



# **EQAS-Food Award Accreditation Report**

**Bachelor's Degree Programme**  
**FOOD SCIENCE AND TECHNOLOGY**

Provided by  
**University of Cordoba, Spain**

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## 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><b>Date of the contract:</b> 25/11/2019</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: 28/04/2020</p>		
<p><b>Peer panel:</b></p> <p>Prof. Dr. Paulo José do Amaral Sobral, University of Sao Paulo</p> <p>Prof. Dr. Esperanza Garcia-Castello, Polytechnic University of Valencia</p>		
<p><b>Responsible decision-making committee:</b> ISEKI Food Association Accreditation Commission</p>		
<p><b>Criteria used:</b></p> <p>EQAS-Food Framework Standards and Accreditation Criteria as of 18.02.2019 European Standard and Guidelines as of 15.05.2015</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 in the preparation of the accreditation procedure. and study plan 2016-2017.
2. The accreditation report of the Directorate of Evaluation and Accreditation Agency (DEVA) of the Andalusian Knowledge Agency done in 2017.
3. Change of the study plan after accreditation, obtained from the web [https://www.uco.es/grados/images/documentos/grados\\_centro\\_f\\_veterinaria/grado\\_CYTA/modificaciones\\_CYTA\\_180630\\_1.pdf](https://www.uco.es/grados/images/documentos/grados_centro_f_veterinaria/grado_CYTA/modificaciones_CYTA_180630_1.pdf).
4. DEVA report on the Proposal for Modification of the Bachelor Degree after the change of the study plan (2018).
5. EQAS alignment matrix.
6. Academic staff table and information on the web <https://www.uco.es/veterinaria/es/profesorado-cyta>.
7. Other supporting documentation at <https://www.uco.es/grados/grado-en-ciencia-y-tecnologia-de-los-alimentos>.

## B Characteristics of the Degree Programme

a) Name & Final Degree	Bachelor's Degree in Food Science & Technology
b) Areas of Specialization	Mention in Food Technology Mention in Gastronomic Sciences
c) Mode of Study	Full time
d) Duration & Credit Points	4 years 240 ECTS
e) First time of offer & Intake rhythm	1989 as an UCO specialization course, 1992 as a 2 <sup>nd</sup> cycle study and finally was implemented as Bachelor's Degree in the 2001-2002 academic year.
f) Number of students per intake	Yearly 65 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 about 760 euros per year.

The **general learning objectives** for the *Bachelor's Degree in Food Science and Technology* students can be specified as follows:

- In the area of *process and product quality management and control*: establish procedures and manuals for quality control; implement and manage quality systems; food analyses, raw materials, ingredients, additives and deliver the corresponding reports; to evaluate and improve the quality of the methods of analysis applied to food control.
- In the area of *process and product development and innovation*: to design and develop new processes and products to meet the market needs; assess the degree of acceptability of these products on the market; establish their production costs; assess the environmental risks of the new productive processes.
- In the field of *food processing*: identify the problems associated to different foods and their processing, which comprehends an in-depth knowledge of raw materials, interactions between components, the different technological processes (not only for production but also for packaging, storage, transport and products distribution), as well as the transformations that the products may undergo during these processes; process management from an environmental point of view and implementation of tools for process control.
- In the area of *food safety management*: assess the hygienic-sanitary and toxicological risk of a process, food, ingredient, packaging, among others; to identify the possible causes of food spoilage and to establish traceability mechanisms.
- In the field of *legal, scientific and technical consultancy*: the graduate must be able to study and interpret reports and administrative files in relation to a product, in order to be able to answer the question posed in a reasoned manner; to know the legislation in force; to defend before the administration the needs of modification of a regulation concerning any product.
- In the area of *strategic management of the food industry*: to participate in the strategic management of the company through interventions in business management of production, of process/product development and innovation as well as marketing strategies.
- In the field of *collective catering*: managing collective catering services; propose feeding programs adequate for different collectives; ensure the quality and safety of managed foods; provide adequate training for the personnel involved.
- In the field of *nutrition and public health*: to participate in health promotion activities, at individual and collective level, contributing to the education of the society about nutrition; promoting the rational food consumption according to healthy guidelines and develop epidemiological studies.
- In the field of *marketing, communication and merchandising*: to advise on advertising and marketing tasks, as well as in the labelling and presentation of food products; to know the newly technical aspects of each product, related to its composition, functionality, processing, etc.
- In the *teaching and research fields*, common to all university graduates: provide knowledge and teaching-learning methodologies at different levels; collect and analyse information; design experiments; analyse and interpret data; identify problems; propose solutions, etc.

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):  
Students have demonstrated to possess and understand knowledge in an area of study that begins at the base of general secondary education, and is usually found at a level that, although supported by advanced textbooks, also includes some aspects that involve knowledge from the forefront of your field of study.
- Basic Competence 2 (CB2):  
Students know how to apply their knowledge to their work or vocation in a professional way and possess the competences that are usually demonstrated through the elaboration and defense of arguments and the resolution of problems within their area of study.
- Basic Competence 3 (CB3):  
To have the ability to collect and interpret relevant data (usually within their area of study) to make judgments that include reflection on relevant issues of a social, scientific or ethical nature.
- Basic Competence 4 (CB4):  
To be able to transmit information, ideas, problems and solutions to both a specialized and non-specialized audience.
- Basic Competence 5 (CB5):  
Students have developed those learning skills necessary to undertake further studies with a high degree of autonomy.

