



EQVEGAN

European Qualifications & Competences for the Vegan Food Industry

621581-EPP-1-2020-1-PT-EPPKA2-SS

Supported by
SECTOR SKILLS ALLIANCES
ERASMUS+PROGRAMME
EDUCATION, AUDIOVISUAL AND CULTURE EXECUTIVE AGENCY
EUROPEAN COMMISSION

Deliverable 1.2

Occupational profiles for the vegan food industry professionals

Workpackage 1 Professional profiles and skills

Task 1.2 Occupational profiles for the vegan food industry professionals

Lead Beneficiary Olav Aarna, Estonian Qualifications Authority (EQA)

Prepared by Olav Aarna (EQA)

Contributors Rui Costa (IPC), Daminan Jastrzebski/ Kiran Subbarayadu (JS), Luis Mayor (ISEKI), Carmen Vega (ACTAE), Jarmo Alarinta (SeAMK), Christophe Cotillon (ACTIA), Fotini Salta (SEVT), Anet Jambrak/Marinela Nutrizio (FFTB)

Revision number 1

Delivery Date (from DDP) 28.02.2021

Delivery Date (Original) 28.04.2021

Foreword

The work described in this report was developed under the project EQVEGAN: European Qualifications & Competences for the Vegan Food Industry (621581-EPP-1-2020-1-PT-EPPKA2-SS). If you wish any other information related to this report or the EQVEGAN project please visit the project web-site (<http://eqvegan.sitedev.pt/>) or contact:

Project Coordinator:

Rui Costa | Polytechnic Institute of Coimbra (IPC), College of Agriculture (ESAC) | ruicosta@esac.pt

WP 1 Leader:

Olav Aarna | Estonian Qualifications Agency (EQA) | Olav.Aarna@ebs.ee

Lead Beneficiary:

Olav Aarna | Estonian Qualifications Agency (EQA) | Olav.Aarna@ebs.ee

Dissemination Level

PU Public

Co-funded by the
Erasmus+ Programme
of the European Union



This project has been funded with support from the European Commission. This document reflects the views only of the author, and the Commission cannot be held responsible for any use which may be made of the information contained therein.



Summary

This document provides findings of the WP1 Task 1.2 concerning the occupational profiles of vegan food industry basic occupations: food production operator, fruit, vegetable and related preserver, food technician and food technologist. The analysis was based on the occupational profiles of these occupations in ESCO and aimed at identifying missing skills/competences and knowledge. The analysis revealed that some important transversal skills/competences are missing in the existing occupational profiles, whereas the missing essential and optional skills/competences and knowledge are related to digitalization, automation, green and circular economy. The identified missing skills/competences and knowledge will be used as an input for the WP2. In WP3 and WP4 the list of missing skills/competences and knowledge will be validated by the trainees and by the stakeholder community.



Foreword	I
Summary	II
1. Introduction	1
2. Methodology	2
3. European Multilingual Classification of Skills, Competences and Occupations (ESCO)	3
3.1 Possibilities offered by ESCO	3
3.2 ESCO occupations pillar	4
3.3 ESCO skills pillar	4
3.4 ESCO qualifications pillar	5
4. Food Production Operator/ Fruit, Vegetables and Related Preserver	6
5. Food Technician	8
6. Food Technologist	9
Glossary	10
Annex. VFI related occupations in ESCO	11
Food production operator	12
Fruit, vegetable and related preservers	14
Food technologist	16
Food production engineer	20
Food technician	22
Food biotechnologist	25
Food production manager	27
Food safety specialist	29
Food analyst	31



1. Introduction

The WP1 of EQVEGAN project is aiming at **reviewing occupational profiles of vegan food industry (VFI) occupations** (engineers/technologists, technicians, operators etc.) **according to ESCO** (European multilingual classification of Skills, Competences and Occupations <https://ec.europa.eu/esco/portal/howtouse/21da6a9a-02d1-4533-8057-dea0a824a17a>).

To achieve that aim a **“multi-actor approach” for defining the occupational profiles of VFI occupations has been used**. The actors for that approach are the project stakeholders with complementary types of knowledge – scientific, practical and other, who join their forces in the project activities to develop innovative solutions which are ready to be applied in practice and cover real needs https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/eip-agri_brochure_multi-actor_projects_2017_en_web.pdf. For operationalising the approach, a **stakeholders’ community and database were built** (see Task 1.1 on Figure 1).

