

IDENTIFICATION OF SIMILAR CURRICULA IN EUROPE

FOR MSC FOOD PROCESSING AND
INNOVATION



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



D1.2 REPORT ON SIMILAR CURRICULA IN EUROPE

WP1. Identification of similar curricula in the subject area

Project Information

Project Acronym:	FOODI
Project full title:	MSc Course in Food Processing and Innovation
Project No:	598987-EPP-1-2018-1-MY-EPPKA2-CBHE-JP
Funding Scheme:	Erasmus+ KA2 Capacity Building in the field of Higher Education
Coordinator:	UTM
Project website	www.foodi-project.eu

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Date	14/11/2019 (P2)
Status:	Final
Dissemination Level:	Public

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Table of Contents

EXECUTIVE SUMMARY	5
1 COLLECTING DATA FOR SIMILAR CURRICULA.....	7
1.1 Europe Area 1 (UCD).....	7
1.2 Europe Area 2 (UNISA).....	40

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List of tables

Table 1 List of relevant MSc Programmes and Courses in the designated countries of Europe Area 1.	38
Table 2 List of MSc courses in Europe Area 2	42

List of figures

Figure 1 Map of Europe indicating the countries designated as ‘Europe Area 1’ and assigned to University College Dublin (UCD). The number of MSc Courses discovered in each country during the internet search is indicated in parentheses. Country codes are as follows: Republic of Ireland (ROI); United Kingdom (UK); Denmark (DK); Sweden (SE); Finland (FI); Estonia (ET); Latvia (LV); Lithuania (LT); Poland (PL); Germany (DE). 7

Figure 2 EC distribution over topical areas - total 120 EC	43
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Executive Summary

The aim of the second deliverable of Work Package 1 is to study similar programmes and curricula in Europe in order to identify the gaps and better assess the exact academic needs that must be catered for by FOODI. University of the Aegean (UAegean) from Greece is responsible in identifying similar curricula in the subject area in Europe with the aid of the partners HEI from Ireland (UCD) and Italy (UNISA).

The research was planned into two phases:

- Research for similar postgraduate courses at universities in Europe.
- Qualitative research through questionnaires to academic experts in food science.

The research process for the Part A started on 6th of March when the Collecting Data Template (APPENDIX D1.2 A) was uploaded in the FOODI's internal area. Europe was separated into the three following areas (one for each European HEI):

a) Europe Area 1 (UCD): U.K., Ireland, Denmark, Poland, Lithuania, Latvia, Estonia, Finland, Sweden, Germany.

b) Europe Area 2 (UNISA): Spain, Italy, Portugal, France, Austria, Luxemburg, Belgium, Netherlands, Turkey.

c) Europe Area 3 (UAegean): Greece, Cyprus, Bulgaria, Romania, Croatia, Slovenia, Hungary, Slovakia, Czechia, Malta

The three European Partners uploaded the templates of all the existing similar MSc courses in Europe in the internal area before the end of April 2019.

The results of this first phase of the survey is a total of 134 MSc Courses in Europe, with 60 of them Area 1, 39 in Area 2 and 35 postgraduate programs in Area 3.

The Part B of research process started on 10th of April when the Questionnaire Template for the Academic Experts (APPENDIX D1.2 B) was also uploaded in the FOODI's internal area.

Then, European HEI created lists of qualified academics who could participate in this qualitative research and with their opinion contribute to the creation of FOODI Master Course. From this sample, researchers received finally answers from 75 Academic Experts from whole the Europe. The key issues that this qualitative research tried to investigate was:

- The importance of specific modules in Business / Innovation / Entrepreneurship area.
- The importance of specific modules in Food Science / Food Technology / Food Engineering area.
- Technical modules should form the major part of postgraduate programs for the Food Industry?

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- Business perspective is needed in postgraduate programs for the Food Industry.
- What is the competitive advantage/unique selling point of your own program?
- What is the target group for your own MSc program?

All the data of the questionnaires were taken from the FOODI's database on 15th of July by the UAegean and the statistical and qualitative assessment was started. Finally, a full review of the findings for both the two parts of the survey was prepared by the lead partner, UAegean, at the end of July 2019.

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1 Collecting Data for Similar Curricula

1.1 Europe Area 1 (UCD)



Figure 1 Map of Europe indicating the countries designated as 'Europe Area 1' and assigned to University College Dublin (UCD). The number of MSc Courses discovered in each country during the internet search is indicated in parentheses. Country codes are as follows: Republic of Ireland (ROI); United Kingdom (UK); Denmark (DK); Sweden (SE); Finland (FI); Estonia (ET); Latvia (LV); Lithuania (LT); Poland (PL); Germany (DE).

Introduction

As part of the ERASMUS+ FOODI Research Project concerned with Capacity Building in Higher Education, University College Dublin was tasked under Work Package (WP) 1 (A1.2 Identification of similar curricula and needs assessment in the subject area) with discovering food science-related Master's Degree (MSc) Courses/Programmes in ten designated countries of Europe Area 1. The objective was to discover what courses, similar to the proposed MSc Programme/s were already available, what the breakdown of course modules emphasised in relation to specific areas of competence, and where FOODI could draw on strengths from pre-existing MSc Programmes, but also address deficits in emphasis in pre-existing MSc Programmes, particularly in relation to innovation.

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Methodology

An extensive internet search was conducted using the Google search engine, and within that search, notable specific websites such as Mastersportal.com were utilised as screening tools. Specific information relating to course details, such as curricula, subject areas covered, modules studied and allocation of ECTS credits were gleaned, where possible, from each Higher Educational Institution (HEI) website.

Initial Results and Findings

Ten countries were included in the web search. During the data search and compilation what became evident was the disparity in the amount of information and detail available on different HEI websites. Some less developed websites appeared merely concerned with providing only very bare facts relating to their course offerings, while others offered a complete disaggregation of modular credits, with a minority providing more detailed information about the curriculum, including approaches to assessment.

Most MSc Courses in Europe, excluding the United Kingdom, were of 120 ECTS, and most included a Thesis component of 30 ECTS credits. (It is important to note that 1 ECTS (UK) is equivalent to 2ECTS (EU) and on this basis, most MSc Programmes in the UK and the EU are equivalent and comparable). Most such courses were also of 24 months duration, almost as a standard. Most courses were offered either on a full- or part-time basis. Details of findings in specific countries are provided in the sections immediately below. In many cases, a HEI offered more than one relevant course. The majority of MSc courses focussing a Business component were explicit in their promotion of Innovation, particular in relation to the need for innovation to meet the emerging challenges facing the food industry, and to address issues such as Food Security, Sustainability and emergent threats to Food Hygiene, Quality and Safety.

A. Germany

There were 7 relevant MSc Courses in Germany. Three programmes are offered at the University of Hohenheim, two at Hochschule Fulda, and one each at the University of Kassel and the University of Anhalt. The MSc Programmes in International Food Business and Consumer Studies was offered at the University of Kassel and Hochschule in collaboration. The European Master of Science (Food Science, Technology and Business) offered at the University of Anhalt is offered in conjunction with HEIs in Portugal (Catholic University of Portugal) and Belgium (KU Leuven).

B. Denmark

There were 4 relevant MSc courses in Denmark, two at the University of Copenhagen and two at the University of Aarhus. The courses offered at the University of Copenhagen were MSc in Food Science and Technology and MSc in Food Innovation and Health. The courses offered at the University of Aarhus were MSc in Molecular Nutrition and Food Technology and MSc in Organic Agriculture and Food Systems.

C. Sweden

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In Sweden, only Lund University offered relevant MSc Programmes; one was MSc in Food Technology and Nutrition and the other was MSc in Food Innovation and Product Design (offered in conjunction with Technological University Dublin).

D. Finland

There were 3 relevant MSc Programmes in Finland, with 2 at the University of Helsinki (MSc Food Sciences and MSc Human Nutrition and Food-related Behaviours) and 1 at the University of Turku (MSc Food Development).

E. Estonia

Only one relevant MSc Programme was offered in Estonia which is a MSc in Agri-food Business Management at the Estonian University of Life Sciences.

F. Latvia

Only one relevant MSc Programme was offered in Latvia which is a Master Degree in Engineering at the Latvian University of Life Science and Technology.

G. Lithuania

Two relevant MSc Programmes were offered in Lithuania. One is a MSc in Food Science and Safety at Kaunas University of Technology and one is a MSc in Food Science at the Lithuanian University of Life Sciences.

H. Poland

Three relevant MSc Programmes were offered in Poland. These are a MSc in Food Science and Nutrition at the University of Agriculture, Krakow; a MSc in Food Science and Nutrition at the Poznan University of Life Sciences; a MA in Food Technology and Human Nutrition at Wraclov University of Environmental and Life Sciences.

I. United Kingdom

There were more MSc Programmes in food-related areas of study in the United Kingdom than in any other country, by a considerable margin. There were 28 MSc courses in total.

J. Republic of Ireland

There are 11 relevant MSc Programmes in the Republic of Ireland, based at three HEIs – University College Dublin (UCD), University College Cork (UCC) and Technological University Dublin (TU Dublin, formerly Dublin Institute of Technology until January 2019).