**UNIVERSITY COMPETENCES:**

- University Competence 1 (CU1):  
Accredit the use and command of a foreign language.
- University Competence 2 (CU2):  
Know and improve the user level in the field of TICs.
- University Competence 3 (CU3):  
Promote habits of active job search and entrepreneurship.

**TRANSVERSAL COMPETENCES:**

- Transversal Competence 1 (CT1):  
Ability to express yourself correctly in Spanish in your disciplinary field.
- Transversal Competence 2 (CT2):  
Ability to solve problems.
- Transversal Competence 3 (CT3):  
Ability to work in a team.
- Transversal Competence 4 (CT4):  
Ability to apply theoretical knowledge to practice.
- Transversal Competence 5 (CT5):  
Ability to make decisions.
- Transversal Competence 6 (CT6):  
Acquire an ethical commitment.
- Transversal Competence 7 (CT7):  
Capacity for analysis and synthesis.
- Transversal Competence 8 (CT8):  
Develop critical reasoning.
- Transversal Competence 9 (CT9):  
Develop skills of initiation to the scientific work and the technical report.
- Transversal Competence 10 (CT10):  
Have developed the motivation for quality.
- Transversal Competence 11 (CT11):  
Organizational and planning capacity.
- Transversal Competence 12 (CT12):  
Information management capacity.
- Transversal Competence 13 (CT13):

- Ability to adapt to new situations.
- Transversal Competence 14 (CT14):  
Sensitivity towards environmental issues.
- Transversal Competence 15 (CT15):  
Be able to design and manage projects.

**SPECIFIC COMPETENCES:**

- Specific Competence 1 (CE1):  
Recognize and apply the physical, chemical, biochemical, biological, physiological, mathematical and statistical fundamentals necessary for the understanding and development of Food Science and Technology.
- Specific Competence 2 (CE2):  
Know the food production models, their composition and physical, physical-chemical and chemical properties to determine their nutritional value and functionality.
- Specific Competence 3 (CE3):  
Know the techniques and carry out food analyses that guarantee optimal conditions for human consumption.
- Specific Competence 4 (CE4):  
Recognize and apply the main basic operations of industrial processes to guarantee the control of processes and food products intended for human consumption.
- Specific Competence 5 (CE5):  
Know the food preservation processes and identify the modifications that these imply on the characteristics of the food.
- Specific Competence 6 (CE6):  
Know, understand and apply the classic methodology and the new technological processes aimed at improving the production and treatment of food.
- Specific Competence 7 (CE7):  
Analyse the biological, physical and chemical hazards of the food chain in order to protect public health.
- Specific Competence 8 (CE8):  
Apply food hygiene standards to the design of industries, as well as to food processes and products, to guarantee the management of food safety according to the established legal framework.
- Specific Competence 9 (CE9):  
Develop protocols for environmental management and quality control in food industries.
- Specific Competence 10 (CE10):  
Know and apply basic knowledge of economics, marketing and business management in food industries.
- Specific Competence 11 (CE11):  
Understand and value that food is one of the basic pillars of the cultural identity of a society.
- Specific Competence 12 (CE12):  
Know and establish nutritional guidelines and design foods to promote consumption and healthy eating.
- Specific Competence 13 (CE13):  
Understand and know how to apply actions to promote food education, health systems and food policies.
- Specific Competence 14 (CE14):  
Evaluate, control and manage strategies and plans for prevention and control of diseases caused by food consumption.
- Specific competence 15 (CE15):  
Inform, train and advise legally, scientifically and technically the public administration, the food industry and consumers to design intervention and training strategies in the field of food science and technology.
- Specific competence 16 (CE16):  
Put into practice the principles and methodologies that define the professional profile of the food scientist and technologist, demonstrating in an integrated way the acquisition of the skills and competences contemplated by the degree.

The following **curriculum** is presented:

Modules approved by the Title Commission and modules proposed by the UCO:

<b>Módulos aprobados por Comisión de Título y módulos propuestos por la UCO</b>			
<b>Denominación del Módulo Comisión de Título</b>	<b>ECTS</b>	<b>Denominación Módulo UCO</b>	<b>ECTS</b>
FORMACIÓN BÁSICA COMÚN	60	FORMACIÓN BÁSICA COMÚN	60
CIENCIA DE LOS ALIMENTOS	24	CIENCIA DE LOS ALIMENTOS	30
TECNOLOGÍA DE LOS ALIMENTOS	38	TECNOLOGÍA DE LOS ALIMENTOS	54
SEGURIDAD ALIMENTARIA	15	SEGURIDAD ALIMENTARIA	28,5
GESTIÓN Y CALIDAD EN LA INDUSTRIA ALIMENTARIA	12	GESTIÓN Y CALIDAD EN LA INDUSTRIA ALIMENTARIA	16,5
NUTRICIÓN Y SALUD	15	NUTRICIÓN Y SALUD	18
PRÁCTICAS EXTERNAS Y TRABAJO FIN DE GRADO	18	PRÁCTICAS EXTERNAS Y TRABAJO FIN DE GRADO	18
		OPTATIVIDAD/RECONOCIMIENTO	15
Total créditos.....	182	Total créditos.....	240



Distribution of modules and subjects:

