



EQAS-Food Award

Accreditation Report

Bachelor's Degree Programme

FOOD SCIENCE AND TECHNOLOGY

Provided by

Universitat Politècnica de València, Spain

Version: 9 December 2021

Table of Contents

A	About the Accreditation Process	3
B	Characteristics of the Degree Programme	4
C	Peer Report for the EQAS-Food Award	15
	1. Formal Data	15
	2. The Rationale of the Programme	16
	3. Educational Process	17
	4. Resources and Partnerships	19
	5. Management System	22
	6. Supporting information about the study programme	23
D	Additional Documents	25
Annex 1	Alignment with EQAS-Food Learning Outcomes	26

A About the Accreditation Process

Title of the degree Programme	Labels applied for	Previous EQAS accreditation
Bachelor's Degree in Food Science and Technology	EQAS-Food Award	none
<p>Date of the contract: 16/04/2021</p> <p>Submission of the final version of the self-assessment report, national accreditation report, report on the amendments after the national accreditation and the EQAS learning outcomes alignment table: 16/04/2021</p>		
<p>Peer panel:</p> <p>Prof. Dr. Rui Costa, Polytechnic of Coimbra, Portugal</p> <p>Dr. Diego A. Moreno, CEBAS-CSIC, Spain</p>		
<p>Responsible decision-making committee: ISEKI Food Association Accreditation Commission</p>		
<p>Criteria used:</p> <p>EQAS-Food Framework Standards and Accreditation Criteria as of 16.01.2018 Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG) as of 2015</p> <p>The accreditation followed the standard procedure described in the EQAS-Food Framework Standards and Accreditation Criteria</p>		

To facilitate the legibility of this document, only masculine noun forms will be used hereinafter. Any gender-specific terms used in this document apply to both women and men.

The Accreditation report is based upon:

1. Self-assessment report (SAR) submitted by the HEI to the National agency in the preparation of the accreditation procedure, from 01/04/2015 [in Spanish].
2. The renovation of accreditation report of the Valencian Agency for Assessment and Prospective (AVAP - *Agència Valenciana d'Avaluació i Prospectiva*), from 15/03/2016 [in Spanish].
3. Study plan and additional information from the web: http://www.upv.es/contenidos/ORIENTA/info/GCTA_Grados_A4-en.pdf, <http://www.upv.es/titulaciones/GCTA/indexi.html>.
4. Alignment matrix with EQAS Food learning outcomes.
5. Academic staff table and information.
6. Clarifications by email received on 11.11.2021 and 03.12.2021

B Characteristics of the Degree Programme

a) Name & Final Degree	Bachelor's Degree in Food Science & Technology "Graduado o graduada en Ciencia y Tecnología de los Alimentos"
b) Areas of Specialization	Not applicable
c) Mode of Study	Full time Castellano (Spanish) and Valencian Language
d) Duration & Credit Points	4 years 240 ECTS (63 Basic training; 24 Elective; 141 Compulsory, 12 Final Degree Project ("TFG"))
e) First time of offer & Intake rhythm	2010 the Bachelor in Science and Food technology (Plan 2000) is eliminated and substituted by the Graduate Programme in Science and Food Technology (Plan 2010)
f) Number of students per intake	Yearly 80 students
g) Fees	The fees depend on the number of ECTS enrolled, as well as the number of times a subject is repeated. A standard 60 ECTS course has a cost of 1,156.20 euros per year [19,27 €/credit (2020/2021)].

The *Bachelor's Degree in Food Science and Technology* has defined a long list of outcomes and competences to be developed. The outcomes are divided in generic outcomes for UPV students, and additional generic and specific outcomes for this degree students.

UPV GENERIC STUDENT OUTCOMES:

- Comprehension and integration
Demonstrate an understanding and integration of knowledge in both the student's own specialization, and other wider contexts.
- Application and practical thinking
An ability to put theoretical knowledge into practice and plan the process to be followed, develop and conduct appropriate experimentation, and analyze and interpret data to draw conclusions.
- Analyzing and solving problems
Analyze and solve problems effectively by identifying and defining the significant elements of which they are composed.
- Innovation, creativity and entrepreneurship
Innovation and entrepreneurship in the form of a satisfactory and original response to personal, organizational and social needs and demands.
- Designs and projects
Effective design, control, and evaluation of an idea until it becomes a specific project.
- Teamwork and leadership
Work with and lead a team effectively in order to achieve common objectives while contributing to the personal and professional development of its members.
- Ethical, environmental and professional responsibility
Show ethical, environmental, and professional responsibility towards oneself and others.
- Effective communication
Effective oral and written communication with proper use of the appropriate means, and bearing in mind

the requirements of the situation and the person receiving the message.

- **Critical thinking**
Develop the ability to think critically and to consider the fundamental concepts behind students' and others' ideas, actions, and judgements.
- **Awareness of contemporary issues**
Identify and interpret contemporary issues both in student's own field, and other fields of knowledge.
- **Life-long learning**
Strategic, independent and flexible use of knowledge in accordance with the desired objectives throughout student's professional career.
- **Planning and time management**
Appropriate planning to make the best use of the time available, programming the required activities to reach the desired academic, professional, and personal objectives.
- **Specific tools**
Select and apply as appropriate the tools, technologies and, in general, the instruments available in any operations related to design and projects in student's professional field.

GENERAL OUTCOMES:

- Being able to analyze
- Being able to synthesize
- Being able to effectively determine the objectives of an activity.
- Expressing one's ideas, knowledge and feelings clearly and opportunely.
- Interacting effectively with others through the clear expression of one's mind or feelings by means of writing and graphic support.
- Managing effectively the information in the field of study.
- Identifying, analyzing and defining problems.
- Being able to choose the best alternative to act on.
- Being able to use the information and communication technologies.
- Facing one's own capacities and limitations.
- Using learning strategically and flexibly
- Giving a satisfactory response to the personal, organizational and social needs and demands.
- Addressing and responding satisfactorily to new situations.
- Influencing individuals and/or groups.
- Carrying out projects on your own initiative.
- Seeking excellence academically, personally and professionally.
- Being able to put theoretical knowledge into practice.