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Deliverable 1.2 Report on similar curricula in Europe

Country	Higher Education Institution	MSc Programme/s	ECTS	Duration (months)	FT/PT/both	Commentary and Useful aspects for FOODI
Germany	University of Hohenheim (Stuttgart)	MSc Food Science and Engineering	120	24	FT	59% Science & Technology 8% Engineering 8% Training 25% Thesis No entrepreneurship or Innovation
Germany	University of Hohenheim (Stuttgart)	MSc Food Biotechnology	120	24	FT	No Innovation or Entrepreneurship or Business. Placement/internship is optional. Very strong technically, emphasis on enzymes, recombinant proteins, fermentation and microbiology
Germany	University of Hohenheim (Stuttgart)	MSc Food Chemistry	120	24	FT	Delivered through German language
Germany	Hochschule Fulda	MSc International Food Business and Consumer Studies	120	24	FT	Offered in collaboration with University of Kassel, immediately below

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Deliverable 1.2 Report on similar curricula in Europe

Germany	University of Kassel	MSc International Food Business and Consumer Studies	120	24	FT	<p>1/6 Engineering</p> <p>1/6 Innovation</p> <p>1/6 Science & Technology</p> <p>1/4 Training</p> <p>1/4 Thesis</p> <p>Emphasis on business aspects of the food industry</p> <p>Management of complex processes in food businesses, in particular in</p> <ul style="list-style-type: none"> - multinational companies and organisations - companies and organisations in need of staff with intercultural competencies, and staff capable of focusing on consumer needs <p>Quality Management and Food Quality</p> <p>Innovation Management</p> <p>Consumer-oriented Product Development</p> <p>International Marketing (all from website, https://www.hs-fulda.de/en/studies/departments/ifbc/study-programme/ifbc-syllabus/)</p>
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Deliverable 1.2 Report on similar curricula in Europe

Germany	Anhalt University of Applied Sciences (in conjunction with KU Leuven (BE) and Catholic University of Portugal (PT))	MA (Master of Science) Food Science, Technology and Business	120	24	FT	Very broad programme; international dimension (offered in conjunction with KU Leuven, Belgium and the Catholic University of Portugal)
Germany	Hochschule Fulda	Sustainable Food Systems (SusFoods) Master of Science (M.Sc.)	120	24	FT	1/4 Engineering 1/4 Innovation 1/4 Training 1/4 Thesis Balanced curriculum, international dimension, one entire semester dealing with food innovation, entrepreneur, management (ISARA-Lyon) Intercultural Competence specified in the Curriculum.
Sweden	Lund University	Food Technology and Nutrition (MSc.)	120	24	FT	0% Engineering 4.1% Innovation 45.8% Science & Technology 25% Engineering

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Deliverable 1.2 Report on similar curricula in Europe

						<p>0% Training</p> <p>25% Thesis</p> <p>No business emphasis but technically strong</p> <p>Links with industry start-ups</p>
Sweden	Lund University	Food Innovation and Product Design (MSc.)	120	24	FT	<p>Development and innovation, logistics, health, very broad; international dimension</p> <p>Sustainability (AgroParisTech); Culinary Innovation (TU Dublin); healthy food design</p> <p>(UNINA) logistics and packaging (Lund)</p>
Denmark	University of Copenhagen	MSc Food Science and Technology, University of Copenhagen,	120 (150 with internship)	24	FT	<p>Some emphasis on business/innovation but technically very strong; blended learning</p> <p>Placement possible</p> <p>Specialisation (dairy, brewing, meat)</p>
Denmark	University of Copenhagen	MSc Food Innovation and Health, University of Copenhagen,	120	24	FT	7.5 ECTS on Entrepreneurship & Innovation
Denmark	University of Aarhus	MSc Molecular Nutrition and Food Technology, University of Aarhus,	120	24	FT	<p>Modules appear less diverse than other MSc Courses</p> <p>Molecular Nutrition is offered specifically in very few courses</p> <p>0% Entrepreneurship</p> <p>4.2% Innovation</p>

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Deliverable 1.2 Report on similar curricula in Europe

						<p>45.8% Science & Technology</p> <p>0% Engineering</p> <p>0% Training</p> <p>50% Thesis</p>
Denmark	University of Aarhus	MSc in Organic Agriculture and Food Systems (Double Degree), University of Aarhus,	120	24	FT	No focus on entrepreneurship or innovation
Lithuania	Kaunas University of Technology	MSc Food Science and Food Safety,	120	24	FT	<p>0% Entrepreneurship</p> <p>0% Innovation</p> <p>1/3 Science & Technology</p> <p>1/6 Engineering</p> <p>1/6 Training</p> <p>1/3 Thesis</p>
Lithuania	Lithuanian University of Health Science	MSc Food Science, Lithuanian University of Health Sciences,	120	24	FT	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas

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Deliverable 1.2 Report on similar curricula in Europe

Latvia	Latvian University of Life Sciences and Technologies	Master of Engineering in Food Science (M.sc.ing.),	120	24	FT	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas
Estonia	Estonian University of Life Sciences	MSc Agri-food Business Management,	120	24	FT	<p>Very strong emphasis on business, including economics, management, accounting, corporate culture</p> <p>7.5 ECTS Food System Innovation (6.25% Innovation)</p> <p>0% Entrepreneurship</p> <p>6.25% Innovation</p> <p>0% Science & Technology</p> <p>0% Engineering</p> <p>60.75% Training (Business)</p> <p>33% Thesis</p>
Poland	University of Agriculture Krakow	MSc Food Technology and Human Nutrition,	-	-	-	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas
Poland	Poznan University of Life Sciences	MSc Food Science and Nutrition,	-	-	-	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas

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Poland	Wraclow University of Environmental and Life Sciences,	M.A. Food Technology and Human Nutrition,	-	-	-	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas
Finland	University of Helsinki	MSc Food Sciences,	120	24	FT	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas
Finland	University of Helsinki	MSc Human Nutrition and Food-related Behaviour,	120	24	FT	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas
Finland	University of Turku	MSc Food Development	120	24	FT	1/6 Entrepreneurship 0% Innovation 1/3 Science and Technology 0% Engineering 1/6 Training 1/3 Thesis

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Deliverable 1.2 Report on similar curricula in Europe

						Some Innovation or Entrepreneurship or Business (20-25 ECTS) Focus on molecular methods, food safety, biotechnology, nutrition and health
United Kingdom	Sheffield Hallam University	MSc Food Process Engineering	90	12	FT	16.66% Entrepreneurship 0% Innovation 41.66% Science and Technology 0% Engineering 16.66% Training 25% Thesis
United Kingdom	University of Nottingham	MSc Food Process Engineering,	90	12	FT	60% Engineering 40% Thesis No business, entrepreneurship, innovation Strong emphasis on food process engineering Links with industry
United Kingdom	University of Nottingham	MSc Food Production Management,	90	12	FT	0% Entrepreneurship 22% Innovation

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Deliverable 1.2 Report on similar curricula in Europe

						<p>22% Science and Technology</p> <p>11% Engineering</p> <p>11% Training</p> <p>33% Thesis</p> <p>Co-delivery with the Business School; approx. 50:50 split between food and business aspects</p>
United Kingdom	Cranfield University	MSc Future Food Sustainability,	90	12	FT/PT	Strong focus on sustainability, food chain integrity, soil, plants; no emphasis on business, entrepreneurship or innovation
United Kingdom	Manchester Metropolitan University	MSc Food Science & Innovation,	90	12	FT	Focus on technical innovation as opposed to business or entrepreneurial innovation (impression from website offering)
United Kingdom	Queens University Belfast	MSc Advanced Food Safety	90	12	FT	<p>No Innovation or Entrepreneurship or Business, No placement</p> <p>Technically very strong, emphasis on food safety, no business or management focus</p>
United Kingdom	Queens University Belfast	MSc Global Food Security (Food Safety)	90	12	FT	No Innovation or Entrepreneurship or Business, No placement

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Deliverable 1.2 Report on similar curricula in Europe

United Kingdom	University of Greenwich	MSc Food Innovation	90	12	FT	50% Innovation 33% Science and Technology 16.66% Training Food Product Development focus, with an award in Food Safety (HACCP), strong emphasis on Innovation
United Kingdom	Sheffield Hallam University	MSc Food & Nutritional Sciences	90	12	FT	16.66% Entrepreneurship 0% Innovation 41.66% Science and Technology 0% Engineering 16.66% Training 25% Thesis
United Kingdom	University of Chester	MSc Food Science & Innovation,	90	12	FT	No further details provided on Curriculum, Programme Structure, Modules or Subject Areas
United Kingdom	Cardiff Metropolitan University	MSc Food Science and Technology,	90	12(FT) 24(PT)	FT/PT	Perhaps the broadest MSc Food Science & Technology available in Europe Area 1; very broad subject base, variety of Teaching & Learning approaches and vehicles and assessment strategies

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United Kingdom	University of Reading	MSc Food Security and Development,	90	12 (FT) 24 (PT)	FT/PT	<p>Very broad programme</p> <p>Covers all aspects of the food supply chain and also aspects such as finance and economics;</p> <p>covers Agriculture in the Tropics as a core module and also Climate change effects on agriculture</p>
United Kingdom	University of Reading	MSc Food Technology and Quality Assurance	90	12 (FT)	FT	Strong emphasis on microbiological risk, quality and safety aspects but also sensory and processing; no emphasis on business, entrepreneurship or innovation
United Kingdom	University of Ulster	MSc Food and Nutrition	90	12(FT)	FT	Strong scientific emphasis, including nutrition, toxicology, regulatory affairs; no emphasis on business, entrepreneurship or innovation.
United Kingdom	University of Reading	MSc Nutrition and Food Science	90	12 (FT) 24 (PT)	FT/PT	Strong scientific emphasis; no emphasis on business, entrepreneurship or innovation
United Kingdom	University of Central Lancashire	MSc Food Safety Management	90	36 (PT)	PT	<p>Very strong emphasis on Food Safety Management</p> <p>MSc Food Safety Management at UCLan provides a fascinating and comprehensive focus on important areas of HACCP auditing, foodborne disease, food safety hazards and the effective</p>

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Deliverable 1.2 Report on similar curricula in Europe

						management of food safety. This course is aimed at individuals in the food industry, enforcement and education who want to develop their knowledge and skills.
United Kingdom	University of Edinburgh	MSc Food Safety	90	36 (PT)		Emphasis on food safety, no business, entrepreneurship or innovation
United Kingdom	Cardiff Metropolitan University	MSc Food Safety Management	90	12	FT	Major focus on risk assessment
United Kingdom	University of Birmingham	MSc Food Safety, Hygiene and Management,	90	12 (FT) 24 (PT)	FT/PT	Technically and scientifically very strong but no inclusion of business, entrepreneurship or innovation
United Kingdom	Teeside University	MSc Food Process Engineering and Advanced Practice	90	12(FT) 24(PT)	FT/PT	Technically and scientifically very strong but no inclusion of business, entrepreneurship or innovation
United Kingdom	University of Greenwich	MSc Food Safety and Quality Management, (e-Learning)	90	36-72 (PT)	PT	e-Learning/distance learning; focus on safety, quality, regulation, law, trade
United Kingdom	University of Edinburgh	MSc Food Security	90	12 (FT)		Focus on food security and sustainability
United Kingdom	University of Reading	MSc Food Science	90	12 (FT)	FT	Technically and scientifically very strong but no inclusion of business, entrepreneurship or innovation