<b>Distribución de Módulos, materias y asignaturas</b>			
<b>Módulos</b>	<b>Materias</b>	<b>Asignaturas</b>	<b>ECTS</b>
FORMACIÓN BÁSICA COMÚN	BIOLOGÍA	BIOLOGÍA	6
		MICROBIOLOGÍA	6
	BIOQUÍMICA	BIOQUÍMICA	6
	EMPRESA	ECONOMÍA Y GESTIÓN DE LA EMPRESA ALIMENTARIA	6
	ESTADÍSTICA	ESTADÍSTICA	6
	FÍSICA	FÍSICA	6
	FISIOLOGÍA	FISIOLOGÍA	6
	MATEMÁTICAS	MATEMÁTICAS	6
	QUÍMICA	QUÍMICA INORGÁNICA	6
		QUÍMICA ORGÁNICA	6
CIENCIA DE LOS ALIMENTOS	QUÍMICA Y BIOQUÍMICA DE LOS ALIMENTOS	QUÍMICA Y BIOQUÍMICA DE LOS ALIMENTOS	6
		ANÁLISIS QUÍMICO DE ALIMENTOS	6
	ANÁLISIS DE ALIMENTOS Y BROMATOLOGÍA	ANÁLISIS BROMATOLÓGICO	6
		ALIMENTACIÓN Y CULTURA	6
	BROMATOLOGÍA DESCRIPTIVA	6	
TECNOLOGÍA DE LOS ALIMENTOS	FUNDAMENTOS DE TECNOLOGÍA ALIMENTARIA	FUNDAMENTOS DE PRODUCCIÓN ANIMAL	4,5
		FUNDAMENTOS DE PRODUCCIÓN VEGETAL	4,5
		FUNDAMENTOS DE INGENIERÍA QUÍMICA	9
		OPERACIONES BÁSICAS	6
		FUNDAMENTOS DE TECNOLOGÍA DE LOS ALIMENTOS	9
	INDUSTRIAS ALIMENTARIAS	INDUSTRIAS ALIMENTARIAS DE ORIGEN ANIMAL	6
		TECNOLOGÍA DEL PROCESADO DE ALIMENTOS DE ORIGEN VEGETAL	6
		FERMENTACIONES INDUSTRIALES	4,5
DISEÑO DE PLANTAS DE PROCESOS ALIMENTARIOS		4,5	
SEGURIDAD ALIMENTARIA	SEGURIDAD ALIMENTARIA	FUNDAMENTOS DE HIGIENE ALIMENTARIA	6
		MICROBIOLOGÍA DE LOS ALIMENTOS	6
		GESTIÓN DE LA SEGURIDAD ALIMENTARIA	6
		TOXICOLOGÍA ALIMENTARIA	6
		PARASITOLOGÍA ALIMENTARIA	4,5
GESTIÓN Y CALIDAD EN LA INDUSTRIA ALIMENTARIA	GESTIÓN Y CALIDAD EN LA INDUSTRIA ALIMENTARIA	FUNDAMENTOS Y APLICACIÓN DEL CONTROL DE CALIDAD	4,5
		GESTIÓN MEDIOAMBIENTAL EN LA INDUSTRIA ALIMENTARIA	6
		LEGISLACIÓN ALIMENTARIA	6
NUTRICIÓN Y SALUD	NUTRICIÓN HUMANA	FUNDAMENTOS DE NUTRICIÓN	6
		NUTRICIÓN APLICADA	6
	SALUD PÚBLICA	SALUD PÚBLICA	6
PRÁCTICAS EXTERNAS Y TRABAJO FIN DE GRADO	PRÁCTICAS EXTERNAS	PRÁCTICAS EXTERNAS	12
	TRABAJO FIN DE GRADO	TRABAJO FIN DE GRADO	6
OPTATIVIDAD/ RECONOCIMIENTO	OPTATIVIDAD (15 ECTS)	ADITIVOS ALIMENTARIOS	3
		ANÁLISIS CROMATOGRÁFICO DE ALIMENTOS	3
		APROVECHAMIENTO DE SUBPRODUCTOS DE INDUSTRIAS AGROALIMENTARIAS	3
		AUTOMÁTICA, CONTROL E INSTRUMENTACIÓN	3
		BIOTECNOLOGÍA ALIMENTARIA	3
		COLOIDES: FUNDAMENTOS Y APLICACIONES EN ALIMENTOS	3
		CONDUCTA ALIMENTARIA: ASPECTOS PSICOLÓGICOS Y DE	3
		MERCADO	
		ESPECTROMETRÍA DE MASAS Y RMN EN ANÁLISIS DE ALIMENTOS	3
		INGLÉS APLICADO A CIENCIA Y TECNOLOGÍA DE ALIMENTOS	3
		MARKETING ALIMENTARIO	3
		MEJORA DE LA CALIDAD DE LOS ALIMENTOS DE ORIGEN ANIMAL MEDIANTE METODOLOGÍAS GENÉTICAS	3
		REACTORES BIOLÓGICOS	3
		CONTROL ALIMENTARIO EN EL COMERCIO EXTERIOR	3
		TECNOLOGÍA CULINARIA	3
		TECNOLOGÍA DE LAS BEBIDAS	3

Temporary distribution of subjects:

Distribución temporal de asignaturas					
Curso 1º					
1º cuatrimestre	ECTS	Carácter/Rama	2º Cuatrimestre	ECTS	Carácter/Rama
Biología	6	Básica/Ciencias	Bioquímica	6	Básica/Salud
Alimentación y Cultura	6	Obligatoria	Economía y Gestión de la Empresa Alimentaria	6	Básica/Ciencias sociales y jurídicas
Matemáticas	6	Básica/Ciencias	Estadística	6	Básica/Salud
Química Inorgánica	6	Básica/Ciencias	Física	6	Básica/Ciencias
Química Orgánica	6	Básica/Ciencias	Fisiología	6	Básica/Salud
Total .....	30		Total .....	30	
Curso 2º					
1º cuatrimestre	ECTS	Carácter/Rama	2º Cuatrimestre	ECTS	Carácter/Rama
Microbiología	6	Básica/Ciencias	Bromatología Descriptiva	6	Obligatoria
Química y Bioquímica de Alimentos	6	Obligatoria	Microbiología de los Alimentos	6	Obligatoria
Análisis Químico de Alimentos	6	Obligatoria	Fundamentos de Ingeniería Química	9	Obligatoria
Legislación Alimentaria	6	Obligatoria	Fundamentos de Producción Animal	4,5	Obligatoria
Salud Pública	6	Obligatoria	Fundamentos de Producción Vegetal	4,5	Obligatoria
Total .....	30		Total .....	30	
Curso 3º					
1º cuatrimestre	ECTS	Carácter	2º Cuatrimestre	ECTS	Carácter
Análisis Bromatológico	6	Obligatoria	Fundamentos de Nutrición	6	Obligatoria
Operaciones Básicas	6	Obligatoria	Fundamentos de Higiene Alimentaria	6	Obligatoria
Gestión Medioambiental en la Industria Alimentaria	6	Obligatoria	Toxicología alimentaria	6	Obligatoria
Fundamentos y Aplicación del Control de Calidad	4,5	Obligatoria	Fermentaciones Industriales	4,5	Obligatoria
Fundamentos de Tecnología de los Alimentos	9	Obligatoria	Industrias Alimentarias de Origen Animal	6	Obligatoria
Total .....	31,5		Total .....	28,5	
Curso 4º					
1º cuatrimestre	ECTS	Carácter	2º Cuatrimestre	ECTS	Carácter
Nutrición Aplicada	6	Obligatoria	Optativa 2	3	Optativa
Tecnología del Procesado de Alimentos de Origen Vegetal	6	Obligatoria	Optativa 3	3	Optativa
Diseño de Plantas de Procesos Alimentarios	4,5	Obligatoria	Optativa 4	3	Optativa
Parasitología Alimentaria	4,5	Obligatoria	Optativa 5	3	Optativa
Gestión de la Seguridad Alimentaria	6	Obligatoria	Prácticas Externas	12	Obligatoria
Optativa 1	3	Optativa	Trabajo Fin de Grado	6	Obligatoria
Total .....	30		Total .....	30	

Changes in the offer of optional subjects, effective from the academic year 2018-2019:

The subject "Eating behaviour: psychological and market aspects" ("Conducta Alimentaria: Aspectos Psicológicos y de Mercado") is replaced by the new optional subject "NIRS technology for feed and food characterization and safety".

Five new optional subjects are included in the context of the new specialization area "Mention in Gastronomic Sciences":

- Gastronomic technology I
- Gastronomic technology II
- Sensory analysis of food
- R+D+I in Gastronomy
- Gastronomic Heritage

All new optional subjects have 3 ECTS.

## 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 programme has clear and definite goals that are meeting the current education needs and offers two specializations: Food Technology and Gastronomic Sciences (<https://www.uco.es/grados/grado-en-ciencia-y-tecnologia-de-los-alimentos>). There are only two Universities at the Andalusian Region offering the Food Science and Technology Bachelor's degree. The UCO programme allows students to apply to three master and doctorate programmes at the same UCO: i) Interuniversity Master in Agrifood, ii) Biosciences and Agri-Food Sciences and iii) Natural resources and sustainability, that even if they are not purely Food Science and Technology programmes, they partially fit into the frame of reference of Food Science and Technology studies as described in the EQAS Framework Standards and Accreditation Criteria.

Students from this Bachelor's degree may also access to Master programmes offered by other Universities in Spain and abroad. Bachelor's students can also access to the non-official master in digital transformation in the agri-food sector offered by UCO.

In the opinion of peers, new Master and PhD programmes in Food Science and Technology would attract more students and would allow a specific FST academic and research career path.

#### 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

The food industry is one of the key sectors in the national economy and more specifically in the economy of the Andalusian Region. The Spanish agri-food sector has an indisputable weight in the Spanish economy since it represents 20% of the Spanish manufacturing industry. Furthermore, Spain is among the top four producers in the EU in terms of turnover along with France, Germany, and Italy. In Andalusia, the agri-food sector continues to be one of the most important industrial sectors, with more than 6,000 companies belonging to more than 2,900 industries. It is the region with the largest number of agri-food companies in Spain with 18.4% of the total (<https://assets.kpmg/content/dam/kpmg/es/pdf/2018/11/iv-estudio-sector-agroalimentario-andalucia.pdf>), and it is the first regional industry, for the number of jobs, around 52,000, and for production, of around 770 million euros (<https://www.uco.es/veterinaria/images/documentos/gcyta/plan-de-estudios-web-cyta-enero-2017.pdf>).

Surveys to employers in the agri-food Andalusian industry revealed the need to train food professionals with highly qualified and specific university training in key aspects for the food industry. For the preparation of the title, a specific commission was created with members of the university community and other members appointed by the Ministry of Innovation, Science and Business representing the social agents, industry and students (see section 2 of the 2017 Study Plan).