- Managing and overcoming differences that arise between individuals and/or groups
- Preparing, managing, evaluating and monitoring a complex task.
- Carrying out actions successfully.
- Being able to solve problems with critical thinking.
- Communicating in a foreign language.

SPECIFIC OUTCOMES:

- Manufacturing and preserving food.
- Analyzing food.
- Controlling and optimizing processes and products.
- Developing new processes and products.
- Managing by-products and waste.
- Analyzing and evaluating food risks.
- Managing food safety.
- Evaluating, controlling and managing food quality.
- Implementing quality systems.
- Commercializing food products.
- Identifying key factors in nutrition.
- Calculating and establishing healthy food guidelines for individuals and groups.
- Evaluating the nutritional status of individuals and groups.
- Designing and interpreting food surveys.
- Providing food education.
- Planning and developing health promotion and prevention plans.
- Carrying out staff training tasks.
- Offering legal, scientific and technical advice to the food industry and consumers.
- Solving mathematical problems.
- Being able to use basic knowledge of computers
- Being able to use basic knowledge of chemistry.
- Being able to use basic knowledge of physics.

- Innovating and developing in the field of food science and technology.
- Acquiring the relevant professional skills.
- Integrating and completing outcomes in an original document.

For the degree programme *Bachelor's Degree in Food Science and Technology*, it is intended that students acquire the following **competences**:

BASIC COMPETENCES:

- Basic Competence 1 (CB1): The students should demonstrate that they own and understand the knowledge acquired during the graduate process going from the initial base (coming from the high school level) to new knowledge, supported by advanced textbooks and reaching the state-of-the-art knowledge in the area of study.
- Basic Competence 2 (CB2): The students should be able to apply their knowledge to their job or vocational professional career having competences that should be demonstrated in the elaboration and defence of arguments and the resolution of problems in their area of study.
- Basic Competence 3 (CB3): Students must have the capacity to unify and make interpretation of relevant data (normally within their area of study) to prepare conclusions and judgements including discussion and reflexive thoughts of social, scientific or ethical characteristics.
- Basic Competence 4 (CB4): The students should be able to transmit/disseminate information, ideas, problems, and solutions to the public either specialized or not.
- Basic Competence 5 (CB5): The students should have developed those learning skills needed to start further graduate studies with certain degree of autonomy.

GENERAL COMPETENCES:

101. Capacity of analysis, to distinguish and separate the parts of a whole to get to know all its principal elements.

102. Synthesis Capacity. Organize and integrate different interrelated components to build up a whole item.

103. Capacity to efficiently determine the objectives of a given activity. The capacity to efficiently determine the objectives, priorities, methods, and controls to develop tasks by organizing the activities with the deadlines and available infrastructures.

104. Communicate with clarity and opportunity the ideas, knowledge, and own feelings. To be able to express themselves with clarity and opportunity when transmitting ideas, knowledge and feelings using language, adapting to the characteristics of the situation and audience to achieve their comprehension and adherence.

105. Effectively interact with other people with clear expression to communicate their thoughts and feelings, using writing and graphical supporting material. To integrate themselves actively in the consecution of common objectives with other people, areas, and organizations. To positively interact with other people with empathy listening and by using clear and concise expression to explain what they think or feel, by means of verbal or non-verbal communication. To understand and accept the social and cultural diversity as an enriching component at the personal and collective level to develop the coexistence with people without falling into any kind of discrimination. Questioning and making themselves interested in the fundamentals and basics of the concepts, ideas, actions, judgements etc. from themselves and from others.

106. Manage efficiently the information in the specialty. To manage efficiently the acquisition, structural analysis, and visualization of data and information in the specialty and evaluate with a critical point of view the results of this management activity.

107. Identify, analyse, and define problems. To identify, analyse and define the significant elements that constitute a problem to solve it with criteria in an effective way.
108. To choose the best alternative to act. To choose the best alternative to act, following a systematic process and taking responsibility of the achievement and the consequences of the taken decision.
109. The use of TICs. The use of technologies of information and communication (TICs) as tool for the expression and communication, to get access to reliable sources of information, as a resource for documents and data storage, for the presentation tasks, learning process, research and cooperative work.
110. To face their own capacities and limitations. To face their own capacities and limitations, pursuing their development and to overpass them with interest and taking care of the planned tasks.
111. Use the learning in a strategic and flexible manner. To use the learning in a strategic and flexible manner according to the pursued objective, starting from the recognition of the own learning system, and the conscious learning.
112. To give a satisfying response to the needs and demands at personal, organization and social level. To give satisfactory answer to the needs and demands at personal, organizational, and social level, modifying and introducing new elements in the processes and the results.
113. Address and satisfactorily respond to new situations. To address and to satisfactory respond to new novel and original situations in a given context.
114. Influence the people and/or groups. To influence the people and/or groups with anticipation fo the future and contributing to the personal and professional development.
115. To carry out projects by their own initiative. To carry out projects with their own initiative with a compromise in the academic activity to explore one opportunity, and assuming the associated risks.
116. To look for the excellence in the professional activity either in Academia or as independent professional or working for hire (companies). To find the excellence in the academic activity as well as in the personal and professional activity, oriented to the results and focused on the continuous improvement.
117. Capacity to apply theoretical knowledge to the practice. Capacity to apply theoretical knowledge to common situations of their professional activity.
118. To treat and to solve the differences that arise between people and/or groups. To treat and solve the differences that may arise between people and/or groups in any organization.
119. To prepare, direct, evaluate and follow-up of a complex work. To prepare, direct, evaluate and follow-up a complex work in a effective way developing one idea until the materialization in a service or product.
120. To realize successful actions. To realize actions that would lead to achieve new results with success.
121. Problem resolution capacity and critical spirit. The capacity to present a plan to address a problem and find the needed solutions, evaluating different alternatives with a critical point of view.
122. The capacity of communication in a foreign language. The capacity of communication, in (at least) a foreign language.