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United Kingdom	SRUC – Scotland’s Rural College	MSc Food Security (in collaboration with University of Edinburgh)	90	12(FT)	FT	See above at University of Edinburgh, MSc Food Security
United Kingdom	Cranfield University	MSc Food Systems and Management	90	24(PT) 12 (FT)	PT/FT	Strong scientific focus, but applicable to industry; no emphasis on business, entrepreneurship or innovation
Rep. of Ireland	Technological University Dublin	MSc Food Science and Innovation	90	24		0% Entrepreneurship 11.1% Innovation 33.3% Science and Technology 0% Engineering 22.2% Training 33.3% Thesis Combination of science and culinary skills (knowledge and applied knowledge/skills), some business and legal emphasis
Rep. of Ireland	University College Dublin (UCD)	MSc Food Business Strategy	90	12	FT	50% Entrepreneurship 50% Innovation
Rep. of Ireland	UCD	Management (Food Engineering)	-	-	-	See below Biosystems and Food
Rep. of Ireland	Technol. Univ. Dublin	MSc Food Safety Management	90	24(PT)	PT	Strong focus on safety, quality, biological and chemical aspects as well as processing

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Rep. of Ireland	UCC	MSc Food Microbiology	90	12 (FT)	FT	Strong focus on scientific aspects, microbiology, fermentation with a view to entering research
Rep. of Ireland	UCC	MSc Food Business and Innovation	90	12(FT)	FT	10 credit (ECTS) module on Food Entrepreneurship and Innovation
Rep. of Ireland	UCD	Biosystems and Food Engineering	90	12(FT)	FT	Strong focus on Biosystems, engineering aspects, sustainability
Rep. of Ireland	UCC	MSc Applied Science in Food Science	90	24(PT) 12 (FT)	PT/FT	Very broad course, scientifically strong, but only 5 credits dedicated to Food Business
Rep. of Ireland	Technol. Univ. Dublin	MSc Gastronomy and Food Studies	90	24(PT)	PT	May be relevant to gastronomic aspects of FOODI
Rep. of Ireland	UCD	Food, Nutrition and Health	90	24 (PT)	PT	Very broad, scientifically strong
Rep. of Ireland	UCD	Food Regulatory Affairs	90	24 (PT)	PT	Industrially orientated, strong focus on food safety and regulatory and legal aspects but also nutritional and health claims

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Deliverable 1.1 - Report on similar curricula in Europe

Country	Higher Education Institute	MSc Programme	Thesis Component	Biotechnology	Food Technology	Food Engineering	Food Processing	Food Chemistry	Food Microbiology	Food Hygiene & Safety Management	Sensory Science	Analytical Science	Food Business and Food Law	Food Product Development & Innovation	Sustainability	Supply Chain Management	Food Security	Food Security, Quality and Climate Change	Animal and Plant Products	Nutrition, Health, Disease
Germany	University of Hohenheim (Stuttgart)	MSc Food Science and Engineering	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0
Germany	University of Hohenheim (Stuttgart)	MSc Food Biotechnology	1	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0
Germany	University of Hohenheim (Stuttgart)	MSc Food Chemistry	1	1	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0

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Deliverable 1.2 Report on similar curricula in Europe

Germany	Hochschule Fulda	MSc International Food Business and Consumer Studies	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0
Germany	University of Kassel	MSc International Food Business and Consumer Studies	1	0	0	0	0	0	0	0	1	0	0	1	1	0	0	0	0	0
Germany	Anhalt University of Applied Sciences (in conjunction with KU Leuven (BE) and Catholic University of Portugal (PT))	MA (Master of Science) Food Science, Technology and Business	1	1	1	1	1	1	1	1	1	0	0	1	1	1	0	0	0	0
Germany	Hochschule Fulda	Sustainable Food Systems (SusFoods) Master of Science (M.Sc.)	1	0	1	1	1	1	1	1	1	0	0	1	1	1	1	1	0	1

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Deliverable 1.2 Report on similar curricula in Europe

Sweden	Lund University	Food Technology and Nutrition (MSc.)	1	1	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0	
Sweden	Lund University	Food Innovation and Product Design (MSc.)	1	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	0	
			Thesis Component	Biotechnology	Food Technology	Food Engineering	Food Processing	Food Chemistry	Food Microbiology	Food Hygiene & Safety Management	Sensory Science	Analytical Science	Food Business and Food Law	Food Product Development & Innovation	Sustainability	Supply Chain Management	Food Security	Food Security, Quality and Climate Change	Animal and Plant Products	Nutrition, Health, Disease
Denmark	University of Copenhagen	MSc Food Science and Technology, University of Copenhagen,	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1	
Denmark	University of Copenhagen	MSc Food Innovation and	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0	0	

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Deliverable 1.2 Report on similar curricula in Europe

		Health, University of Copenhagen,																		
Denmark	University of Aarhus	MSc Molecular Nutrition and Food Technology, University of Aarhus,	1	1	0	0	0	1	1	0	1	1	0	1	1	0	0	0	0	0
Denmark	University of Aarhus	MSc in Organic Agriculture and Food Systems (Double Degree), University of Aarhus,	1	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
Lithuania	Kaunas University of Technology	MSc Food Science and Food Safety,	1	1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0
Lithuania	Lithuanian University of Health Science	MSc Food Science, Lithuanian	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Deliverable 1.2 Report on similar curricula in Europe

		University of Health Sciences,																		
Latvia	Latvian University of Life Sciences and Technologies	Master of Engineering in Food Science (M.sc.ing.),	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Estonia	Estonian University of Life Sciences	MSc Agri-food Business Management,	0	0	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0
			Thesis Component	Biotechnology	Food Technology	Food Engineering	Food Processing	Food Chemistry	Food Microbiology	Food Hygiene & Safety Management	Sensory Science	Analytical Science	Food Business and Food Law	Food Product Development & Innovation	Sustainability	Supply Chain Management	Food Security	Food Security, Quality and Climate Change	Animal and Plant Products	Nutrition, Health, Disease
Poland	University of Agriculture Krakow	MSc Food Technology and Human Nutrition,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Deliverable 1.2 Report on similar curricula in Europe

Poland	Poznan University of Life Sciences	MSc Food Science and Nutrition,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Poland	Wraclow University of Environmental and Life Sciences,	M.A. Food Technology and Human Nutrition,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Finland	University of Helsinki	MSc Food Sciences,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Finland	University of Helsinki	MSc Human Nutrition and Food-related Behaviour,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

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Deliverable 1.2 Report on similar curricula in Europe

Finland	University of Turku	MSc Food Development	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	0	0
United Kingdom	Sheffield Hallam University	MSc Food Process Engineering	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	University of Nottingham	MSc Food Process Engineering,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	University of Nottingham	MSc Food Production Management,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	Cranfield University	MSc Future Food Sustainability,	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0
United Kingdom	Manchester Metropolitan University	MSc Food Science & Innovation,	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0

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Deliverable 1.2 Report on similar curricula in Europe

			Thesis Component	Biotechnology	Food Technology	Food Engineering	Food Processing	Food Chemistry	Food Microbiology	Food Hygiene & Safety Management	Sensory Science	Analytical Science	Food Business and Food Law	Food Product Development & Innovation	Sustainability	Supply Chain Management	Food Security	Food Security, Quality and Climate Change	Animal and Plant Products	Nutrition, Health, Disease
United Kingdom	Queens University Belfast	MSc Advanced Food Safety	1	0	0	0	1	1	1	1	0	1	1	0	0	0	0	0	0	
United Kingdom	Queens University Belfast	MSc Global Food Security (Food Safety)	1	1	1	0	0	1	1	1	0	1	0	0	0	1	1	0	0	
United Kingdom	University of Greenwich	MSc Food Innovation	1	0	1	0	0	1	1	1	0	1	1	1	0	0	0	0	0	

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Deliverable 1.2 Report on similar curricula in Europe

United Kingdom	Sheffield Hallam University	MSc Food & Nutritional Sciences	1	0	0	0	1	0	1	1	0	0	0	1	0	1	0	0	0
United Kingdom	University of Chester	MSc Food Science & Innovation,	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
United Kingdom	Cardiff Metropolitan University	MSc Food Science and Technology,	1	1	1	0	1	1	1	1	1	1	0	1	0	0	0	0	
United Kingdom	University of Reading	MSc Food Security and Development,	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0
United Kingdom	University of Reading	MSc Food Technology and Quality Assurance	1	0	1	0	1	1	1	1	1	1	0	0	1	0	0	0	0

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Deliverable 1.2 Report on similar curricula in Europe

United Kingdom	University of Ulster	MSc Food and Nutrition	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	
United Kingdom	University of Reading	MSc Nutrition and Food Science	1	0	1	0	1	1	0	0	0	0	0	0	0	0	0	0	0	
United Kingdom	University of Central Lancashire	MSc Food Safety Management	1	0	0	0	0	0	1	1	0	0	1	0	0	0	0	0	0	
			Thesis Component	Biotechnology	Food Technology	Food Engineering	Food Processing	Food Chemistry	Food Microbiology	Food Hygiene & Safety Management	Sensory Science	Analytical Science	Food Business and Food Law	Food Product Development & Innovation	Sustainability	Supply Chain Management	Food Security	Food Security, Quality and Climate Change	Animal and Plant Products	Nutrition, Health , Disease
United Kingdom	University of Edinburgh	MSc Food Safety	1	0	0	0	1	0	1	1	0	0	0	0	0	1	0	0	0	
United Kingdom	Cardiff Metropolitan University	MSc Food Safety Management	0	0	0	0	0	0	1	1	0	0	1	0	0	1	0	0	0	

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Deliverable 1.2 Report on similar curricula in Europe

United Kingdom	University of Birmingham	MSc Food Safety, Hygiene and Management,	1	0	1	0	1	1	1	1	0	1	0	0	0	1	1	0	0
United Kingdom	Teeside University	MSc Food Process Engineering and Advanced Practice	1	0	1	1	1	1	1	1	0	1	0	0	0	0	0	0	0
United Kingdom	University of Greenwich	MSc Food Safety and Quality Management, (e-Learning)	1	0	0	0	0	0	1	1	0	0	1	0	0	1	1	0	0
United Kingdom	University of Edinburgh	MSc Food Security	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0
United Kingdom	University of Reading	MSc Food Science	1	0	1	1	1	1	1	1	1	1	0	0	1	0	0	0	0
United Kingdom	SRUC – Scotland’s Rural College	MSc Food Security (in collaboration with University of Edinburgh)	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0

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Deliverable 1.2 Report on similar curricula in Europe