However, the peers did not find clear evidence on the participation of industry employers in the quality assurance system of the programme (<https://www.uco.es/organiza/centros/veterinaria/es/calidad-cyta>), namely feedback system and commission to review the programme.

The students contact with companies can be considered very relevant, since 12 ECTS are included in the study plan in the semester B of the 4<sup>th</sup> year as external internships that they may carry out abroad through the Leonardo Program or in national territory through university-industry agreements.

The Educational Center (UCO Faculty of Veterinary) has an international mobility program available for students through the Erasmus+ program, in which there are agreements with 10 countries and 31 higher education institutions. The mobility indicators for the students in 2016-2017 were 43 IN and 37 OUT, although these data refer to the two titles of the Center (Veterinary and Food Science and Technology Degrees). There are also available other mobility programs more focused on Iberoamerica and Asia (Iberoamerica-Santander and UCO-Global) (<https://www.uco.es/organiza/centros/veterinaria/es/calidad-cyta>).

### **Criterion 2.2 Educational Objectives**

The panel confirms that the Bachelor's 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 fundamental and applied knowledge needed to be employed in the food industry or to continue towards higher education and research in all aspects of food science and technology. The BSc comprises natural, engineering, social and food sciences fields in a well-balanced manner. The coverage of the food science field includes relevant areas of EQAS minimum learning outcomes.

The excellent connection of the Bachelor's degree programme with companies of the local and regional food industry (see internship agreements with companies in the 2017 Study Plan, section 7) showed the peers that the degree programme is successful in educating professionals satisfying high qualification standards.

### **Criterion 2.3 Programme outcomes**

The Study Plan describes general learning objectives 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.

The peers judged the defined programme competences (section B of this report) in each of these categories: basic competences (5 programme competences), university competences (3 programme competences), transversal competences (15 programme competences) and specific competences (16 programme competences). These competences are well described and implemented for the Bachelor's degree programme. The peers evaluated the programme competences in each of the categories and the exhaustive analysis of the delivery of these competences in the relevant modules. The achievement of the programme competences is evident in the documentation.

Nevertheless, the peers recommend condensing the programme competences, since 39 programme competences originates unnecessary overlapping. Also, a clearer alignment with European Qualifications Framework for Higher Education categories (knowledge and understanding, applying knowledge and understanding, making judgments, communication skills, and learning skills) could make it clearer for benchmarking. Finally, it is advisable to reflect on the need of updating the general learning objectives and programme competences presented in the 2017 Study Plan in view of the new specialization areas "Food

Technology” and “Mention in Gastronomic Sciences” implemented in 2018.

#### **Final assessment of the peers regarding criterion 2:**

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

### **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 8 modules:

1. Basic science courses (biology, biochemistry, business, statistics, physics, physiology, maths and chemistry) with 60 ECTS in total that allow a strong basis for next and specific modules;
2. Food science courses (food chemistry and biochemistry and food analysis and bromatology) with 30 ECTS;
3. Food technology (fundamentals of food technology and food industry) with 54 ETCS;
4. Food safety with 28.5 ECTS;
5. Management and quality in food industry with 16.5 ECTS in total;
6. Nutrition and health (human nutrition and public health) with 18 ETCS;
7. External training and final degree project with 18 ECTS;
8. Optional courses with an offer of 60 ECTS despite students have to follow 15 ETCS.

The sequence of the courses is very well defined, and it is remarkable the fact that the optional ECTS offered are 4 folds the ECTS needed to get the BSc degree. The new optional subjects (Gastronomic technology I and II, Sensory analysis of food, R+D+I in Gastronomy and Gastronomic Heritage) provide enough training to acquire the necessary competences to obtain the “Mention in Gastronomic Sciences” as described at [https://www.uco.es/grados/images/documentos/grados\\_centro\\_f\\_veterinaria/grado\\_CYTA/modificaciones\\_CYTA\\_180630\\_1.pdf](https://www.uco.es/grados/images/documentos/grados_centro_f_veterinaria/grado_CYTA/modificaciones_CYTA_180630_1.pdf).

It is recommended:

- to update the subject tables in the Study Plan in view of 2018 changes.
- to provide the subjects table both in Spanish and English, not only the bilingual module ([https://www.uco.es/grados/images/documentos/grados\\_centro\\_f\\_veterinaria/grado\\_CYTA/m\\_bil\\_ingue\\_CYTA.pdf](https://www.uco.es/grados/images/documentos/grados_centro_f_veterinaria/grado_CYTA/m_bil_ingue_CYTA.pdf)), since foreign students may want to do subjects from other modules. For the same reason, at least the summary of the subject (“breve descripción de contenidos”) would also be in Spanish and English.

#### **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 (7.9/10) is above the average (7.2/10) 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.

As commented in the DEVA accreditation report, the degree is relatively in demand. The number of enrolled in first option is 51% and has gone increasing in the last courses (2017). The drop-out rate is low (16%), so control measures are always recommended but not strictly necessary.

The programme is organized in 8 semesters with a workload of 60 ECTS (1500 hours of work for the student) each academic course (2 semesters). The optional subjects are grouped mainly during the last semester of the degree, along with the external internships and 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.

Non-contact hours are 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.