SPECIFIC COMPETENCES:

202. Food Analysis. To analyse foods, goods or primary sources, ingredients, additives and to prepare the corresponding reports; to evaluate and improve the quality of the methods of analysis applied in the control of food.
201. Manufacture and preservation of foods. To gain knowledge of the different properties of foods and the effects on these properties during manufacturing processes and preservation practices.
203. Control and optimization of processes and products. To identify the associated problems with the different foods and their processing, considering the starting materials or goods, the interactions between

components of foods, and the different technological processes (from production, packaging, storage, transport, and distribution of products), as well as the transformations that the products may suffer during such processes; the management of processing with an environmentally-friendly perspective; to establish tools for the management of the processes.

204. Development of new processes and products. To design and elaborate new processes and products; to evaluate the degree of acceptability of these products in the market; to establish the production costs; evaluate the environmental risks of the new productive processes.

205. Waste and by-product management. To know the by-products of food industry and their properties; to establish processes for the valorisation of by-products; to establish programmes of waste disposal.

206. Analysis and evaluation of risks in foods. To evaluate the hygienic-sanitary risk and toxicological risk of a process, food, ingredient, package; to identify the possible causes of food spoilage.

207. Management of food safety. To evaluate the hygienic-sanitary risk and toxicological risk of a process, food, ingredient, package; to identify the possible causes of food spoilage.

208. Evaluation, control and management of food quality. To establish procedures and manuals of quality control; to execute those quality procedures; to take actions from the results.

210. Commercialization of food products. To advice in the publicity tasks and marketing, as well as in the labelling and presentation of food products; to know the newest technical aspects of each product, related to its composition, functionality, processing, etc.

211. Identification of factors affecting nutrition. To identify the factors that affects the availability of foods and the food choices; to evaluate the determinant factors of food habits; to identify the food factors that affect health; to establish proper dietary recommendations to reduce the risk of the nutritional factors associated with disease.

212. Calculation and establishment of healthy dietary advice for the individual and society level. To give advice and make agreement in the modifications of the composition of the menu, and the way of preparation and the dietetic input in the collective food service; to propose food programmes personalised to different type of people groups; Achieve the food security and safety of the managed products; to offer the needed training to the staff involved in the process.

213. Evaluate the individual and collective nutritional state. Detect the origin of nutritional disorders from the clinical history and dietary intake analysis; evaluate the morphological alterations using physical examination and anthropometric measures; evaluate the physical activity; to evaluate the organic reservoirs using biochemical and immunological biomarkers.

214. Design and interpretation of food questionnaires. Select the strategy and more appropriate method to know the consumption of foods and nutrients of the individuals; Interpretation of the qualitative and quantitate information about food intake; knowledge and interpretation of the data shown in tables of food composition; transformation of the information using food composition tables in energy and nutrients; The use of programs and informatics tools available for the transformation of data coming from food questionnaires.

215. Dietary education. Design, organization, application, and evaluation of programs of nutritional and food education oriented to the workplace, the scholarly environment, population at risk and general population; to elaborate educational materials and support materials for the preventive activities and the promotion of health, from the point of view of the food/diet.

216. Planning and development of programs for promotion of health and prevention of diseases. Interventions in activities of health promotion, at individual and collective level; planning strategies of nutritional intervention to sensitize the target population, with modifications of lifestyle to a healthier way of life;

promotion of the rational consumption of foods according to health rules; contribution to the establishment of objectives and nutritional guides for different population groups; development of epidemiological studies.

217. Tasks of training for personnel. Offer knowledge and methodologies of teaching-learning at different levels; gather and analyse existing information; design of experiments; analysis and interpretation of results; identification of problems; propose solutions.

218. Legal, scientific, and technical advice to the food industry and the consumers. The study and interpretation of reports and administrative files or dossiers of a product; Know the current legislation; to defend the needs and the modifications of a norm or rule respective of any product to the administration.

219. Solve mathematical problems. To give the tools for the resolution of mathematical problems that may appear in Food Science and Technology. The skills to apply the knowledge on linear algebra, calculus, equations, numerical methods, numerical algorithms, statistics and modelling or optimization.

220. Basic knowledge on informatics. The use of common software existing in the market and the capacity of develop activities of easy programming.

221. Use the basic knowledge in Chemistry. To give tools to use the basic concepts of general chemistry, organic and inorganic chemistry, and their applications in Food Science and Technology.

222. To use the basic knowledge of Physics. To give tools to use the basic concepts of the general laws of thermodynamics, fields, waves, electromagnetism, and their applicability to the resolution of problems of Food Science and Technology.

223. Innovation and development in food science and technology. To acquire the knowledge, skills and abilities in innovation and development in Food Science and Technology, through the optional matters offered in the Degree of Food Science and Technology.

224. To acquire the proper capacities of the professional activity. To acquire the knowledge, skills, and abilities of the professional activity, through the realization of external practical training periods.

225. Integration and completion of competences in a original document. To integrate and to complete the knowledge, skills, and abilities in an original document, presented and defended in front of a university committee.

The following **curriculum** is presented:

Planning of the Degree (5.1. Descripción del Plan de Estudios. and "Apartado 5". Annex 1.)

5.2. Training activities (Actividades Formativas)

Practical training activities. Classroom. Field visits. Informatics. Laboratory. Seminars. Autonomous work.

5.3. Teaching methodologies.

Regular masterclass. Group work. Learning based on problems. Study of cases. Resolution of exercises and problems. Laboratory. Surveillance. Evaluation activities. Theoretical projects. Theory studies. Learning based on projects. Contract for trainees.