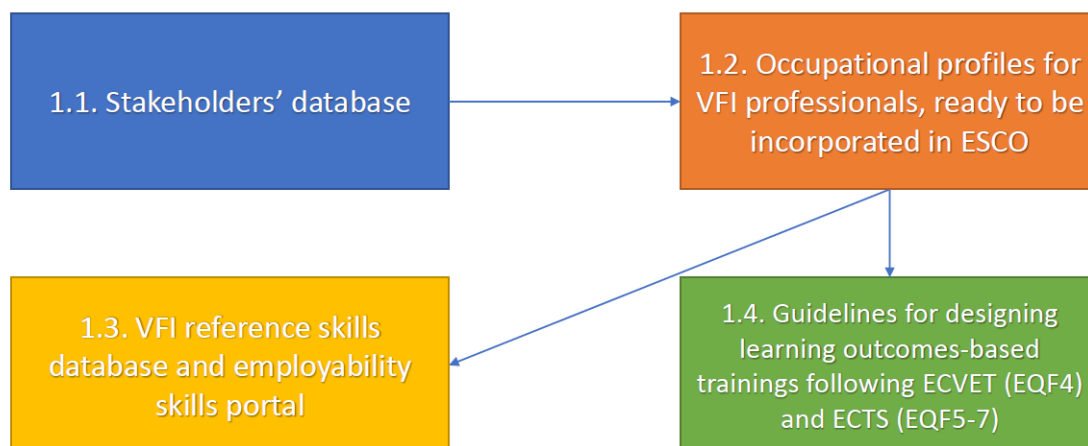


Figure 1. The structure of WP1

Employability skills for the VFI occupations will be identified and made available in a portal and further linked to courses and certification developed in WP2-WP4.

This document describes the process and findings of WP1 Task 1.2 (see Figure 1).



2. Methodology

The method used for developing occupational profiles of VFI specific occupations is based on ESCO database, which provides descriptions of 2942 occupations and 13 485 skills linked to these occupations. This means, that the occupational profiles developed shall follow the structure of ESCO descriptions (see Chapter 2).

The process of developing occupational profiles of VFI specific occupations consists of the following phases:

- 1) Identifying the food industry specific occupations in ESCO.
- 2) Identifying the VFI specific occupations.
- 3) Identifying missing skills/competences and knowledge in the occupational profiles of VFI specific occupations in ESCO.
- 4) Validation of the occupational profiles of VFI specific occupations will take place in WP2-WP4.

In the first phase **nine food industry specific occupations** were identified (see Annex).

In the second phase as a result of analysing the definitions, descriptions, scope and occupational profiles of food industry specific occupations **four occupations most relevant for the VFI** were identified:

- Fruit, Vegetable and Related Preserver,
- Food Production Operator,
- Food Technician,
- Food Technologist.

In the third phase the project consortium identified **missing essential and optional skills/competences and knowledge** in the occupational profiles of these four VFI specific occupations (see Chapters 3 and 4).

The results of the fourth phase can not be reflected in this document, because the validation process has not started yet. The results of validation, incl. **descriptions of missing skills/competences and knowledge in ESCO format** will be presented in the final report of the project.



3. European Multilingual Classification of Skills, Competences and Occupations (ESCO)

ESCO database served as a reference point for identifying the vegan food industry (VFI) specific and transversal skills/competences, and underlying knowledge not included in the existing occupational profiles of food industry (see Annex).

ESCO as a software product has three pillars:

- Skills/competences,
- Occupations,
- Qualifications.

ESCO provides descriptions of 2942 occupations and 13 485 skills linked to these occupations, translated into 27 languages (all official EU languages plus Icelandic, Norwegian and Arabic).

3.1 Possibilities offered by ESCO

The aim of ESCO is to **support job mobility across Europe and a more integrated and efficient labour market**, by offering a “**common language**” on occupations and skills that can be used by different stakeholders on employment and education and training topics.

ESCO concepts and descriptions can help people to understand:

- what knowledge and skills are usually required when working in a specific occupation;
- what knowledge, skills and competences are obtained as a result of a specific qualification;
- what qualifications are demanded or often requested by employers from those searching for work in a specific occupation.

ESCO’s concepts and the relationships between them can be understood by electronic systems. This allows different systems and platforms to use ESCO to suggest the most relevant jobs to jobseekers on the basis of their skills or the most relevant trainings to people who want to reskill or upskill.

ESCO contains accurate descriptions of occupations and skills that can be used in both drafting job offers and CVs, facilitating comparability and matching. This will support both employers to find the right people for their vacancies and jobseekers to find the right jobs for their skills.