United Kingdom	Cranfield University	MSc Food Systems and Management	1	0	0	0	1	0	1	1	0	0	0	0	1	1	0	0	0	
Rep. of Ireland	Technological University Dublin	MSc Food Science and Innovation	1	0	0	0	1	0	0	0	1	1	1	1	0	0	0	0	0	
Rep. of Ireland	University College Dublin (UCD)	MSc Food Business Strategy	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Rep. of Ireland	UCD	Management (Food Engineering)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Rep. of Ireland	Technol. Univ. Dublin	MSc Food Safety Management	1	0	1	1	1	1	1	1	0	1	1	0	0	0	0	0	0	

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Deliverable 1.2 Report on similar curricula in Europe

			Thesis Component	Biotechnology	Food Technology	Food Engineering	Food Processing	Food Chemistry	Food Microbiology	Food Hygiene & Safety Management	Sensory Science	Analytical Science	Food Business	Food Product Development & Innovation	Sustainability	Supply Chain Management	Food Security	Food Security, Quality and Climate Change	Animal and Plant Products	Nutrition, Health, Disease
Rep. of Ireland	UCC	MSc Food Microbiology	1	1	1	1	1	0	1	1	0	0	0	0	0	0	0	0	0	0
Rep. of Ireland	UCC	MSc Food Business and Innovation	1	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0	0	0
Rep. of Ireland	UCD	Biosystems and Food Engineering	1	1	1	1	1	0	0	0	0	0	0	0	1	0	0	0	0	0
Rep. of Ireland	UCC	MSc Applied Science in Food Science	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	1
Rep. of Ireland	Technol. Univ. Dublin	MSc Gastronomy and Food Studies	1	0	0	0	0	0	0	0	1	0	1	1	0	0	0	0	0	0

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Deliverable 1.2 Report on similar curricula in Europe

Rep. of Ireland	UCD	Food, Nutrition and Health	1	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0	1
Rep. of Ireland	UCD	Food Regulatory Affairs	1	0	0	0	0	0	0	1	0	0	1	1	0	1	0	0	0

Table 1 List of relevant MSc Programmes and Courses in the designated countries of Europe Area 1.

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Interim Findings and Conclusions

- Sixty (60) relevant MSc Courses and Programmes were discovered in the HEIs within the designated countries. The number of MSc Programmes in each country is indicated in Figure 1.
- Of the 60 identified MSc Courses/Programmes, 5 referred specifically to Innovation in the Course/Programme title – Lund (SE), Technological University Dublin (ROI; delivered in collaboration), Copenhagen (DK), Greenwich (UK) and Chester (UK).
- There is no standard format for provision of information to prospective students in European HEIs. This adds to the difficulty in acquiring a breakdown of necessary information and a disaggregation of any MSc Programme ECTS schedule. Only some HEIs offer more detailed Course, Curriculum or Module information as separate downloadable pdf files. Thus, it is somewhat difficult and largely subjective when trying to categorise those modules which are indicated, particularly in relation to categorisation as Science & Technology or Engineering, or as Entrepreneurship, Innovation or Training.
- 120 ECTS gained over 24 months is a standard arrangement for full-time Programmes.
- In most Programmes, a Thesis of 30 ECTS is a requirement for award of the attendant qualification.
- An aspect that might be especially useful for FOODI is the inclusion of an Intercultural Competence component specified in the MSc in Sustainable Food Systems offered at Hochschule Fulda (<http://www.susfoods.eu/>). Further details available at <http://www.susfoods.eu/programme/>

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1.2 Europe Area 2 (UNISA)

The existing similar MSc courses in the Universities of the Europe Area 2 are presented in the following Table.

	Country	University	MSc Course
1	Austria	MCI - The Entrepreneurial School	Food Technology and Nutrition
2	Austria	BOKU Universität für Bodenkultur Wien University of Natural Resources and Life Sciences, Vienna	Sustainability in Agriculture, Food Production and Food Technology in the Danube Region
3	Austria	University of Applied Sciences Upper Austria	Food Technology and Nutrition
4	Belgium	KU Leuven	Food Technology
5	Belgium	KU Leuven	BIFTEC - European Master of Science in Food Science, Technology and Business
6	France	EM Normandie (Grand Ecole Management)+ UniLaSalle	Master In Engineering
7	France	ERASMUS+ EMJMD in Food Innovation and Product Design based in Université Paris-Saclay	Depending on effective study plan Nutrition or Food Science
8	France	Ecole Supérieure d'Agricultures basée à Angers	Master Food Identity
9	France	Ecole Supérieure d'Agricultures basée à Angers	Master In Engineering
10	France	ISA - Institut Supérieur D'agriculture de Lille	Food Science
11	France	EMJMD base in ISARA Lyon and other 6 universities	Food Science

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12	Italy	Università Politecnica delle MARCHE	Food and Beverage Innovation and Management
13	Italy	Università degli Studi della BASILICATA	Sustainable management of food quality - EDAMUS
14	Italy	Università di Bologna	Food Science and Technology
15	Italy	Università degli Studi di BOLOGNA – Campus of Rimini	Resource economics and sustainable development
16	Italy	Università Commerciale "Luigi Bocconi" MILANO	Economics and Management of Innovation and Technology
17	Italy	Libera Università di Bolzano	Food Sciences for Innovation and Authenticity
18	Italy	Università Cattolica del Sacro Cuore	Master of Science in Agricultural and Food Economics
19	Italy	Università degli Studi di FERRARA	Economics, Management and Policies for Global Challenges
20	Italy	Università degli Studi di FIRENZE	Natural Resources Management For Tropical Rural Development
21	Italy	Università degli Studi di MILANO	Biotechnology for the bioeconomy
22	Italy	Università degli Studi di PADOVA	Sustainable agriculture
23	Italy	Università degli Studi di PADOVA	ITALIAN FOOD AND WINE
24	Italy	Università degli studi di SALERNO	Food Engineering
25	Italy	Università degli Studi di TERAMO	Food Science and Technology
26	Netherland	Maastricht	Health Food Innovation Management

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27	Netherland	Wageningen	Food Technology: Product Design
28	Netherland	Wageningen	Food Technology: Sustainable Food Process Engineering
29	Netherland	Wageningen	Food Technology: Food Innovation and Management
30	Portugal	University of Algarve	Food Engineering
31	Portugal	Portuguese Catholic University	Food Engineering
32	Portugal	University of Minho/University of Porto (Inter-university Master)	Food Science and Technology
33	Portugal	UNIVERSIDADE DE LISBOA	Master in Food Engineering
34	Portugal	UNIVERSIDADE NOVA DE LISBOA	Master in Food Technology and Safety
35	Turkey	EGE University	Food Engineering
36	Turkey	Istanbul Technical University	Food Engineering
37	Turkey	Mersin University	Food Engineering
38	Turkey	Middle East Technical University	Food Engineering
39	Spain	KU Leuven	Master in Food and Beverage Sustainable Entrepreneurship

Table 2 List of MSc courses in Europe Area 2

All the selected courses are related to food and have at least a food technology/transformation dimension or a food innovation dimension, possibly both of them. All courses have the duration of 2 years and 120 EC. A rough analysis was carried out to enucleate the weight of the different topical areas and namely: Entrepreneurship, Innovation, Science and technology, Engineering, Training and Thesis. The results of the comparison between the curricula is provided in the Figure below:

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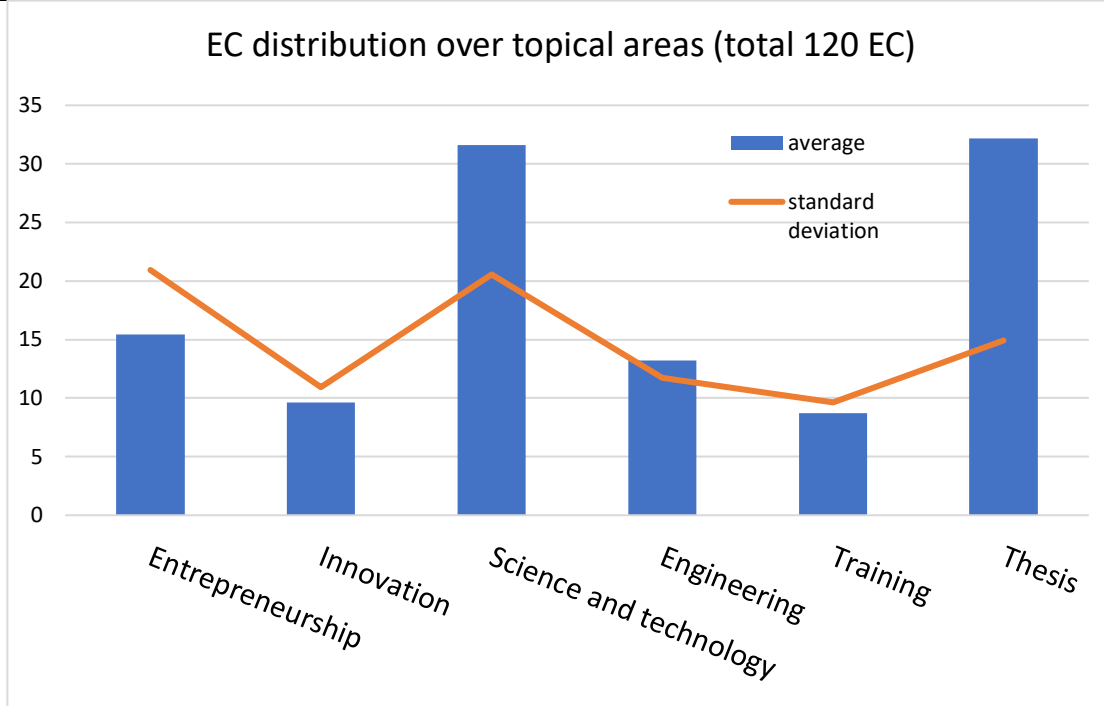
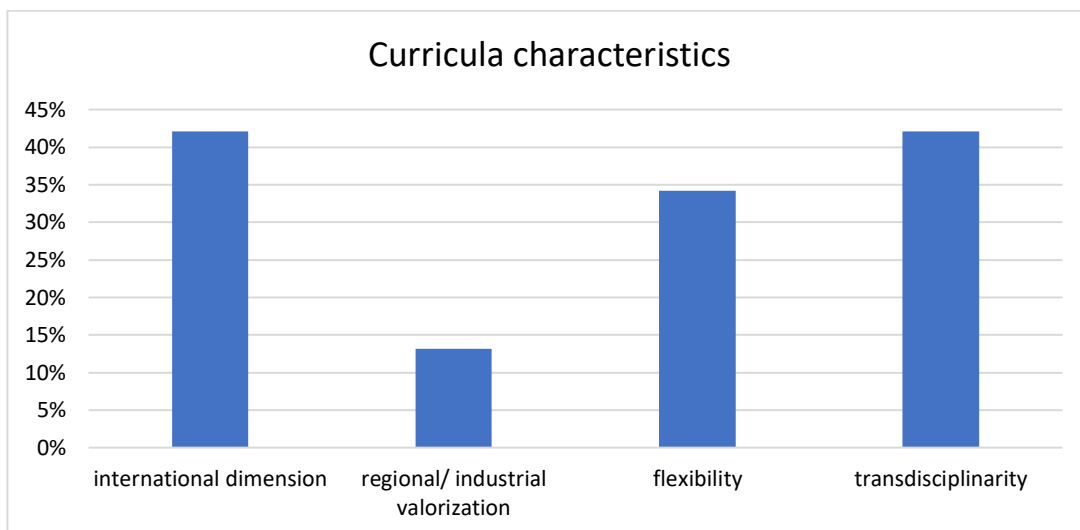


Figure 2 EC distribution over topical areas - total 120 EC

Provided the 120 EC total value for a master course, this means that the average Curriculum with some similarities to Foodi roughly provides about 25% of the credits to Food Science and Technology, 25% to the thesis, 15% to entrepreneurship, 15% to engineering and 10% to innovation and another 10% to training.