5.4. Systems of evaluation.

Oral exam. Written texts of open answers. Objective tests. Academic work. '1-minute' questions. Dossier. Projects. Case study. Observation. Co-evaluation. Auto-evaluation.

Distribution of modules and subjects:

BASIC COURSES (63 ECTS)

Biochemistry (6 ECTS)

Biology of Microorganisms and Plants (9 ECTS)

Biostatistics (6 ECTS)

Food Business Economics and Management (6 ECTS)

Foundations of Chemistry for Science and Food Technology (12 ECTS)

Foundations of Mathematics (6 ECTS)

Fundamentals of Food Engineering (7.5 ECTS)

Fundamentals of Physics for Science and Food Technology (6 ECTS)

Human Physiology (4.5 ECTS)

OTHER COMPULSORY COURSES (141 ECTS)

Chemical Analysis I (4.5 ECTS)

Chemical Analysis II (4.5 ECTS)

Chemical Changes in Food Processing (7.5 ECTS)

Chemical Composition of Foods (6 ECTS)

Dietetics (4.5 ECTS)

Environmental Management in the Food Industry (4.5 ECTS)

Food Analysis and Quality Control I (6 ECTS)

Food Analysis and Quality Control II (4.5 ECTS)

Food and Culture (4.5 ECTS)

Food Biotechnology (4.5 ECTS)

Food Processing I (6 ECTS)

Food Processing II (6 ECTS)

Food Standardization and Legislation (4.5 ECTS)

Human Nutrition (7.5 ECTS)

Microbiology and Food Hygiene I (4.5 ECTS)

Microbiology and Food Hygiene II (4.5 ECTS)

Packaging (4.5 ECTS)

Physical Properties of Food I (6 ECTS)

Physical Properties of Food II (7.5 ECTS)
Production of Raw Materials of Animal Origin (4.5 ECTS)
Production of Raw Materials of Vegetable Origin (4.5 ECTS)
Public Health (4.5 ECTS)
Quality Engineering in the Food Industry (4.5 ECTS)
Quality Management in the Food Industry (4.5 ECTS)
Toxicology in the Food Industrial Processing (4.5 ECTS)
Unit Operations in Food processing I (6 ECTS)
Basic Operations in Food Industry II (6 ECTS)

ELECTIVE COURSES (18 ECTS in semester 8; main examples below)

Beverage Industries (4.5 ECTS)
Entrepreneurship in the Agrifood Sector (4.5 ECTS)
Food law and Consumer Protection (4.5 ECTS)
Food Marketing (4.5 ECTS)
Microbiological Risk Assessment in Foods (4.5 ECTS)
Quality Systems and Models (4.5 ECTS)
The Food Industry and Commercial Distribution (4.5 ECTS)

LANGUAGE (6 ECTS in semester 7)

Academic and Professional French A1 - A2 - B1 - B2 (6 ECTS)
Academic and Professional German A1 - A2 - B1- B2 (6 ECTS)
English B2 for Food Science and Technology and Oenology (6 ECTS)
Scientific and Technical French - B1 (6 ECTS)
Technical Valencian C1 - C2 (6 ECTS)

Bachelor Thesis 12 ECTS

Temporary distribution of subjects:

Block First
Class Compulsory First Year
Min. Cr. --

Code	Courses	Carácter	Sem	ECTS	Ofe.
11188	Biochemistry	Basic Training	B	6	✓
11183	Biology of microorganisms and plants	Basic Training	T	9	✓
11218	Food and Culture	Compulsory	A	4,5	✓
11185	Foundations of Chemistry for Science and Food Technology	Basic Training	T	12	✓
11187	Foundations of Mathematics	Basic Training	A	6	✓
11186	Fundamentals of Food Engineering	Basic Training	B	7,5	✓
11184	Fundamentals of Physics for Science and Food Technology	Basic Training	A	6	✓
11190	Human Physiology	Basic Training	B	4,5	✓
11200	Production of Raw Materials of Animal Origin	Compulsory	B	4,5	✓

Block Second
Class Compulsory General
Min. Cr. --

Code	Courses	Carácter	Sem	ECTS	Ofe.
11203	Basic Operations in the Food Industry II	Compulsory	B	6	✓
11189	Biostatistics	Basic Training	A	6	✓
11196	Chemical Analysis I	Compulsory	B	4,5	✓
11192	Chemical Composition of Foods	Compulsory	A	6	✓
11191	Food Business Economics and Management	Basic Training	B	6	✓
11215	Human Nutrition	Compulsory	B	7,5	✓
11194	Physical Properties of Food I	Compulsory	A	6	✓
11195	Physical Properties of Food II	Compulsory	B	7,5	✓
11201	Production of Raw Materials of Vegetable Origin	Compulsory	A	4,5	✓
11202	Unit Operations in Food Processing I	Compulsory	A	6	✓

Block Third
 Class Compulsory General
 Min. Cr. --

Code	Courses	Carácter	Sem	ECTS	Ofe.
11199	Chemical Analysis II	Compulsory	A	4,5	✓
11193	Chemical changes in food processing	Compulsory	A	7,5	✓
11216	Dietetics	Compulsory	A	4,5	✓
11197	Food analysis and quality control I	Compulsory	A	6	✓
11198	Food analysis and quality control II	Compulsory	B	4,5	✓
11204	Food processing I	Compulsory	B	6	✓
11214	Food Standardization and Legislation	Compulsory	B	4,5	✓
11209	Microbiology and food hygiene I	Compulsory	A	4,5	✓
11208	Microbiology and food hygiene II	Compulsory	B	4,5	✓
11217	Public Health	Compulsory	A	4,5	✓
11212	Quality engineering in the food industry	Compulsory	B	4,5	✓
11211	Quality management in the food industry	Compulsory	B	4,5	✓

Block Fourth
 Class Compulsory General
 Min. Cr. --

Code	Courses	Carácter	Sem	ECTS	Ofe.
11262	Bachelor's Thesis	Thesis	B	12	✓
11213	Environmental management in the food industry	Compulsory	A	4,5	✓
11207	Food Biotechnology	Compulsory	A	4,5	✓
11205	Food Processing II	Compulsory	A	6	✓
11206	Packaging	Compulsory	A	4,5	✓
11210	Toxicology in the food industrial processing	Compulsory	A	4,5	✓

Changes in the curriculum since last accreditation: none.