The use of ESCO in job offers, research, big data analyses, etc., helps education and training providers to understand what skills the labour markets need. They can then adapt their curricula accordingly to prepare their students better for tomorrow's labour markets. ESCO also helps potential employers to better understand what students have learned.

ESCO is available in 27 languages, allowing jobseekers and employers to better communicate about skills, training and jobs in any chosen European language. Through its use in the [EURES](#) portal and in many other online platforms, it helps European public and private



employment services to offer their services across borders, languages and electronic systems, so that they can better support people who want to work in another European country.

A poor understanding of qualifications across Europe, and the lack of an easy way to compare them, can hinder labour mobility. ESCO seeks to bridge this communication gap between the education and training institutions and labour market actors by making skills and qualifications visible and comparable at EU level.

3.2 ESCO occupations pillar

The occupations pillar organises the occupation concepts in ESCO. It uses hierarchical relationships between them, metadata as well as **mappings to the International Standard Classification of Occupations (ISCO)** in order to structure the occupations (see Annex). Each occupation concept contains one preferred term and any number of non-preferred terms and hidden terms in each of the ESCO languages.

Each occupation also comes with an occupational profile. The profiles contain an explanation of the occupation in the form of **description, scope note and definition**. The **profile lists the skills/competences and knowledge** that experts considered relevant terminology for this occupation on a European scale.

3.3 ESCO skills pillar

The skills pillar distinguishes between:

- skill/competence concepts,
- knowledge concepts by indicating the skill type.

There is **no distinction between skills and competence**, because competence means a skill applied in a specific work context.

Each of these concepts comes with one preferred term and a number of non-preferred terms in each of the 27 ESCO languages. Every concept also includes an **explanation in the form of description**.

The skills pillar of ESCO contains 13 485 concepts structured in a hierarchy which contains four sub-classifications. Each sub-classification targets different types of knowledge and skill/competence concepts:

- Knowledge,
- Skills,
- Attitudes and values,
- Language skills and knowledge.

In addition to the hierarchy, subsets of skills can be accessed through:



- A transversal skills hierarchy,
- A collection of languages,
- A collection of digital skills.

3.4 ESCO qualifications pillar

Qualification is the formal outcome of an assessment and validation process which is obtained when a competent body determines that an individual has achieved learning outcomes to given standards.

Information on qualifications at European level is displayed in [Europass](#), and comes from databases of national qualifications reflecting the National Qualifications Frameworks that are owned and managed by the EU Member States.

[Europass](#) offers the most up to date and rich repository of high quality data on qualifications, national qualification frameworks and learning opportunities in Europe, helping learners to find a course in another country and employers to grasp the value of a qualification from a different EU Member State.



4. Food Production Operator/ Fruit, Vegetables and Related Preserver

Although the occupational profiles of Food Production Operator and Fruit, Vegetables and Related Preserver are different (see Annex), our analysis has revealed that the skills/competences and underlying knowledge missing in the existing descriptions of occupational profiles are the same. Therefore, it was decided to add the following skills/competences and knowledge to both profiles:

Essential skills and competences

- Basic ICT (working with human-machine interface; use different software, like traceability),
- Manual controlling of machines and processes,
- Fault diagnostic of automation systems,
- Waste management (recycling, waste separating),
- To correctly order the raw materials, intermediate and final products warehouse,
- Management of products for certification in warehouse and production plant,
- Management of non-conforming products,
- Traceability,
- Active listening,
- Team working,
- Problem solving.

Essential knowledge

- Awareness of circular and green economy concepts,
- Waste management,
- Energy management,
- Water management,
- Food safety culture, food defence, food authenticity and food fraud,
- Storage management concepts (FIFO, LIFO...related to reduction of food waste).

Optional skills and competences

- Ability to perform first aid,
- Management and configuration changing of the interface for different robotic or automatic equipment on the line for different formats (filler, packer, palletizer, strapping machine....),
- Project management,
- Additional language (English),
- Use additive technologies,



Optional knowledge

- Digitalisation concepts (software, hardware, blockchain technology, traceability systems, IoT).

These amendments to the Food Operator and Fruit, Vegetable and Related Preserver occupational profiles are the input for developing the training modules in WP2. On the other hand, these amendments are validated by the EQVEGAN stakeholder community and by the trainees in WP3 and WP4



Food Technician and Food Technologist

The occupational profiles of Food Technician and Food Technologist are different (see Annex). Our analysis has revealed some missing skills/competences and underlying knowledge in the existing occupational profiles (see sections 4.1 and 4.2). Although some entries in the lists of skills/competences and knowledge are identical, they may have different level of complexity for Food Technician and Food Technologist.