Some major characteristics of the curricula were identified and searched among the examined curricula. These are: international dimension; regional/industrial valorisation; curriculum flexibility; transdisciplinary. The frequency of the occurrence of these characteristics are reported in the following Figure.



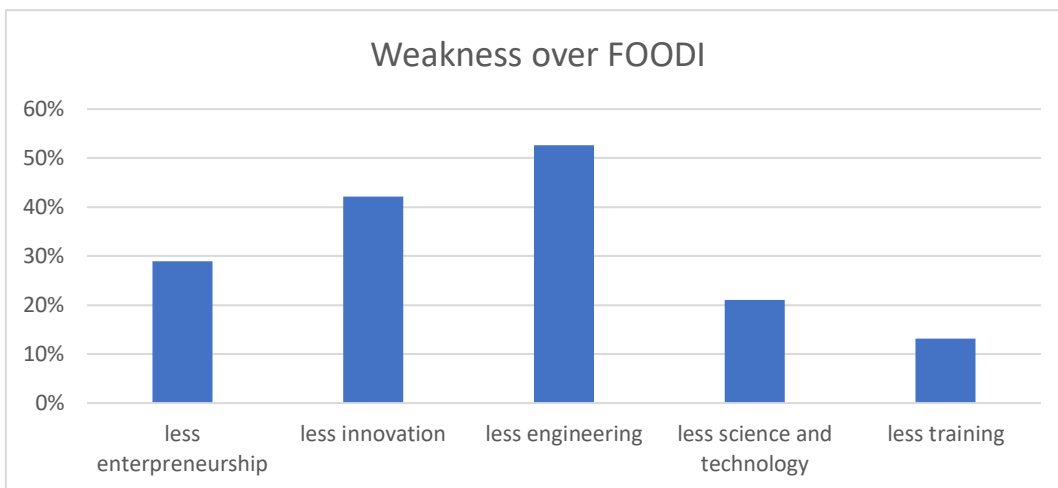
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Figure 3 Curricula characteristics

Transdisciplinary and International dimensions are the most common characteristics. Often, it is found also some element of valorisation of local food culture or the relationship with industries in the region. Flexibility of the master course, allowing an extensive tailoring of the subjects taught, is also very frequently found.

Finally, the weakness of the curricula with respect to the expected design of Foodi where categorized in the following cases: less entrepreneurship; less innovation; less engineering; less science; less training. The frequencies found for these weaknesses of the examined curricula over Foodi are summarized in the following Figure

*Figure 4 Weakness over FOODI*

It appears that very often the engineering dimension is less significant than envisaged in FOODI. Also, the innovation dimension is frequently lacking in the curricula examined. Less frequently but still significant is the number of curricula with little or no credits dedicated to entrepreneurship.

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1.3 Europe Area 3 (U Aegean)

A. The MSc Courses

The survey was conducted through the postgraduate research webpages and then information was sought for each postgraduate from the universities' websites. In many cases there were detailed information about curricula with detailed curriculum descriptions. In several other cases, university websites did not provide information on curricula (such as the 6 Plovdiv University programs in Bulgaria), or this information was not in English.

The Eastern European research area comprised 10 countries, and through this research 35 postgraduate study programs were identified.

The existing similar MSc courses in each country in Europe Area 3 are presented in the following Table.

	Country	University	MSc Course
1	Greece	Agricultural University of Athens	MSc in Food Science and Technology & Human Nutrition
2	Greece	Agricultural University of Athens	MSc in Integrated Production Management of Milk and Milk Products
3	Greece	Agricultural University of Athens	MSc in Modern Food Technology. Dairy - Oenology
4	Greece	Agricultural University of Athens	MSc in Food, Nutrition and Health
5	Greece	Agricultural University of Athens	MBA Food and Agribusiness
6	Greece	International University of Greece	MSc in Quality Management and Production Organization Systems for the Food Industry
7	Greece	West Attica University	MSc in Food Innovation, Quality and Safety
8	Greece	West Attica University	MSc in Wine and Beer Science
9	Greece	University of Thessaly	MSc in Bio-entrepreneurship

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10	Greece	University of Patras	MBA in Business Administration of Food & Agricultural Enterprises
11	Greece	University of Athens	MSc in Viticulture-Oenology and Alcoholic Beverages
12	Greece	University of West Macedonia	MSc in Analysis and Control of Food Products
13	Cyprus	Nicosia University	MSc in Sports Nutrition/Dietetics and Nutrition Intervention
14	Bulgaria	University of Food Technologies - Plovdiv	MSc in Food Analysis and Control
15	Bulgaria	University of Food Technologies - Plovdiv	MSc in Food Engineering
16	Bulgaria	University of Food Technologies - Plovdiv	MSc in Food Safety
17	Bulgaria	University of Food Technologies - Plovdiv	MSc in Functional Foods
18	Bulgaria	University of Food Technologies - Plovdiv	MSc in Wine and Beer Technology
19	Bulgaria	University of Food Technologies - Plovdiv	MSc in Quality Management in Food Industry
20	Romania	Dunarea University of Galati	MSc in Food Science and Engineering
21	Romania	Dunarea University of Galati	MSc in Food Products Control, Authenticity and Safety
22	Romania	Dunarea University of Galati	MSc in Nutrition

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23	Romania	Dunarea University of Galati	MSc in Engineering and Management in Public Food and Agrotourism
24	Romania	University Politehnica of Bucharest	MSc in Food Chemistry
25	Croatia	University of Zagreb	MSc in Food Management
26	Croatia	University of Zagreb	MSc in Food Quality and Safety
27	Czech Republic	Czech University of Life Sciences Prague	MSc in Sustainable Agriculture and Food Security
28	Czech Republic	Czech University of Life Sciences Prague	MSc in Natural Resources and Environment
29	Hungary	University of Szeget	MSc in Food Science and Food Technology Engineering
30	Hungary	University of Debrecen	MSc in Food Safety and Quality Engineering
31	Hungary	Szent Istvan University	MSc in Food Engineering
32	Slovenia	University of Maribor	MSc in Food Safety in the Agri-food Chain
33	Slovenia	University of Lubliana	MSc in Food Science
34	Slovakia	Slovak University of Technology in Bratislava	MSc in Automation and Information Engineering in Chemistry and Food Industry
35	Malta	University of Malta	MSc in Food Sciences and Nutrition

Table 3 List of MSc courses in Europe Area 3

The number of postgraduate programs per country is also shown in the following Figure 1.2.4.

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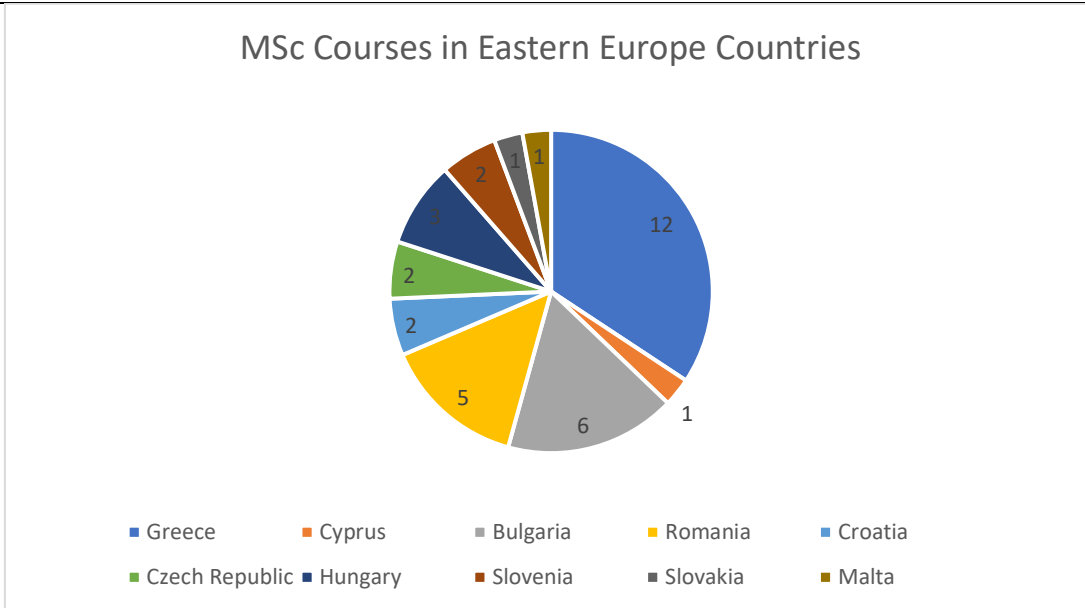


Figure 5 MSc courses in Eastern Europe Countries

Concerning the scientific areas that these MSc courses cover, we identified three groups of interest:

- Entrepreneurship, Innovation and Management
- Food Technology and Science
- Food Engineering

According to this definition we can categorise the above mentioned MSc courses as follows, in the following Table.