C Peer Report for the EQAS-Food Award

1. Formal Data

Criterion 1 Formal Specifications

The peers took note of the formal information about the degree BSc programme. They perceived that the Bachelor's degree programme of Food Science and Technology is a typical course in this field of studies, and belongs to the domain of Food Science and Technology as described in the EQAS Framework Standards and Accreditation Criteria. The curriculum and the organization of the program are consistent with the planned outcomes and competences of the degree.

The admission of students follows common ways of access and requirements, most of them accessing after completion of the secondary education. After completion of the degree, the students can continue their training in Food Science and Technology at the master level and after the doctoral level.

UPV possess additional support for the development of students' competences by the Office Psicopedagogic Support (Gabinete de Orientación Psicopedagogo Universitario), additional training on decision making, problem solving, information management skills, social skills, teamwork, leadership, autonomous learning, among others, and other training that can be organized upon proposal by the colleges.

Final assessment of the peers regarding criterion 1:

The documents submitted provided enough evidence for a positive assessment in this criterion.

2. The Rationale of the Programme

Criterion 2.1 Needs of stakeholders

UPV informs that the fields where graduates will be able to work are food safety, management and quality control, development and innovation, legal, scientific and technical advice, commercialization and marketing, food processing, collective catering and community nutrition and public health. These professional paths are common those of the international community in food science and technology.

Specific improvements in their training offer and in the curricula, has regular and direct input from External Council of each degree (<https://www.upv.es/entidades/ETSIAMN/info/996039normalc.html>), which meets yearly to suggest improvements. The Food Technology Area External Council includes representatives of agri-food companies, food retail, technological centre, and local administration.

Criterion 2.2 Educational Objectives

UPV presented broad generic educational objectives for the programme¹:

- Have established themselves as technically competent and responsible practicing professionals who are socially and ethically committed to working in a global and sustainable society.
- Actively partake of or lead multidisciplinary working groups to solve technologically complex problems in their field of knowledge or area of expertise.
- Appropriately, accurately and honestly communicate their ideas.
- Have pursued advanced education, innovate in science and technology, expand and strengthen their knowledge.

The outcomes and competences presented for this programme degree confirms that the Bachelor degree fits in the frame of reference for the EQAS food award. The aim of the BSc FST programme is to train the future food technologists with the necessary knowledge to understand the nature of foods, the causes of their spoilage, the fundamental aspects of their processing and their improvement for public consumption. In the end the students will have acquired the competences needed to be employed in the food industry/retail/services or to continue towards higher education and research in all aspects of food science and technology.

Criterion 2.3 Programme outcomes

The Study Plan describes general learning objectives (as outcomes and competences) based on the professional profiles available for the graduate (see section B of this report). The graduates have the possibility of continuing second stage studies as commented in section C.1.

Although the outcomes and competences are not written according to the guidelines that can be found in the higher education literature or in documentation such as the ECTS Guide or the European Qualifications Framework, these constitute an exhaustive, ambitious and, overall, realistic set of objectives. However, for better information for the public and more effectiveness on programme design, the peers recommend UPV to define broad generic objectives, though a little more specific than the 4 educational objectives.

Final assessment of the peers regarding criterion 2:

The documents submitted provided enough evidence for a positive assessment in this criterion.

¹ Informed by email from Gabriela Clemente Polo gcllemen@tal.upv.es on 11-11-2021

3. Educational Process

Criterion 3.1 Overview of the curriculum

The curriculum is complete and provides enough training in the different areas related to food studies. The BSc study programme is based on:

1. Basic courses with 63 ECTS in total that allow a strong basis for next and specific modules.
2. Other compulsory courses with 141 ECTS: Food Science 46.5 ECTS, Food Technology 42 ECTS, Food Safety 13.5 ECTS, Food industry management and quality 18 ECTS, Nutrition and health 21 ECTS.
3. Elective courses with 18 ECTS for food technology, quality management, logistics, marketing or law.
4. Language courses with 6 ECTS on academic/professional/technical French, German, English or Valencian.
5. A thesis of 12 ECTS.

The sequence of the courses is very well defined. The elective courses that can be chosen are 6 courses out of 7 possibilities, which in fact makes this almost a compulsory list of courses.

Although using automatic translation, all the information is available in English in the webpage, providing information to a wide international audience of students and teachers interested in mobility to UPV.

Criterion 3.2 Delivery of the curriculum

The admission requirements in the programme are based on the *numerus clausus* more than on pre-requisites, as requested in bachelor programmes from public Spanish Universities according to the Spanish legislation. The final grade from high school required to enter in the programme (9.05/10) is highly above the average (7.59/10) considering the 19 FST degrees offered in Spain (<https://elpais.com/especiales/universidades/titulacion/notas/ciencia-y-tecnologia-de-los-alimentos/45>), which ensures the recruitment of high calibre students.

The programme is organized in 8 semesters with a workload of 60 ECTS in each academic course (2 semesters). The optional subjects are grouped mainly during the last semester of the degree, along with the final degree work, what has sense considering that in this case all the compulsory subjects have been already done and students are able to better decide which are their interests. Each semester includes 15 effective teaching weeks and 3 additional weeks dedicated to preparation and taking exams or presenting similar work or activities.

Planned non-contact hours are higher than 60% for all subjects, (even higher rate in the Module “Internship and final degree work”), which is in alignment with the student-centred learning environment promoted with the Bologna reform.