5. Food Technician

Essential skills and competences

- ICT (use different specific software, like traceability, analysis, data management (handling, analysis, protection), cybersecurity, IoT),
- Coordinating solving the fault of automation systems and the whole process,
- Waste management (recycling, waste separating),
- Management products for certification in warehouse and production plant,
- Management of non-conforming products,
- Adjust instructions for traceability related to safety standards,
- Active listening,
- Team working,
- Problem solving.

Essential knowledge

- Circular and green economy concepts,
- Waste management,
- Energy management,
- Water management,
- Food ethics (food defense, food authenticity and food fraud).

Optional skills and competences

- Ability to perform first aid,
- Follow on the latest trends in Food product and packaging development and adopt changes,
- Cooperate with Food Technologist to utilize food waste and create new food products,
- Implement necessary renewable sources of energy according to one's geographical locations.



6. Food Technologist

Essential skills and competences

- ICT (use different specific software, like traceability, analysis, data management (handling, analysis, protection), cybersecurity, IoT),
- Coordinating solving the fault of automation systems and the whole process,
- Waste management (recycling, waste separating),
- Management products for certification in warehouse and production plant,
- Management of non-conforming products,
- Adjust instructions for traceability related to safety standards,
- Use additive technologies,
- Implementation of food ethics (food culture, food defense, food authenticity and food fraud),
- Trainer in hygiene, food safety, GMP and food handling,
- Active listening,
- Team building/management,
- Problem solving/critical thinking,
- Leadership,
- Planning and organization.

Essential knowledge

- Circular and green economy concepts,
- Waste management,
- Energy management,
- Water management,
- Food ethics (food defense, food authenticity and food fraud).

Optional skills and competences

- Cooperate with Food Technician to utilize food waste and create new food products,
- Ability to perform first aid,
- Design a food safety and quality system (FSSC 22000; BRC; IFS; ...) Self-management (time, stress, organization).

Optional Knowledge

- Project management.

These amendments to the Food Technician and Food Technologist occupational profiles are the input for developing the training modules in WP2. On the other hand, these amendments are validated by the EQVEGAN stakeholder community and by the trainees in WP3 and WP4.



Glossary

Vegan food industry (in narrow sense) – industry producing vegetarian replacements of meat and dairy products.

Vegan food industry (in wide sense) – industry producing food from vegetables, fruits, cereals and nuts.

Occupational profile – person's skills/competences profile (in ESCO format) needed to perform successfully in an occupation.

Education and training provider – organisation or individual providing education or training services; it may be an organisation specifically set up for this purpose, or may be other, such as employers, who provide training as a part of their business activities.

Employability skills – skills necessary for employment in particular occupation or job.



Annex. VFI related occupations in ESCO

This Annex was compiled based on descriptions of selected VFI related occupations in ESCO database

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Foccupation%2Fe3dc66de-99c7-4607-a82b-7244036d316d&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/occupation/e3dc66de-99c7-460>.

To see if and how an occupation is regulated in EU Member States, EEA countries or Switzerland please consult the Regulated Professions Database of the Commission. Regulated Professions Database: http://ec.europa.eu/growth/single-market/services/free-movement-professionals/qualifications-recognition_en.



Food production operator

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC8160&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C8160>

Food production operators supply and perform one or more tasks in different stages of the food production process. They perform manufacturing operations and processes to foods and beverages, perform packaging, operate machines manually or automatically, follow predetermined procedures, and take food safety regulations on board.

Hierarchy

- 8 - Plant and machine operators and assemblers
 - 81 - Stationary plant and machine operators
 - 816 - Food and related products machine operators
 - 8160 - Food and related products machine operators
 - Food production operator

Essential skills and competences

- administer ingredients in food production
- apply GMP
- apply HACCP
- apply requirements concerning manufacturing of food and beverages
- be at ease in unsafe environments
- carry out checks of production plant equipment
- clean food and beverage machinery
- disassemble equipment
- ensure refrigeration of food in the supply chain
- ensure sanitation
- follow production schedule
- keep inventory of goods in production
- lift heavy weights
- monitor ingredient storage
- monitor the production line
- support management of raw materials

Essential Knowledge

- food safety principles

Optional skills and competences

- adjust drying process to goods
- administer materials to tea bag machines
- apply different dehydration processes of fruits and vegetables
- apply extruding techniques
- apply preservation treatments
- check bottles for packaging
- check quality of products on the production line