### **Criterion 3.3 Learning and assessment**

The organization of assessments and examinations in two semesters, with exams out of the class time, are in agreement with most of other EU higher education institutions. The UCO regulations and allowance for a resit show a good practice of allowing the student to recover from a bad result ([http://www.uco.es/estudia/Guia20022003/Guia\\_20022003/Texto/RAAUUCO/Planes\\_de\\_docencia\\_y\\_examenes.html](http://www.uco.es/estudia/Guia20022003/Guia_20022003/Texto/RAAUUCO/Planes_de_docencia_y_examenes.html)).

### **Criterion 3.4 Alignment matrix for EQAS LO**

The Bachelor’s degree programme documentation contained details on the alignment of the programme learning outcomes to the EQAS matrix.

The BSc EQAS learning outcomes are overall fulfilled in all EQAS categories. Just to mention that, in the area “Food Chemistry and Analysis”, peers observed that the EQAS LO “Carry out an analysis of the proximate composition of foods and of basic sensory properties” and more specifically the “basic sensory analysis” part, is only fully accomplished when the student follows optional subjects.

### **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 peers judged the staff of the program to be of quantity and quality to ensure that the intending learning outcomes and program goals are reached. According to the data reported in the document “Academic Staff ORCID. Faculty of Veterinary of Córdoba. Degree in Food Science and Technology”, the faculty of Food Science and Technology courses involves teachers from 26 departments of the UCO, making a total of 96 teachers. Evidently, the majority (26) of the professors are from the Department of Bromatology and Food Science and Technology, followed by a team of teachers from 4 Departments in the Chemistry Area, which contribute with 25 professors (Figure 1).

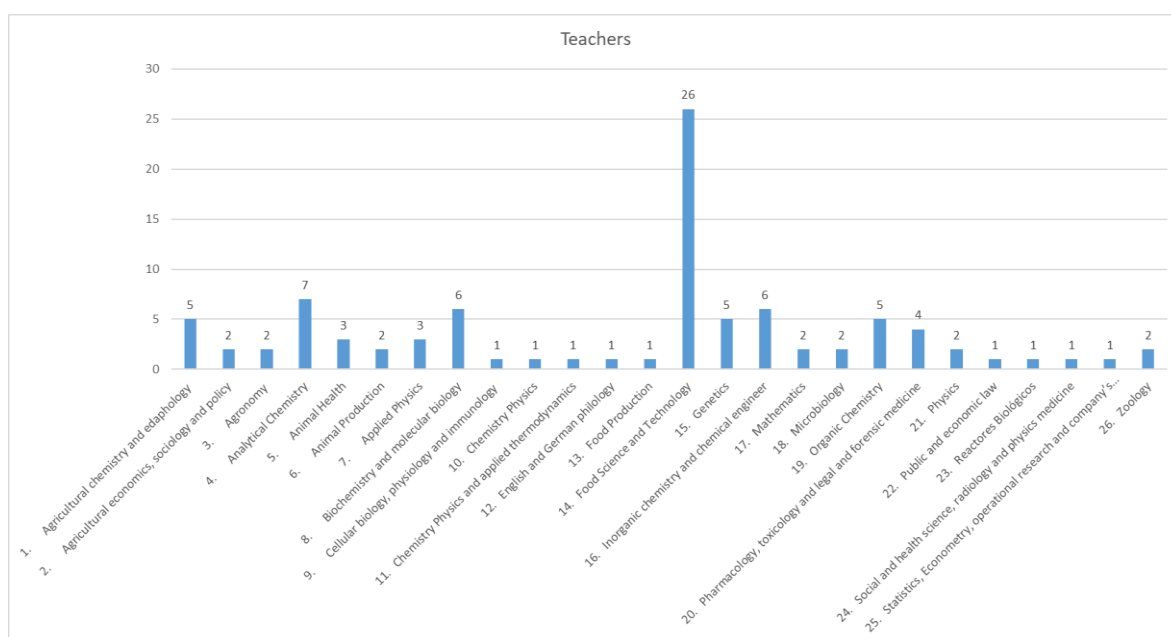


Figure 1. Distribution of teachers of Food Science and Technology course by Departments of the UCO.

However, it is noted that the data on the website (<https://www.uco.es/veterinaria/es/profesorado-cyta>) are not completely in accordance with the information provided in the self-evaluation document (“AUTOINFORME GLOBAL DE RENOVACIÓN DE LA ACREDITACIÓN”). According to this website, the Food Science and Technology course has 86 teachers. This can constitute a disinformation and should be avoided due to the requirement for transparency of information.

In addition, the transparency of the information is somewhat compromised due to the absence of some CVs. Among the list published on the previously cited website, only 56 professors presented their CVs, that is, 30 professors did not disclose their biographic nor curricular information, among which, 12 of these professors belongs to the Department of Bromatology and Food Science and Technology, the most important Department related to the professional formation of students. It is necessary to make these teachers understand that the disclosure of their biographical information is part of a process of transparency and that it serves as a kind of database, which should be available to students and the general public, as well.

The contribution of the professors for the design of the degree on FST is notable for the diversity of departments involved, which allows the offer of numerous optional classes, including those regarding complementary training, for example. This criterion also involves teaching mobility activities through the ERASMUS+ Program.