The peers found the delivery of the curricula to be very good and to fulfil the standards of the EQAS Food Award Framework.

The peers recommend including a compulsory external internship that could improve even more the employability of graduates. Nevertheless, it is noted that in 19/20 almost 60% of the students took a voluntary internship (Informe de Gestión 2019/2020).

Criterion 3.3 Learning and assessment

The teaching contact hours comprehend lectures, seminars, practical classes (informatics, field or lab). These include methods as working in groups, problem-based learning, case studies, problem solving, among others. Assessment includes oral and written examinations, report, projects, observation, in-class questions, portfolio, self and peer assessment. Overall, each curricular unit includes a variety of teaching activities, that can reach a total 6 and a variety of assessment indicators that can reach 8 simultaneously. These constitute an adequate practice, providing alternative methods for different learning styles and for assessment of different skills.

Criterion 3.4 Alignment matrix for EQAS LO

The Bachelor's degree programme documentation contained insufficient details on the alignment of the programme learning outcomes to the EQAS matrix though a detailed review by the peers (Annex I) confirmed the overall fulfilment in all EQAS categories.

Final assessment of the peers regarding criterion 3:

The documents submitted provided enough evidence for a positive assessment in this criterion.

4. Resources and Partnerships

Criterion 4.1 Academic and support staff

The strategic plan of UPV, approved in September 2007, established an Action Plan named “Equity” having in it aims the equality of opportunities. This plan establishes systems to guarantee the equality in all the areas of the UPV to avoid discrimination upon sex, economic situation, or disabilities, allowing and encouraging the continuation of the studies and the professional development of the workers of the university. The University putted in place plans and measures to encourage and facilitate the access to the degrees and postgraduate studies for the university staff, avoiding the discrimination based on sex or disability, to reach positions of responsibility in equal-opportunity conditions for men and women (Calls of Social Action, “Convocatorias de Acción Social”).

In the competitions or tests for accessing the position under this public system of the UPV, these rules are compulsory, and with respect to the adaptability measures needed will be taken as the guarantee for equal-opportunity access. In line with this, the UPV is working in the offer of public employment for the administration and services staff and following the rules of the Organic Law 3/2007 of 22 of March, for the effective equality between men and women, as well as in the selection processes to access the public servant scales and positions, including the intramural promotion, also by admitting the challenged candidates in equal conditions to the rest of participants.

To this respect, and according to the regulations in force, there is a minimum of 5% of the total of the positions in the public offer of staff to be covered by challenged candidates with a 33% or higher disability, if they pass the selection tests, and upon request, presenting the accredited degree of disability and the compatibility with the development of the tasks and functions corresponding to the position, that would be determine in the rules.

The academic personnel are divided in different categories according to the administrative type of positions (e.g. titular or permanent positions, “colaborador”, “asociado”, etc.). There is a total of 136 university teachers, 125 of them full-time appointed, and 11 part-time appointed, having the Ph.D. degree 123 of them. The distribution of categories and percentages of dedication is included in the “Apartado 6. Anexo 6”, file for more details. According to this, 91.9% of the teaching or academic staff is appointed as full-time staff, only 8.1% is appointed as part-time personnel and 90.4% of the staff own a Ph.D. or doctorate degree.

The accumulated experience of the staff (teaching, research and professional activity) of the 136 university professors reaches 613 Trienniums, 306 Quinquenniums (of teaching experience), and 151 ‘sexenios’ (six-year term, of research experience). The “anexo 6” included also metrics about the distribution in the different categories, and it is interesting to highlight that >50% of the personnel owns +2 quinquenniums in teaching experience, and 2 or more six-year term ‘sexenios’, of research experience (evaluated and granted by external agencies).

The staff background is of different origins: Agronomic engineering (46%), Sciences (Biology, Chemistry, Maths, Physics) (28%), Food Science and Technology (7%), Philology (6%), Pharmacy (5%), Law (1%), and others (6%).

Additional human resources for the degree includes lab technicians, 32, being 31 permanent positions (public servants) and accumulating 135 trienniums of experience. There are 5 lab technicians (specialist), 1 second officer, 16 medium-level technicians, and 10 higher-level technicians.

Additionally, there are administration and services personnel (of different administrative degrees from group A1 to Group D) totalling 60 positions (54 as public servants or permanent, 6 under contract) - detailed description of number and categories is included in the point 6.2. "Otros recursos humanos", of the Annex 6.

Criterion 4.2 Facilities

UPV Resources and services to support the Food Science and Technology Degree - Infrastructures and Equipment

- **General Library (Central library and libraries of the Campus)**

Service of the University community (11 points of service and 12 libraries of free access)

Central library and additional libraries in Higher Technical Schools of the Campus, totalling +2600 study points.

Digital library with electronic resources and documental resources of more than 460,000 volumes and 624 periodical publications.

- **Teaching equipment at UPV**

The UPV as an entrepreneur and internationally focused entity, has the compromise of being updated in the equipment, as well as incorporation of new methodologies, instruments, etc. There is an ordinary distribution of equipment for the centers according to the teaching programme. Additionally, extraordinary equipment for laboratories and experimental activities is available.

- **Infrastructures of universal access and designed for all**

Universal access criteria for disability are also implemented with different plans of integral access to the facilities to eliminate the barriers, with the help of the Ministry of Work and Social businesses (IMSERSO), Spanish National Association of Blind (ONCE) patients, and the UPV.

- **Technology of Information and Communication (TIC)**

"PoliformaT" tool of collaborative e-learning for each course and for the interaction between teachers and alumni. System of "intranet" for the alumni, for the interaction with the university for any administrative question as well as email service, network access to different platforms, ID of UPV, different additional training programmes (e.g. languages, audiovisual material, computers, etc.).