Entrepreneurship & Innovation / Management			
1	MBA Food and Agribusiness	Agricultural University of Athens	Greece
2	MSc in Integrated Production Management of Milk and Milk Products	Agricultural University of Athens	Greece
3	MSc in Quality Management and Production Organization Systems for the Food Industry	International University of Greece	Greece
4	MSc in Food Innovation, Quality and Safety	West Attica University	Greece

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5	MSc in Bio-entrepreneurship	University of Thessaly	Greece
6	MBA in Business Administration of Food & Agricultural Enterprises	University of Patras	Greece
7	MSc in Quality Management in Food Industry	University of Food Technologies - Plovdiv	Bulgaria
8	MSc in Engineering and Management in Public Food and Agrotourism	Dunarea University of Galati	Romania
9	MSc in Food Management	University of Zagreb	Croatia
Food Science & Technology			
10	MSc in Food Science and Technology & Human Nutrition	Agricultural University of Athens	Greece
11	MSc in Modern Food Technology. Dairy - Oenology	Agricultural University of Athens	Greece
12	MSc in Wine and Beer Technology	University of Food Technologies - Plovdiv	Bulgaria
13	MSc in Food Safety	University of Food Technologies - Plovdiv	Bulgaria
14	MSc in Food Safety in the Agri-food Chain	University of Maribor	Slovenia
15	MSc in Food Products Control, Authenticity and Safety	Dunarea University of Galati	Romania
16	MSc in Food Quality and Safety	University of Zagreb	Croatia
17	MSc in Sustainable Agriculture and Food Security	Czech University of Life Sciences Prague	Czech Republic
18	MSc in Natural Resources and Environment	Czech University of Life Sciences Prague	Czech Republic

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19	MSc in Food, Nutrition and Health	Agricultural University of Athens	Greece
20	MSc in Wine and Beer Science	West Attica University	Greece
21	MSc in Viticulture-Oenology and Alcoholic Beverages	University of Athens	Greece
22	MSc in Analysis and Control of Food Products	University of West Macedonia	Greece
23	MSc in Sports Nutrition/Dietetics and Nutrition Intervention	Nicosia University	Cyprus
24	MSc in Food Analysis and Control	University of Food Technologies - Plovdiv	Bulgaria
25	MSc in Functional Foods	University of Food Technologies - Plovdiv	Bulgaria
26	MSc in Food Chemistry	University Politehnica of Bucharest	Romania
27	MSc in Nutrition	Dunarea University of Galati	Romania
28	MSc in Food Science	University of Lubiana	Slovenia
29	MSc in Food Sciences and Nutrition	University of Malta	Malta
Engineering			
30	MSc in Food Engineering	University of Food Technologies - Plovdiv	Bulgaria
31	MSc in Food Science and Engineering	Dunarea University of Galati	Romania
32	MSc in Food Science and Food Technology Engineering	University of Szeget	Hungary

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33	MSc in Food Safety and Quality Engineering	University of Debrecen	Hungary
34	MSc in Food Engineering	Szent Istvan University	Hungary
35	MSc in Automation and Information Engineering in Chemistry and Food Industry	Slovak University of Technology in Bratislava	Slovakia

Table 4 Categories related to FOODI

According to the this analysis, there are **9** MSc courses in the **Entrepreneurship, Innovation and Management** area that covers fields such as MBA, Production Management, Quality Management, Food Innovation and Bio-entrepreneurship.

There are also **20** MSc courses in the **Food Science and Technology** area that covers the fields of Food Technology, Food Safety, Nutrition, Functional Foods, Food Chemistry and Food Science. Finally, there are **6** MSc courses in the area of Food **Engineering**. These results are also presented in the following Figure.

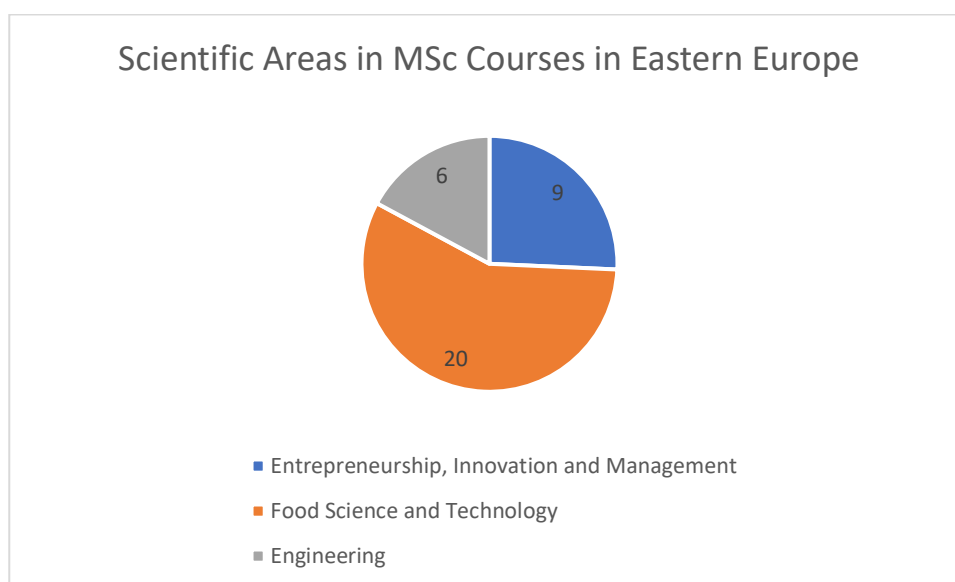


Figure 6 Scientific areas in MSc Courses in Eastern Europe

From the above data, it is clear that the overwhelming majority of programs are targeting the regions of Food Technology, Science and Engineering and only 25% of them have a more entrepreneurial perspective concerning the food industry.

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Continuously, we tried to confirm this output through the investigation of the curricula for each postgraduate program in order to create more detailed and secure data for our research.

B. The Curricula

The modules that are taught in these courses cover several scientific topics. We categorized these modules into 4 groups: Entrepreneurship & Innovation, Management, Food Science & Technology, Engineering. The following Table and Figure present the presence of this scientific areas in each MSc course, as well as the requirement of an MSc Thesis.

Modules and Topics in MSc courses					
MS Course	Entrepreneurship & Innovation	Management	Food Science & Food Technology	Engineering	Thesis
MSc1	---	4	15	4	V
MSc2	---	2	6	2	V
MSc3	---	3	20	4	V
MSc4	1	5	27	3	V
MSc5	---	---	7	---	V
MSc6	1	---	9	1	V
MSc7	1	1	7	---	V
MSc8	---	4	6	---	V
MSc9	4	---	4	---	V
MSc10	5	17	---	---	V
MSc11	---	2	10	---	V
MSc12	---	12	3	---	V
MSc13	---	1	12	---	V
MSc14-19	---	---	---	---	V

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MSc20	---	---	---	---	V
MSc21	1	4	13	4	V
MSc22	---	2	13	---	V
MSc23	---	---	15	3	V
MSc24	2	6	5	1	V
MSc25	1	6	9	4	V
MSc26	---	3	14	---	V
MSc27	---	---	6	1	V
MSc28	1	4	11	---	V
MSc29	---	---	---	---	V
MSc30	---	---	---	---	V
MSc31	---	5	14	---	V
MSc32	---	2	13	---	V
MSc33	---	9	18	---	V
MSc34	---	3	19	13	V
MSc35	---	3	9	2	V
TOTAL	17	98	285	42	100%

Table 5 Modules and Topics in MSc courses

In the group of Entrepreneurship, modules such as Entrepreneurship, Innovation and Consumer Behavior are included. The group of Management includes modules such as Management, Quality management, Marketing, Strategy, Law, Quantitative methods and Statistical analysis. Finally, in the group of Engineering, we found modules such as Production planning and Production management.

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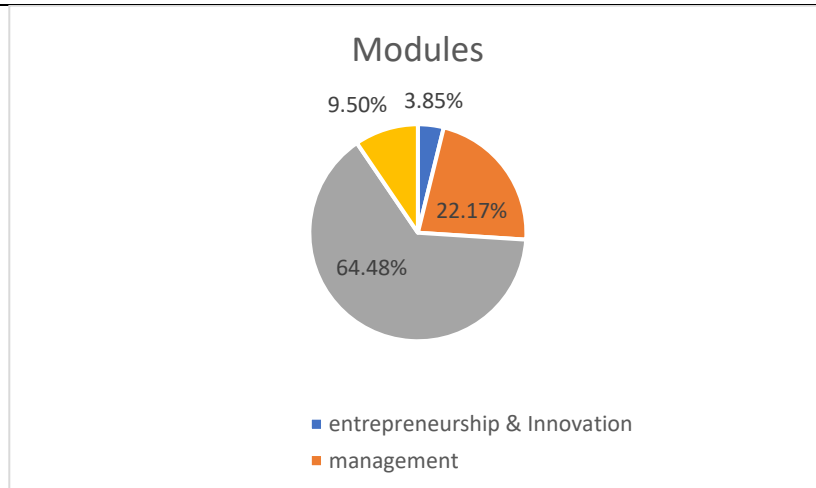


Figure 7 Modules View

The lack of courses on entrepreneurship and innovation is made even clearer by studying curricula. In a total of 442 courses offered in all programs, only 17 relate to entrepreneurship and innovation, less than 4%.

Even in programs that include the concept of management, such as MBAs, but also in all others, the only business dimension that develops is that of quality control, law, marketing, and quantitative methods.

There is therefore a large gap in the analysis of the business environment, the study of entrepreneurship and the emergence of innovation as the main pillar of the development of businesses in the food sector.

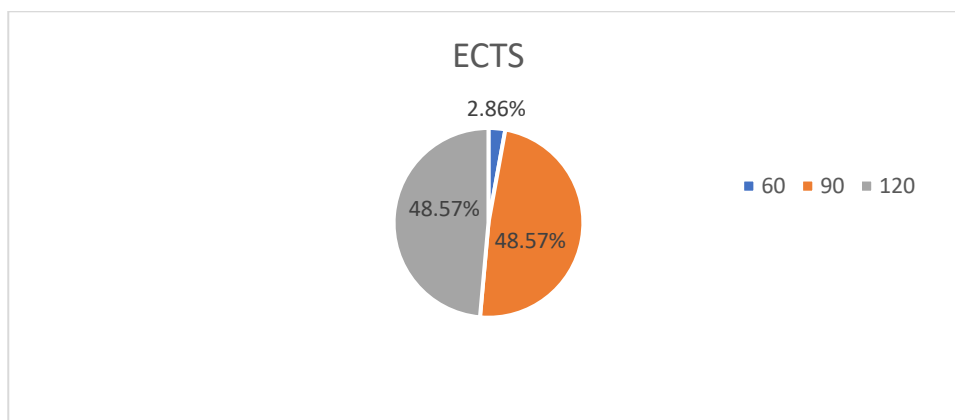


Figure 8 ECTS View

All the above mentioned MSc courses includes a Master Thesis for the completion of the course. Finally, from the above Figure 1.2.7, it became clear that the duration of the programs ranges from 3 to 4 semesters of study with a corresponding educational result of 90 – 120 ECTS.