- check the quality of raw materials at reception
- conduct cleaning in place
- dispose food waste
- dispose non-food waste within the food industry
- ensure compliance with environmental legislation in food production
- ensure correct goods labelling
- examine production samples
- execute chilling processes to food products
- follow evaluation procedures of materials at reception
- follow hygienic procedures during food processing
- handle kitchen equipment according to the requirements
- label samples
- measure sugar refinement
- mitigate waste of resources
- monitor almond blanching process
- monitor coating specifications
- monitor filling machines
- monitor milled food products
- monitor oil blending process
- monitor sugar uniformity
- mould chocolate
- operate automated process control
- operate forklift
- perform carbonation processes
- perform cleaning duties
- rectify spirits
- set up equipment for food production
- tend bottle-washing machine
- tend packaging machines
- weigh materials
- work according to recipe

Optional Knowledge

- centrifugal force
- cleaning of reusable packaging
- condiment manufacturing processes
- fermentation processes of food
- food canning production line
- food homogenisation
- food storage
- health, safety and hygiene legislation
- hydrogenation processes for edible oils
- milk production process
- modern brewing systems



Fruit, vegetable and related preservers

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Fruit and vegetable preservers tend machines to prepare and preserve fruit and vegetable products. They aim to keep preserved perishable foods in a stable form. Thus, they perform duties such as freezing, preserving, packing after sorting, grading, washing, peeling, trimming and slicing agricultural products.

Hierarchy

- 7 - Craft and related trades workers
 - 75 - Food processing, wood working, garment and other craft and related trades workers
 - 751 - Food processing and related trades workers
 - 7514 Fruit, vegetable and related preservers

Essential skills and competences

- apply GMP
- apply HACCP
- apply preservation treatments
- apply requirements concerning manufacturing of food and beverages
- check quality of fruits and vegetables
- clean food and beverage machinery
- execute chilling processes to food products
- follow hygienic procedures during food processing
- maintain cutting equipment
- prepare fruits and vegetables for pre-processing
- process fruits and vegetables
- use food cutting tools
- work in conveyor belts in food manufacturing

Essential Knowledge

- food preservation
- food storage
- fruit and vegetables maceration

Optional skills and competences

- adjust drying process to goods
- analyse characteristics of food products at reception
- apply different dehydration processes of fruits and vegetables
- assess environmental parameters at the workplace for food products
- care for food aesthetic
- check quality of products on the production line
- dispose food waste



- ensure compliance with environmental legislation in food production
- identify the factors causing changes in food during storage
- jell fruits
- label samples
- maintain food specifications
- manage fruit juice extraction processes
- operate a heat treatment process
- operate equipment for food homogenisation
- operate industrial ovens
- tend canning machine
- tend drying equipment
- work according to recipe

Optional Knowledge

- food canning production line
- food dehydration processes
- temperature scales



Food technologist

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Food technologists develop processes for manufacturing foodstuffs and related products based on chemical, physical, and biological principles and technology. They design and plan layouts or equipment, oversee staff, engage in controlling, and improve food technologies in food production processes.

Hierarchy

- 2 - Professionals
 - 21 - Science and engineering professionals
 - 214 - Engineering professionals (excluding electrotechnology)
 - 2145 - Chemical engineers
 - 2145.1 - chemical engineer
 - food technologist

Essential skills and competences

- analyse packaging requirements
- analyse samples of food and beverages
- apply GMP
- apply HACCP
- apply food technology principles
- apply requirements concerning manufacturing of food and beverages
- assess HACCP implementation in plants
- collect samples for analysis
- develop food production processes
- ensure public safety and security
- evaluate ingredient documentation from suppliers
- follow-up lab results
- identify the factors causing changes in food during storage
- improve chemical processes
- interpret data in food manufacturing
- keep up with innovations in food manufacturing
- lead process optimisation
- manage discarded products
- manage food manufacturing laboratory
- manage the use of additives in food manufacturing
- monitor developments used for food industry
- monitor processing conditions
- perform food risk analysis
- prepare visual data
- read engineering drawings
- strive for nutritional improvement of food manufacturing



- translate chemical innovations in pragmatic terms
- use new technologies in food manufacturing
- watch food product trends
- write work-related reports

Essential Knowledge

- biotechnology
- chemistry
- combination of flavours
- combination of textures
- enzymatic processing
- fermentation processes of food
- food allergies
- food and beverage industry
- food canning production line
- food engineering
- food legislation
- food materials
- food preservation
- food product ingredients
- food products composition
- food safety principles
- food science
- food storage
- food toxicity
- foodborne diseases
- functional properties of foods
- health, safety and hygiene legislation
- ingredient threats
- laboratory-based sciences
- legislation about animal origin products
- pathogenic microorganisms in food
- processes of foods and beverages manufacturing
- quality assurance methodologies
- risks associated to physical, chemical, biological hazards in food and beverages
- traceability in food industry

