETRIC DESSERT DIVERSION** Dough divider is the machine used for weighing and cutting dough.

EQUIPMENT NAME: **MOULDER** The modulator is used to make the dough.

EQUIPMENT NAME: **PROOFING CHAMBER** The test chamber is used to raise the dough.

EQUIPMENT NAME: **RACK OVEN** The rack oven is designed for baking different types of products and is used for baking in the shop as well as for the production function.

EQUIPMENT NAME: **COOLING LINE** The cooling line is used to cool the baked products. It is the conveyor belt from the oven to the packing or cutting plant.

EQUIPMENT NAME: **SHOCK FREEZER** The shock freezer is a device that rapidly reduces the temperature of the imported product, either fresh or pre-cooked, while retaining its special features throughout storage.

EQUIPMENT NAME: CUTTING MACHINE The cutting machine is used to cut bread into equal shapes, with multiple knives (15-24 knives).

EQUIPMENT NAME: **PACKING MACHINE** The packaging machine is designed to automatically package ready-to-transport products and sometimes is connected to the cutting machine.

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