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2 Questionnaires from Academic Experts

Process and Sample

The research process started on 10th of April when the Questionnaire Template for the Academic Experts (APPENDIX D1.2 B) was uploaded in the FOODI's internal area.

European universities created lists of qualified academics who could participate in the research and with their opinion contribute to the creation of FOODI Master Course.

The Sample for each European Partner from the three European Areas (1, 2, 3) is presented in the following Tables.

Country	Europe Area 2 (UNISA)	
	University	Contacts
Austria	University of Natural Resources and Life Science	1
Croatia	University of Osijek	1
	University of Zagreb	1
France	AgroParitech	1
	ISARA	1
	Technical University of Compiengne	1
	YNCREA	2
Israel	Technion - Israel Institute of Technology	1
Italy	AgenziaForestas	1
	Consorzio per la Ricerca nel Settore della Filiera Lattiero-Casearia e dell'Agroalimentare	1
	Università Cattolica Del Sacro Cuore	1
	University of Bari	1
	University of Basilicata	5
	University of Bologna	3
	University of Calabria	2

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	University of Foggia	7
	University of Messina	1
	University of Milan	3
	University of Modena and Reggio Emilia	1
	University of Naples "Federco II"	4
	University of Palermo	2
	University of Parma	2
	University of Perugia	1
	University of Reggio Calabria	2
	University of Sassari	2
	University of Tuscia	1
	University of Udine	2
	University of Verona	1
Portugal	University of Minho	1
Spain	Universidad Autònoma de Barcelona	1
	University of Lleida	1
	University of Zaragoza	2
Turkey	Istanbul Technical University	10
	Middle East Technical Univerisity	12
	Ege University	1
	Mersin university	7
Total		87

Table 6 No of contacts reached for Area 2

Table 1.2.9	Europe Area 3 (UAegean)
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Country	University	Contacts
Greece	Agricultural University of Athens	28
Greece	International University of Greece	20
Greece	West Attica University	28
Greece	University of Thessaly	21
Greece	University of Patras	7
Greece	University of Athens	18
Cyprus	Nicosia University	5
Bulgaria	University of Food Technologies - Plovdiv	16
Romania	Dunarea University of Galati	20
Croatia	University of Zagreb	42
Czech Republic	Czech University of Life Sciences Prague	14
Hungary	University of Szeget	13
Total		232

Table 7 Number of contacts reached for Area 3

Answers to the questionnaire were received from the academic experts presented in the table below.

	Name	Organisation
1	Anet Režek Jambrak	Faculty of Food Technology and Biotechnology, University of Zagreb, Croatia
2	Taner Baysal	Ege University
3	Ignacio Alvarez	University of Zaragoza
4	Javier Raso	University of Zaragoza (Spain)
5	VANDENDRIESSCHE Pierre	YncreaHauts-de-France - ISA LILLE
6	Giuseppe Perretti	University of Perugia
7	Antonietta Baiano	University of FOGGIA - Dipartimento di ScienzeAgrarie, degliSlinenti e dell'Ambiente
8	Silvana Cavella	Univerità di Napoli Federico II
9	Corona Onofrio	dipartimentoScienzeAgrarie, Alimentari e Forestali
10	Nicola Condelli	Università della Basilicata

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11	luciano cinquanta	University of Palermo (Italy)
12	NIKOLAOS G. STOFOROS	Agricultural University of Greece
13	Professor Panagiotis Kaldis	University of West Attica
14	Irini F.Strati	University of West Attica
15	Anthimia Batrinou	University of West Attica, Athens
16	MOCANU GABRIEL-DANUT	Faculty of Food Science and Engineering, Dunarea de Jos University of Galati, Romania
17	Barbu Vasilica	Dunarea de Jos University of Galati
18	Kiril Mihalev	University of Food Technologies - Plovdiv
19	ELENI LIKOTRAFITI	Alexander Technological Educational Institute of Thessaloniki
20	Karin Kovačević Ganić	University of Zagreb Faculty of Food Technology and Biotechnology
21	Amalia Conte	University of Foggia
22	Mario Ščetar	Univ. of Zagreb
23	Verica Dragović-Uzelac	Faculty of Food Technology and Biotechnology
24	Prokopis Theodoridis	University of Patras
25	Constantine Iliopoulos	Agricultural University of Athens, Athens, Greece
26	Antonio Bevilacqua	University of Foggia
27	angelo fabbri	Bologna University - Italy
28	andrea summer	University of Parma
29	Carlo	SSICA past researcher
30	Sebastiano Porcu	Agenzia forestale regionale per lo sviluppo del territorio e l'ambientesdellaSardegna
31	Domenico Meloni	Department of Veterinary Medicine, University of Sassari (Italy)
32	Federico Gómez	Lund University
33	Linda Nicolaidis	Natural Resources Institute of the University of Greenwich
34	Marcin Lukaszewicz	Agriculture University in Krakow
35	Malgorzata Korzeniowska	Wroclaw University of Environmental and Life Sciences
36	Simon Dawson	Cardiff Metropolitan University
37	Prof. Dr. Wolfram Schnäcker	Anhalt University of Applied Sciences
38	Alessandro Seguino	University of Edinburgh
39	Seamus O'Mahony	University College Cork
40	Vaida Kitryte	Kaunas University of Technology
41	Madeleine Smith	University of Birmingham
42	Maciej Kuligowski	Poznan University of Life Sciences
43	Demetres D. Leonidas	University of Thessaly
44	Tomislava Vukusic	Faculty of Food Technology and Biotechnology, Univeristy of Zagreb

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45	Stelios Rozakis	Technical University of Crete, former director and currently Visiting Professor Postgraduate Master's in Agribusiness in AUA
46	Gabriela Bahrim	Dunarea de Jos University
47	Lionakis Konstantinos	Aueb
48	Silviu STANCIU	Dunarea de Jos University of Galati, Romania
49	Anca Nicolau	Faculty of Food Science and Engineering from the Dunarea de Jos University of Galati, Romania
50	MOCANU GABRIEL - DANUT	„DUNAREA DE JOS” UNIVERSITY OF GALATI, FACULTY OF FOOD SCIENCE AND ENGINEERING
51	Anet Režek Jambrak	Faculty of Food Technology and Biotechnology
52	Helga Medic	University of Zagreb
53	Lara Manzocco	University of Udine
54	Panko Mitev	UFT Plovdiv
55	Helga Keil	Fulda University of Applied Sciences
56	Annalisa Romano	University of Naples FEDERICO II
57	Avi Shpigelman	Technion, Israel institute of Technology
58	Moncef Chouaibi	High Institute of Food Industries of Tunisia
59	Antonio Vicente	University of Minho, Portugal
60	BASTON OCTAVIAN	Dunarea de Jos University
61	Antonio Jose Trujillo	Universidad Autónoma de Barcelona
62	Gianpaolo Ruocco	Università degli Studi della Basilicata
63	Angelo Maria Giuffrè	Università degli Studi Mediterranea di Reggio Calabria, AGRARIA - Dipartimento di Agricoltura,
64	Mecit Oztop	Middle East Technical University
65	Pervin	ISTANBUL TEKNİK UNIVERSİTESİ
66	Meral	Istanbul Technical University
67	Alev Bayındırlı	METU Food Engineering Department
68	Gulum Sumnu	Middle East Technical University
69	Leyla Nesrin Kahyaoglu	METU
70	Asli Can Karaca	Istanbul Technical University Department of Food Engineering
71	Hami Alpas	METU
72	H. İbrahim Ekiz	Mersin University Food Engineering Department
73	Ants-Hannes Viira	Estonian University of Life Sciences
74	Ute Gilles	University of Kassel
75	Mahir TURHAN	Department of Food Engineering, University of Mersin, Mersin, Turkey

Table 8 Academic Experts involved in the FOODI online questionnaire

The final panel of participants gives a representative picture of the European territory, which is presented in the following Figure 1.2.8.

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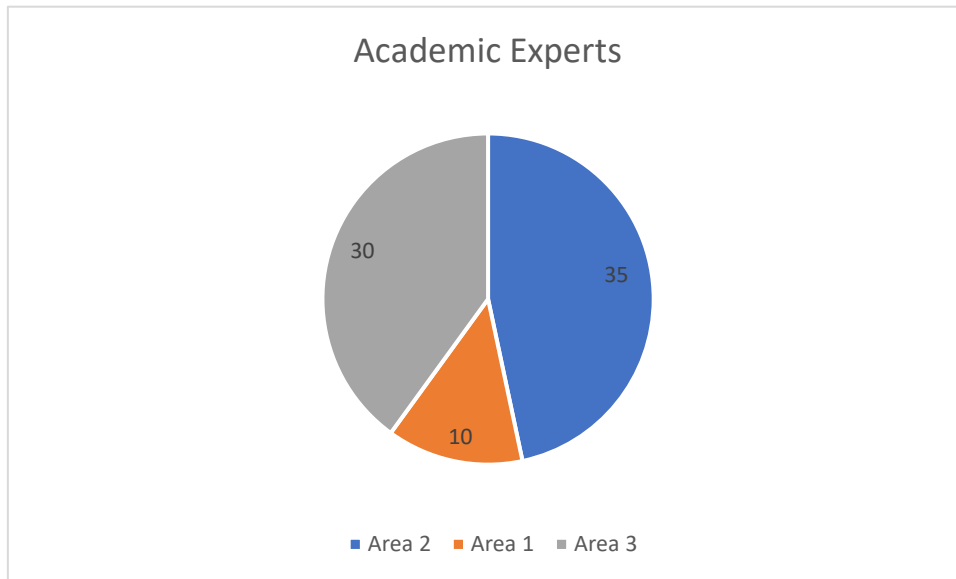


Figure 9 Academic Experts reached per Area

We therefore conclude that responses represent the whole of Europe's reality, and this way the academic experience developed in Europe on postgraduate food education programs can be safely captured.