Regarding teaching workload distribution, it was observed that 76 professors became involved with teaching in the course of Food Science and Technology, in 2015/16, among which, 75 holders of the title of Doctor, which is excellent in terms of quality of workmanship. It was also observed that the absolute majority of the offered credits were of the responsibility of “Profesores Catedráticos de Universidad” and “Profesores Titulares de Universidad”, totaling 215.96 credits, against a total of 319.55 credits (~68%). Moreover, it was observed that the more experienced teacher in the degree in Food Science and Technology collaborated in the incorporation of fellows, and in the establishment and promotion of new teachers, thus allowing a dynamical renovation with highly qualified personnel trained in different specialties of interest to the study plan. However, information about teachers' seniority, that is, how much time they have at home or teaching, is not available in their CVs. This information could be important, and teachers should be encouraged to inform the dates of obtaining their main titles, as well as the date of admission to teaching. Moreover, no reference was made on need in new technical staff to allow important changes or evolutions on the program.

Finally, it can be considered that the Faculty of the UCO involved in teaching the course in Food Science and Technology, completely covers all the Areas presented in the Alignment Table, namely: 1. Food safety and microbiology; 2. Food chemistry and analysis; 3. Food processing and engineering; 4. Quality management and the Law; 5. Generic competences (including the mains soft skills). However, it can be suggested that the “Food Packaging and Stability”, and “Refrigeration and Cold Chain” areas must be strengthened, considering these are very important in terms of preserving pre-processed, processed or even, minimally processed foods, especially for hot regions.

Additionally the peers regarded as highly positive a politics for supporting teachers to develop their pedagogical skills in new teaching and assessment methods and in the application of new e-learning platforms and plans for the wider application of such systems within the program.

The ERASMUS program is appropriately facilitated, and students avail of it. The intake of students and the number of outgoing students is a good indicator of this.

#### **Criterion 4.2 Facilities**

Due to the information provided by the professors in their CVs, that is, by carrying out research projects in considerable quantity and quality, and by the quantity and quality of published work (papers in Journals and meeting annals), it can be recognized that the infrastructures and services for the normal functioning of the activities necessary for the formation of students in Food Science and Technology give evidence for the overall suitability of the facilities, regarding diversity, areas, and equipment, to education needs.

Regarding training through research, it can be seen from the information available, that most professors in the Department of Bromatology and Food Science and Technology have research lines defined in themes (wines, olives and olive oil, cheeses, etc.) or specialties, with an apparent predominance on Microbiology and related areas. Thus, the involved Laboratories must be well and adequately equipped.

#### **Criterion 4.3 Partnership**

The peers found quite adequate the international cooperation of the faculty. UCO researchers carry a notable number of international projects and collaborate with top global organizations, with members of its staff being project leaders. As a consequence, several UCO researchers have published their papers on high level Journals.

The main website page of the FST course provides access to many sections with more detailed information, including those on external practices and student mobility. The external practices page is dedicated to



students who wish to do internships under the tutelage of professionals. A list of companies with current agreements with the UCO, and a relationship of professors who participate as academic tutors are located in this page. Regarding the student mobility page, some detailed information on mobility programs, academic agreements with other centres, scholarships and grants, recognition tables and the application procedure, and awards, is easily found.

It must be observed that the FST course of UCO participates actively in Erasmus+ Programs for student mobility, including the mobility of students from/to EU and associated countries for exchange of students for study or for practical purposes. There are bilateral agreements with 10 different countries and 31 different centres. In four of these partner centres, courses are offered in English. A total of 108 students participated on mobility activities during the 2015/16 year. This amount can be considered as very good. On another side, there is also an Erasmus+ Program for teacher mobility, including the modality of teacher mobility for teaching or training purposes. In this Program, the mobility for administration and service staff is also included. Total mobility with this program during 2015/16 year was of 11 teachers.

In addition, there are other two very interesting programs: a) the Iberoamerica-Santander Internship Program, which includes 4 scholarships for students interested in studies and internships with different universities in Latin American countries (Mexico, Chile, Brazil, Argentina, Colombia); and b) the UCO-GLOBAL Internship Program, which includes 4 scholarships for students interested in studies and internships with countries around the world, including USA and Asia.

Overall, these Programs gives a good base for staff and student exchange and partnership in research projects. It is also a good base to further promote the international attractiveness of the course.

The partnership with the food industry is also strong, which assures several types of collaboration already referred, with a particular note on the traineeships of students as part of the program. This partnership allows for external academic practices, consisting in students' practical activities under supervision by a teacher. During these practices, students can apply and complement the knowledge acquired in their academic training. In the website page of the FST course (<https://www.uco.es/organiza/centros/veterinaria/es/practicas-extracurriculares-cyta>), students can find a list of 32 enterprises who can accept students for external curricular/extracurricular practices, for the academic course 19/20. Names of teachers, available as supervisors, are also in this list. There are 26 Teachers.

To finalize this point 4 evaluation, the peers would like to present these strong points, as following:

- Transversality of the teaching staff, which is very interesting because the training in Food Science and Technology must be multidisciplinary.
- Important number of teachers involved in the Food Science and Technology course belongs to a correlated department (Bromatology and Food Science and Technology), supposed to be the main responsible for the professional formation of Students.
- Most teachers have well-defined lines of research and are closely related to the course.
- Several professors conduct cutting-edge research, publishing their results in high-impact journals.
- High amount of international mobility for students, teachers and staff supported by Erasmus+ Programs, among others.
- Students are well motivated to do external practices supported by a good number of Teachers, as supervisors.