- **Buildings and additional resources**

Additional buildings of the UPV such as animal farms, greenhouses, experimental fields, classrooms, rooms for informatics (with computers for teaching, and for free access of students), teaching laboratories, etc. The supplied material (Anexo 7) describes in enormous detail all the available facilities of the campus, in terms of spaces for teaching, laboratories, and scientific equipment available for the use in practical courses of Food Science and Technology.

Criterion 4.3 Partnership

UPV has a wide range of partners in industry for students' internships. Data available on the Career and Employment Office (<https://www.upv.es/entidades/SIE/index-en.html>), includes a Unit of Internship in Companies, identifies more than 250, summing all companies that collaborate in all degrees, from which 70 collaborate with the FST degree².

A similar system is used for the partnerships with universities. In this case, ETSIAMN International Office

² Information sent by email on December 3rd 2021

(<http://iro-etsiamn.webs.upv.es/>) oversees its management. UPV has now bilateral agreements with 31 EU universities.

At the research level, UPV has an impressive structure to support researchers to get financial support for their projects (<https://innovacion.upv.es/es/investigadores/>), which results in a wide number of funded projects.

The peers found quite adequate the international cooperation of the research and academic level, providing opportunities for research and mobility of students and teachers, as also the partnership with companies that enables students to have a hands-on approach during their education and accelerate their insertion in the job market.

Final assessment of the peers regarding criterion 4:

The documents submitted provided enough evidence for a positive assessment in this criterion.

5. Management System

Criterion 5 Management system

The management system of the UPV for quality assurance of degrees (SIGCTi) includes all steps advised by the European Standards and Guidelines, was certified by the Spanish authority for higher education ANECA in 2010. The management structure is composed by:

- The Structure Responsible for the Degree (ERT: center, department or institute).
- The Academic Degree Commission (CAT, in which the different interest groups participate: those responsible for the degree, students, teaching staff and administration and services staff).
- The Quality Commission of the UPV (CC).
- Other central organs.

The system clearly indicates a quality-oriented approach where program improvements can be made taking into consideration the different stakeholders input. The inclusion of students is clearly stated though not of employers. However, the already referred External Council (Section 2.1) input is certainly considered in the review of the training offer.

The system includes well defined procedures and gathers qualitative and quantitative information that feeds evaluation and supports decision making. Publicly available annual reports exist and are accessible in the web.

The indicators provided from the last 4 academic years a high satisfaction of the students and teachers with the degree, which is quite positive especially considering the high expectations students bring to this degree based on the excellent entrance rates (http://www.upv.es/titulaciones/GCTA/menu_1012812c.html). Although the favourable indicators, these result from small participation of students in the survey, a common problem in universities worldwide.

The report of 19/20 (Informe de Gestión 2019/2020) informs excellent indicators at all levels. The vacancies are almost filled (92.5%), again certainly related to the high entrance rates, though it is pointed a decrease compared to the previous year. Internationalization is above the expected, with the particularly relevant 30% of students having studied abroad. Employability is quite high, higher than 90% after 3 years.

The management system is adequately in place with the capability of acting quickly and appropriately following internal or external reviews as the actions.

Final assessment of the peers regarding criterion 5:

The documents submitted provided enough evidence for a positive assessment in this criterion.

6. Supporting information about the study programme

The quantitative indicators proposed for this degree are based and justified in the historical evolution of last 5 years of the “Food Science and Technology” degree and included the ratio of graduated students - 49%, ratio of abandonment or non-completion of 27.9%, and efficacy ratio of 76.5%. The proposed objectives as indicators of this degree would be: 50% of graduation, 25% of non-completion and 77% of efficiency. Values of different quantitative indicators of the evolution of the degree (last 5 years) are included in section 8 - Annex 1 of the “Current verification memory”.

The data of the 2nd-cycle title of the Food Science and Technology, that would disappear with the implementation of the degree, may be different from those from a degree that starts in a 1st year of university. The existence of alumni in a 2nd-cycle title that are also working could negatively affect the results, but, the proposition is to improve the results, taking into consideration that would need periodical review once the new degree would be in place. The system of management and quality of the official titles of the UPV on a year basis through the service of evaluation, planning and quality of the UPV (SEPV), elaborates a general “report of results” (“Informe de resultados”) that includes:

1. Report of the process of evaluation of the teaching that includes all the indicators defined in the process.
2. Report of the academic performance that includes, at least, the ratios of graduates and abandonment or non-completion.
3. Report on complaints, suggestions and congratulations to the Title.

From this report the academic commission of the degree elaborates the “report of the management of the degree” to collect the analysis of the results obtained and includes the major points of the areas to improve in the degree. This document is approved by the responsible structure of the degree and submitted to the quality commission of UPV.

The improvement of the official titles of the UPV is presented in a plan for the improvement of the title and can include the improvements in the processes of the UPC, as well as in the own processes of the ERT (structure responsible of the title) and the design of the title/degree.

This information can be consulted in the handbook added in the Chapter 9 of the memo for verification, in the points III.3. Evaluation and measure of the official titles of the UPV, and the III.4. the improvement of the official titles of the UPV.

On the other hand, as detailed in point 8.2 “progress and results of learning in students”, on a yearly basis, once known the results of the September tests/exams from a previous academic year, the service of evaluation, planning and quality of the UPV (SEPV), prepares and submit to the area of academic performance and curricular evaluation and to all the responsible structures of the degree, a series of studies and detailed reports to evaluate the progress and results of the learning of the students and to plan corresponding actions: academic results, flow per degree (entries, graduates, changes, non-completions), graduates per degree (average time for degree, efficiency rate, evolution and comparison), detail per subjects (for the ratio of performance, examinations, success and efficacy, % of alumni repeating year, etc.), detection of abnormalities in the degree, etc.