Optional skills and competences

- adapt production levels
- adjust production schedule
- advocate for consumer matters in production plants
- analyse production processes for improvement
- analyse trends in the food and beverage industries
- apply control process statistical methods



- apply scientific methods
- assess ergonomics of the workplace
- assess food samples
- assess nutritional characteristics of food
- assess quality characteristics of food products
- assess shelf life of food products
- be at ease in unsafe environments
- carry out environmental audits
- carry out training in environmental matters
- check quality of products on the production line
- check the quality of raw materials at reception
- collect briefing regarding products
- configure plants for food industry
- coordinate launches of new food products
- create new recipes
- detect microorganisms
- develop new food products
- develop standard operating procedures in the food chain
- ensure compliance with environmental legislation in food production
- ensure continuous preparedness for audits
- ensure correct goods labelling
- ensure quality of final product
- follow laboratory manuals
- food plant design
- identify hazards in the workplace
- impart training on general quality management supervision
- inspect silo systems
- keep food laboratory inventory
- keep up-to-date with regulations
- manage communications with food industry governmental bodies
- manage environmental management system
- manage packaging development cycle from concept to launch
- manage scale-up experiments for manufacturing of products
- mitigate waste of resources
- monitor ingredient storage
- monitor packaging operations
- monitor the production line
- operate automated process control
- participate as observer in different types of audits in the food sector
- participate in the development of new food products
- perform chemical experiments
- perform food safety checks
- perform microbiological analysis in the food chain
- perform physico-chemical analysis to food materials



- perform quality audits
- perform sensory evaluation
- plan shifts of employees
- provide food labelling expertise
- research new cooking methods
- research new food ingredients
- select adequate packaging for food products

Optional Knowledge

- cultural customs on food preparation
- effects of pesticides in food raw materials
- fermentation processes of beverages
- food homogenisation
- food safety standards



Food production engineer

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Food production engineers oversee the electrical and mechanical needs of the equipment and machinery required in the process of manufacturing food or beverages. They strive to maximise plant productivity by engaging in preventive actions in reference to health and safety, good manufacturing practices (GMP), hygiene compliance, and performance of routine maintenance of machines and equipment.

Hierarchy

- 2 - Professionals
 - 21 - Science and engineering professionals
 - 214 - Engineering professionals (excluding electrotechnology)
 - 2141 - Industrial and production engineers
 - 2141.3 - industrial engineer
 - 2141.3.2 - production engineer
 - food production engineer

Essential skills and competences

- apply GMP
- apply HACCP
- apply requirements concerning manufacturing of food and beverages
- carry out checks of production plant equipment
- configure plants for food industry
- develop food production processes
- disaggregate the production plan
- disassemble equipment
- keep up with innovations in food manufacturing
- keep up-to-date with regulations
- manage all process engineering activities
- manage corrective actions
- mitigate waste of resources
- monitor equipment

Essential Knowledge

- electrical engineering
- electronics
- food storage
- quality assurance methodologies

Optional skills and competences

- analyse work-related written reports
- assess HACCP implementation in plants



- be at ease in unsafe environments
- ensure compliance with environmental legislation in food production
- ensure full functioning of food plant machinery
- food plant design
- lead process optimisation
- perform quality audits
- write work-related reports

Optional Knowledge

- food and beverage industry
- food homogenisation
- food preservation
- food safety standards



Food technician

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Food technicians assist food technologists in the development of processes for manufacturing foodstuffs and related products based on chemical, physical, and biological principles. They perform research and experiments on ingredients, additives and packaging. Food technicians also check product quality to ensure compliance with legislation and regulations.