And these weaknesses, as well:

- Considerable lack of information regarding teacher biographic data, which compromises transparency in the transmission of information.
- Existence of teachers without defined lines of research.
- Relationship of teachers with the subjects they teach in the Food Science and Technology course is missing.
- Low student's attractiveness of Food Science and Technology course, who completed only almost half of offered positions in the 1st year, in 2014-2015

#### **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 structure of the UCO program clearly indicates a quality oriented approach where program improvements can be made taking into consideration the different stakeholders. The inclusion of students and stakeholders is a sign of the university aims of integrating them into the quality system.

UCO guarantees a Quality Assurance System (SGC) for all its courses. This system has been developed according to the model proposed by the "Andalusian Knowledge Agency". Quality management is carried out by a "Quality Assurance Unit" (UGC), which has a composition defined after approval by the Board of "Facultad". The UGC is formed by the Vice-dean responsible for teaching in Science and Technology of Food, the Course Coordinator, the "jefe de negociado", a teacher of the course who assigns the functions of Department Head, and a student elected by the student council.

It should be noted that the implemented SGC has a set of procedures for assessing the quality of the teaching-learning process, which involves the evaluation of the quality of teaching and teachers. This procedure then provokes a very dynamic process of changes in the design foreseen for the title (course), always in search of quality. And, it is clear, analysing the quantity and quality of the teaching staff involved in the title, that they can contribute greatly to these new adaptations.

There is information that the Faculty of Veterinary publishes a call for teaching innovation projects, with the aim of supporting the organization of practical activities, which should contribute greatly to the teaching-learning process. Added to this, several initiatives aimed at motivating the teaching staff, via, for example, the enhancement of teaching "quinquenniums" and research "sexenniums".

Moreover, there is also a policy of continuous evaluation of the teaching team, corresponding to an "Evaluation and Improvement of the Quality of Teaching and of Faculty", with the purpose of obtaining information for the improvement of the actions carried out by the Faculty. This policy provides results on the teaching work, allowing the establishment of indicators on the quality of their actions that serve as a guide for decision making.

Regarding some student survey results, students in the Food Science and Technology course have an ever higher appreciation with regard to the adequacy of the activities developed to achieve the objectives of the disciplines. And, without a doubt, that much of this satisfaction is directly linked to the quality and dedication of the Faculty and of facilities, as well.

Due to the existence of procedures developed by the SGC, aiming above all to guarantee the quality of the teaching-learning process, it has been possible to monitor the evaluation of teachers. Thus, it was observed that students evaluated the fourth year of the course, with a higher grade. This result was explained by the completion of national and international exchanges, which must motivate them. However, it is observed that the grades of all items, for all years of the course, were equal to or greater than 3 (out of 5), which can be considered as very good, in overall. Specifically, in relation to the Faculty, it can be observed that 53% of the teachers were evaluated with a score in 4-5, and 38%, with a score in 3-4, that is, only 9% obtained scores below 3. These results corroborate with the previous analysis and can be justified by the quality of the Faculty of the course under analysis.

However, the low demand for the course by students is remarkable. Only about 50% of the vacancies were filled by students in 2014-2015. It is necessary to carry out campaigns to publicize the course, demonstrating its importance for guaranteeing food security, and above all, its field of professional activity.

The management system is adequately in place with the capability of acting quickly and appropriately following internal or external reviews as the actions. Changes in facilities, in academic personnel workload, in the improvement of student mobility, and others, make proof of it. Students, teachers and administration staff can access teaching, administrative or even cultural management through intranet services, such as "Entornos Virtuales de Aprendizaje", SIGMA, PETRA, PIE, among others. Information on these systems are actualized almost dynamically.

Concluding again, presenting the strong points of this Point 5:

- Existence of a Quality Assurance System regarding the teaching-learning process.
- Excellent results of evaluation of Teachers and teaching.

And its weaknesses:

- There is no information on a Master course on Food Science and Technology, which could be a motivation factor for students.
- There is no information on the employability of students formed on FST of UCO.
- There is no mention to alumni (graduated) monitoring.

#### **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

Several websites, cited in the text above, have been consulted. Nevertheless, the main sources of information about the study programme are two web pages located in the Faculty of Veterinary website (<https://www.uco.es/organiza/centros/veterinaria/es/grados/gr-ciencia-y-tec-de-los-alimentos#informacion>) and in the university degrees offer website (<https://www.uco.es/grados/grado-en-ciencia-y-tecnologia-de-los-alimentos>) respectively. These web pages provide comprehensive information about the rationale of the programme, career opportunities, admission requirements, study plan, teaching staff, facilities, quality assurance system and other relevant aspects of the programme. Although both pages are interlinked and complementary, a single web page would facilitate the access to the information.

The peers, in alignment with the DEVA evaluation report, recommend increasing the available information in English, at least the main pages of both websites, curricular itinerary (tables of core and optional subjects) and, as commented in C3, the subject descriptions (at the minimum the summary of the subject “breve descripción de contenidos”).

It is also recommended updating the 2017 Study Plan with the new itineraries implemented in the 2018-2019 academic year and including the description of the new subjects. It seems to be updated in one website (<http://www.uco.es/grados/grado-en-ciencia-y-tecnologia-de-los-alimentos>) but not in the other (<https://www.uco.es/organiza/centros/veterinaria/es/grados/gr-ciencia-y-tec-de-los-alimentos#informacion>).

The public information on the study programme is also facilitated by an excellent plan of activities which includes among other: i) divulgation/recruitment events for secondary education students; ii) organization of “reception days” for the new degree students; iii) seminars and workshops for students and teachers, aimed at promoting the contact between university and food industry and iv) a career guidance service for graduates.

## 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