In the same fashion, the system of information of the university (‘Mediterrania’), allows to the responsible of the titles, in any moment, the consultation and generation of updated reports of the unified taxes and complementary indicators defined for the following up of the degree. These reports help in the analysis of the information to the major level of detail (alumni and subject), allowing a deeper study of the data and the levels

of aggregation needed. The access is achieved through the intramural network (intranet) of the responsible personnel and can be allowed over the whole academic year. The information shown, taxes, complementary indicators, is updated periodically, and is submitted to the control and validation of data.

D Additional Documents

Before preparing their final assessment, the panel asks that the following missing or unclear information be provided together with the comment of the Higher Education Institution on the previous chapters of this report:

No additional documents needed

Annex 1 Alignment with EQAS-Food Learning Outcomes

1) Learning outcomes for Food Safety and Microbiology	
ITEM	Alignment with EQASFood Learning Outcomes 1
Describe the properties of common food spoilage organisms. Experimentally determine their presence and numbers.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of the Biology of microorganisms and plants, microbiology and food hygiene II, and toxicology in the food industrial processing.
Describe the properties of common food poisoning organisms, their toxins and means of detection.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Quality management and engineering in the food industry, and Public Health.
Recognize and describe the principles and limitations of food preservation Exercise appropriate judgement on the suitability of different preservation methods to particular foods; give some practical examples.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Quality Management and engineering in the food industry.

2) Learning outcomes for Food Chemistry and Analysis	
ITEM	Alignment with EQASFood Learning Outcomes 2
Demonstrate understanding of the basic concepts of organic chemistry, physical chemistry and biochemistry related to food. Demonstrate an understanding of the structure and function of major food components. Describe the physical and chemical properties of foods in production and supply chain.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules Physical Properties of Foods I and Chemical Analysis I and II; Production of raw materials of animal and vegetable origin, and chemical composition of foods as well as Foundations of Chemistry for Science and Food Technology.
Describe the effects of at least two different food process operations on the physicochemical properties of foods	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Physical Properties of Food II and Food analysis and Quality Control II.
Demonstrate a practical understanding of health and safety in the laboratory.	Contents, syllabus and outcomes well aligned with the expected outcomes in Microbiology and food hygiene II (also with LO1).
Carry out an analysis of the proximate composition of foods and of basic sensory properties.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Food analysis and quality control I, and Food and Culture.
Describe the main constituents of foods and their role in nutrition and health.	Contents, syllabus and outcomes well aligned with the expected outcomes in the Modules of Human PHysiology, Human Nutrition, Dietetics and Public Health.

3) Learning outcomes for Food Processing and Engineering	
ITEM	Alignment with EQASFood Learning Outcomes 3
Identify sources of raw material, explain the variability and the impact on food processing operations.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Physical Properties of Food I and II.
Understand the fundamental concepts of mass, heat, and momentum transfer required in food unit operations. Calculate mass and energy balances for a general food process.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Food analysis and quality control I, and Unit Operations in Food Industry I and II.
Explain the principles and current practices of major food processing operations, and understand the effect of processing parameters on product quality.	Contents, syllabus and outcomes well aligned with the expected outcomes in Food Processing I and II, Food analysis and quality control II, Toxicology in the food industrial processing, quality management in the food industry, and Food Biotechnology.
Explain characteristics and properties of packaging materials for food products and identify appropriate packaging systems.	Contents, syllabus and outcomes well aligned with the expected outcomes in Packaging.
Understand the basic principles and practices used for cleaning and sanitation of food process equipment, including the use of water, cleaning chemicals and waste management.	Contents, syllabus and outcomes well aligned with the expected outcomes in the Modules of Environmental management in the food industry..

4) Learning outcomes for Quality Management and the Law	
ITEM	Alignment with EQASFood Learning Outcomes 4
Describe how quality management systems are applied in the food industry with examples..	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Chemical Analysis II, and Quality engineering in the food industry..
Describe the main organisations responsible for overseeing quality management systems at a national and European level.	Contents, syllabus and outcomes well aligned with the expected outcomes in the module of Quality management in the food industry.
Describe the principles of food legislation and how it application in the food industry.	Contents, syllabus and outcomes well aligned with the expected outcomes the modules of Environmental management in the food industry, and food standardization and legislation.
Describe the principles of authentication of food provenance and quality. Give an example of at least one well known scheme.	Contents, syllabus and outcomes well aligned with the expected outcomes in Biology of microorganisms and plants, production of raw materials of animal and vegetable origin, as well as physical properties of food I and II, and the modules of food processing II and food standardization and legislation.

5) Learning outcomes for Generic Competences	
ITEM	Alignment with EQASFood Learning Outcomes 5
Carry out a basic experimental work under close supervision and write a summary report using a word processing application and spreadsheet as appropriate.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Chemical changes in food processing, production of raw materials of animal and vegetable origins, quality management in the food industry.
Communicate scientific ideas through written, oral and visual means in their native language.	Contents, syllabus and outcomes well aligned with the expected outcomes in the modules of Microbiological Risk Assessment in Foods, Food Analysis and Quality Control I and II, Food Law and Consumer Protection, Unit Operations in Food Industry II, Toxicology in the food industrial processing, food and culture, quality systems and models, English B2 for food science and technology and oenology.
Able to work in a team, with an understanding of the different roles, time management and meetings coordination.	Contents, syllabus and outcomes well aligned with the expected outcomes the modules of Quality Management in the Food Industry, Fundamentals of Food Engineering and Chemical Analysis I. Food Analysis and Quality Control I and II, Quality systems and models, Food Law and Consumer Protection, Toxicology in the Food Industrial Processing, and Food and Culture.
Demonstrate self-planning in order to prioritise and manage time and resources effectively.	Contents, syllabus and outcomes well aligned with the expected outcomes in Biochemistry and Chemical Composition of Foods.
Demonstrate problem solving skills, showing ability to solve practical interdisciplinary problems, showing ability to separate relevant and irrelevant information and working towards a successful solution.	Contents, syllabus and outcomes well aligned with the expected outcomes in Human Physiology, Quality Engineering in the food industry and Beverage industries.