Hierarchy

- 3 - Technicians and associate professionals
 - 31 - Science and engineering associate professionals
 - 311 - Physical and engineering science technicians
 - 3119 - Physical and engineering science technicians not elsewhere classified
 - food technician

Essential skills and competences

- apply GMP
- apply HACCP
- apply requirements concerning manufacturing of food and beverages
- carry out checks of production plant equipment
- clean food and beverage machinery
- ensure public safety and security
- identify the factors causing changes in food during storage
- manage all process engineering activities
- manage delivery of raw materials
- manage packaging material
- monitor freezing processes
- monitor ingredient storage
- monitor the production line
- prepare visual data
- schedule regular machine maintenance
- set up equipment for food production
- write work-related reports

Essential Knowledge

- food and beverage industry
- food preservation
- food product ingredients
- functional properties of foods
- pathogenic microorganisms in food
- processes of foods and beverages manufacturing
- quality assurance methodologies



Optional skills and competences

- adjust production schedule
- administer ingredients in food production
- analyse packaging requirements
- analyse production processes for improvement
- analyse work-related written reports
- apply control process statistical methods
- apply food technology principles
- assist in the development of standard operating procedures in the food chain
- be at ease in unsafe environments
- calibrate laboratory equipment
- check quality of products on the production line
- check the quality of raw materials at reception
- develop new food products
- ensure compliance with environmental legislation in food production
- ensure full functioning of food plant machinery
- ensure quality of final product
- evaluate ingredient documentation from suppliers
- follow hygienic procedures during food processing
- follow-up lab results
- investigate customer complaints
- keep inventory of goods in production
- manage corrective actions
- manage resources in food manufacturing
- mitigate waste of resources
- monitor coating specifications
- monitor developments used for food industry
- monitor processing conditions
- operate automated process control
- participate in the development of new food products
- perform food risk analysis
- perform quality audits
- plan shifts of employees
- read engineering drawings
- select adequate packaging for food products

Optional Knowledge

- cleaning of reusable packaging
- combination of flavours
- combination of textures
- fermentation processes of beverages
- fermentation processes of food
- food canning production line
- food legislation



- food materials
- food safety principles
- laboratory-based sciences
- legislation about animal origin products



Food biotechnologist

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Food biotechnologists study the life cycle of food from its preservation up to the spoilage and the food-borne pathogens. They research and understand food-borne diseases in order to prevent them. They ensure that food products abide by government regulations regarding food health and safety.

Hierarchy

- 2 - Professionals
 - 21 - Science and engineering professionals
 - 213 - Life science professionals
 - 2131 - Biologists, botanists, zoologists and related professionals
 - food biotechnologist

Essential skills and competences

- analyse samples of food and beverages
- apply GMP
- apply HACCP
- apply requirements concerning manufacturing of food and beverages
- detect microorganisms
- ensure public safety and security
- follow-up lab results
- identify the factors causing changes in food during storage
- improve chemical processes
- keep up with innovations in food manufacturing
- lead process optimisation
- manage discarded products
- manage food manufacturing laboratory
- monitor developments used for food industry
- monitor processing conditions
- operate microscope
- perform food risk analysis
- perform microbiological analysis in the food chain
- prepare visual data

Essential Knowledge

- biotechnology
- enzymatic processing
- fermentation processes of beverages
- fermentation processes of food
- food allergies
- food and beverage industry
- food legislation



- food preservation
- food product ingredients
- food products composition
- food safety principles
- food science
- food storage
- food toxicity
- foodborne diseases
- ingredient threats
- laboratory-based sciences
- legislation about animal origin products
- pathogenic microorganisms in food
- quality assurance methodologies

Optional skills and competences

- adjust production schedule
- analyse work-related written reports
- apply food technology principles
- apply preservation treatments
- apply scientific methods
- assess HACCP implementation in plants
- assess food samples
- assess shelf life of food products
- be at ease in unsafe environments
- carry out environmental audits
- carry out training in environmental matters
- check quality of products on the production line
- collect briefing regarding products
- develop new food products
- develop standard operating procedures in the food chain
- ensure compliance with environmental legislation in food production
- ensure quality of final product
- follow laboratory manuals
- keep up-to-date with regulations
- monitor the production line
- participate in the development of new food products
- perform quality audits
- write work-related reports

Optional Knowledge

- food materials
- food safety standards
- risks associated to physical, chemical, biological hazards in food and beverages
- statistics



Food production manager

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Food production managers oversee and monitor production and have overall responsibility for staffing and related issues. Hence, they have a detailed knowledge of the manufacturing products and their production processes. On the one hand, they control process parameters and their influence on the product and on the other hand, they ensure that staffing and recruitment levels are adequate.

Hierarchy

- 1 - Managers
 - 13 - Production and specialised services managers
 - 132 - Manufacturing, mining, construction, and distribution managers
 - 1321 - Manufacturing managers
 - 1321.1 - manufacturing manager
 - 1321.1.1 - industrial production manager
 - food production manager

Essential skills and competences

- analyse production processes for improvement
- analyse trends in the food and beverage industries
- apply GMP
- apply HACCP
- apply control process statistical methods
- apply requirements concerning manufacturing of food and beverages
- communicate production plan
- control of expenses
- ensure cost efficiency in food manufacturing
- identify hazards in the workplace
- implement short term objectives
- interpret data in food manufacturing
- keep up with innovations in food manufacturing
- maintain relationship with customers
- manage corrective actions
- manage resources in food manufacturing
- oversee production requirements
- plan food plant production activities
- plan shifts of employees
- set production KPI
- set quality assurance objectives
- supervise employees in food production plants



Essential Knowledge

- financial capability
- food and beverage industry
- food legislation
- quality assurance methodologies

Optional skills and competences

- adapt production levels
- advocate for consumer matters in production plants
- apply foreign language for international trade
- assess environmental plans against financial costs
- ensure continuous preparedness for audits
- hire new personnel
- lead process optimisation
- manage communications with food industry governmental bodies
- manage medium term objectives
- manage staff
- mitigate waste of resources
- monitor developments used for food industry
- perform strategic planning in the food industry
- plan medium to long term objectives

Optional Knowledge

- food safety standards
- legislation about animal origin products



Food safety specialist

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Food safety specialists organise processes and implement procedures to avoid problems with food safety. They comply with regulations.

Hierarchy

- 2 - Professionals
 - 22 - Health professionals
 - 226 - Other health professionals
 - 2263 - Environmental and occupational health and hygiene professionals
 - food safety specialist

Essential skills and competences

- control food safety regulations
- develop food safety programmes
- evaluate retail food inspection findings
- investigate complaints related to consumer protection
- keep task records
- maintain personal hygiene standards
- monitor packaging operations
- plan inspections for prevention of sanitation violations
- prepare reports on sanitation
- take action on food safety violations
- train employees

Essential Knowledge

- food legislation
- food preservation
- food storage

Optional skills and competences

- analyse samples of food and beverages
- assess food samples
- audit HACCP
- develop food policy
- ensure correct goods labelling
- monitor sugar uniformity
- use instruments for food measurement



Optional Knowledge

- cold chain
- food homogenisation
- food policy
- general principles of food law



Food analyst

<https://ec.europa.eu/esco/portal/occupation?uri=http%3A%2F%2Fdata.europa.eu%2Fesco%2Fisco%2FC751&conceptLanguage=en&full=true#&uri=http://data.europa.eu/esco/isco/C751>

Food analysts perform standardised tests to determine the chemical, physical, or microbiological features of products for human consumption.

Hierarchy

- 3 - Technicians and associate professionals
 - 31 - Science and engineering associate professionals
 - 311 - Physical and engineering science technicians
 - 3111 - Chemical and physical science technicians
 - food analyst

Essential skills and competences

- analyse characteristics of food products at reception
- analyse samples of food and beverages
- apply GMP
- apply HACCP
- apply requirements concerning manufacturing of food and beverages
- assess nutritional characteristics of food
- assess quality characteristics of food products
- attend to detail regarding food and beverages
- blend food ingredients
- calibrate laboratory equipment
- collect samples for analysis
- conduct food tests
- ensure public safety and security
- follow hygienic procedures during food processing
- follow laboratory manuals
- identify the factors causing changes in food during storage
- interpret data in food manufacturing
- keep food laboratory inventory
- keep up-to-date with regulations
- maintain laboratory equipment
- measure pH
- perform physico-chemical analysis to food materials
- prepare visual data
- preserve samples
- pursue excellence in the creation of food products
- report test findings
- set quality assurance objectives



Essential Knowledge

- food safety principles
- food safety standards
- food science
- food toxicity
- ingredient threats
- laboratory-based sciences
- pathogenic microorganisms in food
- quality assurance methodologies

Optional skills and competences

- analyse packaging requirements
- analyse trends in the food and beverage industries
- analyse work-related written reports
- apply scientific methods
- assess environmental parameters at the workplace for food products
- assess food samples
- assess shelf life of food products
- check bottles for packaging
- check quality of products on the production line
- detect microorganisms
- develop new food products
- develop standard operating procedures in the food chain
- follow evaluation procedures of materials at reception
- follow-up lab results
- investigate customer complaints
- label samples
- mitigate waste of resources
- monitor developments used for food industry
- participate in the development of new food products
- perform food risk analysis
- perform food safety checks
- perform microbiological analysis in the food chain
- perform sensory evaluation
- write work-related reports

Optional Knowledge

- fermentation processes of food
- food homogenisation
- food legislation
- food products composition
- risks associated to physical, chemical, biological hazards in food and beverages
- statistics