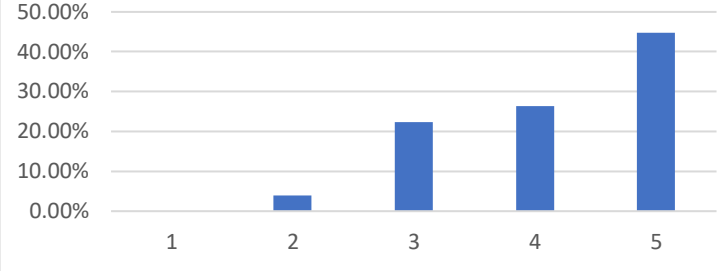
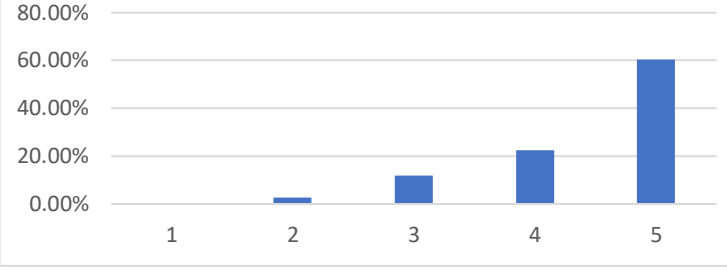
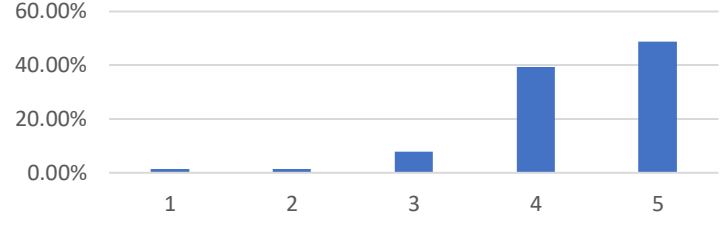
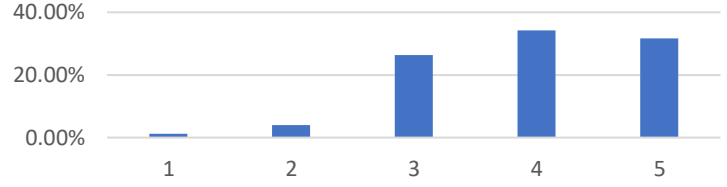
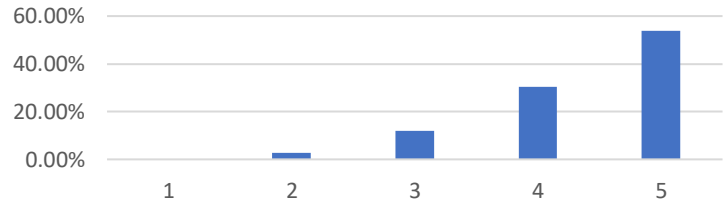
2.1 Research Outcomes

The results of the answers given by the experts to the questions of the questionnaire are presented in detail in the following Tables.

	<i>Concerning Business / Innovation / Entrepreneurship modules, we would like your opinion on the importance of each of the following modules</i>				
FOODI Modules	<i>Not important</i>			<i>Very Important</i>	
	1	2	3	4	5

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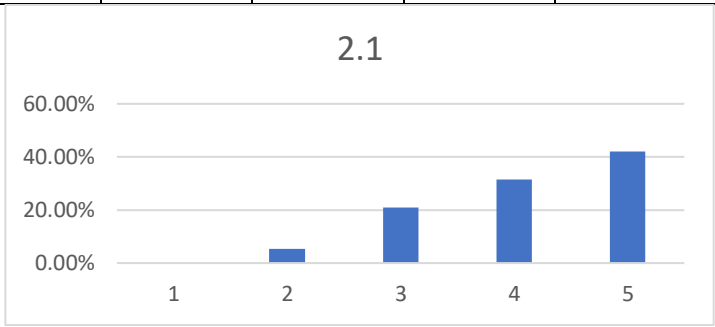
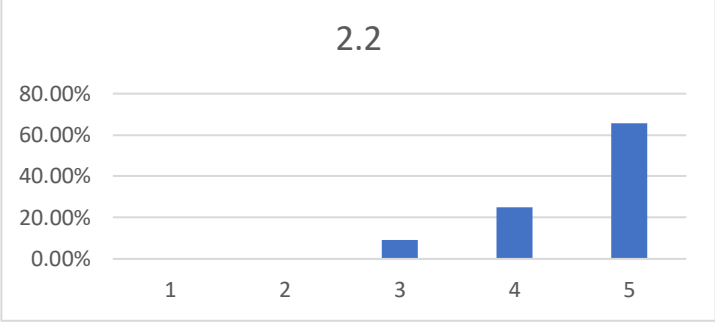
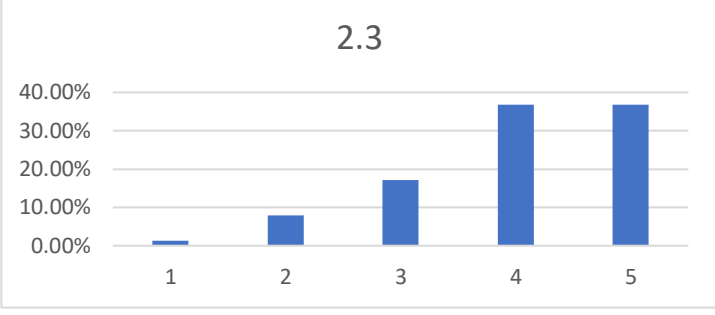
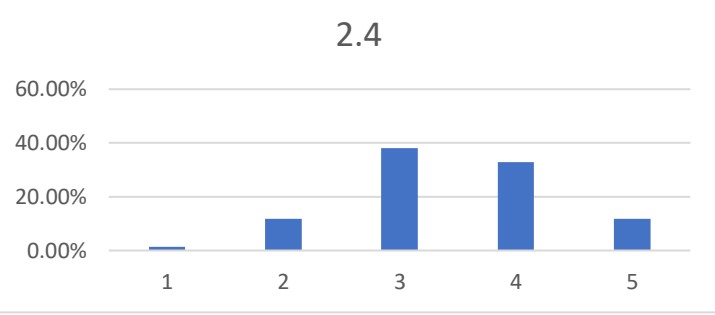
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<p>Food supply chain management</p>	<p>1.1</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.00%</td> </tr> <tr> <td>2</td> <td>~4.00%</td> </tr> <tr> <td>3</td> <td>~22.00%</td> </tr> <tr> <td>4</td> <td>~28.00%</td> </tr> <tr> <td>5</td> <td>~45.00%</td> </tr> </tbody> </table>	Category	Percentage	1	0.00%	2	~4.00%	3	~22.00%	4	~28.00%	5	~45.00%
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<p>Food innovation</p>	<p>1.2</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.00%</td> </tr> <tr> <td>2</td> <td>~2.00%</td> </tr> <tr> <td>3</td> <td>~12.00%</td> </tr> <tr> <td>4</td> <td>~22.00%</td> </tr> <tr> <td>5</td> <td>~60.00%</td> </tr> </tbody> </table>	Category	Percentage	1	0.00%	2	~2.00%	3	~12.00%	4	~22.00%	5	~60.00%
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<p>Consumer preferences and behaviour</p>	<p>1.3</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~1.00%</td> </tr> <tr> <td>2</td> <td>~1.00%</td> </tr> <tr> <td>3</td> <td>~8.00%</td> </tr> <tr> <td>4</td> <td>~38.00%</td> </tr> <tr> <td>5</td> <td>~48.00%</td> </tr> </tbody> </table>	Category	Percentage	1	~1.00%	2	~1.00%	3	~8.00%	4	~38.00%	5	~48.00%
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4	~38.00%												
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<p>Agri-food marketing</p>	<p>1.4</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~1.00%</td> </tr> <tr> <td>2</td> <td>~4.00%</td> </tr> <tr> <td>3</td> <td>~26.00%</td> </tr> <tr> <td>4</td> <td>~34.00%</td> </tr> <tr> <td>5</td> <td>~31.00%</td> </tr> </tbody> </table>	Category	Percentage	1	~1.00%	2	~4.00%	3	~26.00%	4	~34.00%	5	~31.00%
Category	Percentage												
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3	~26.00%												
4	~34.00%												
5	~31.00%												
<p>Entrepreneurship & innovation</p>	<p>1.5</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>0.00%</td> </tr> <tr> <td>2</td> <td>~2.00%</td> </tr> <tr> <td>3</td> <td>~12.00%</td> </tr> <tr> <td>4</td> <td>~30.00%</td> </tr> <tr> <td>5</td> <td>~52.00%</td> </tr> </tbody> </table>	Category	Percentage	1	0.00%	2	~2.00%	3	~12.00%	4	~30.00%	5	~52.00%
Category	Percentage												
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3	~12.00%												
4	~30.00%												
5	~52.00%												

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Table 9 Opinions on Importance of each Innovation/Entrepreneurship module

	Concerning Food Science / Food Engineering modules, we would like your opinion on the importance of each of the following modules				
FOODI Modules	Not important			Very Important	
	1	2	3	4	5
Innovation in industrial food processing	2.1 				
Virtualization for R&D in the food industry	2.2 				
Food quality and safety management	2.3 				
Industrial process control	2.4 				

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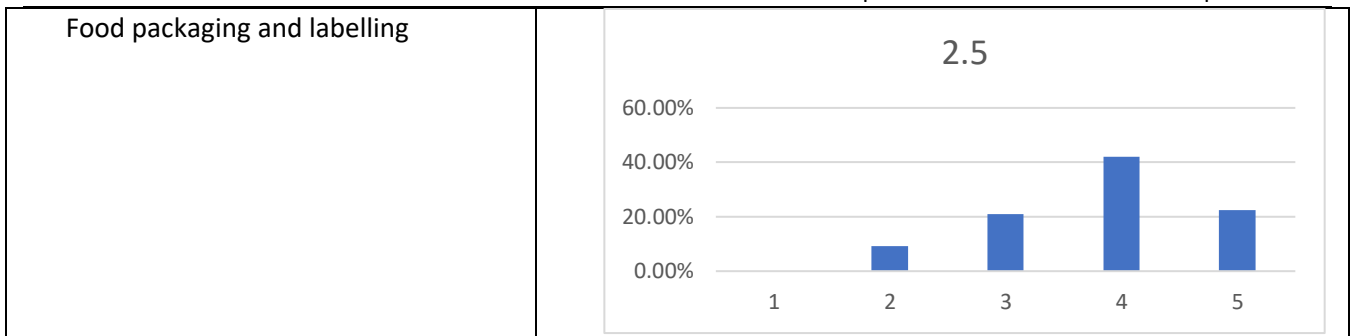


Table 10 Opinions on Importance of each Engineering module

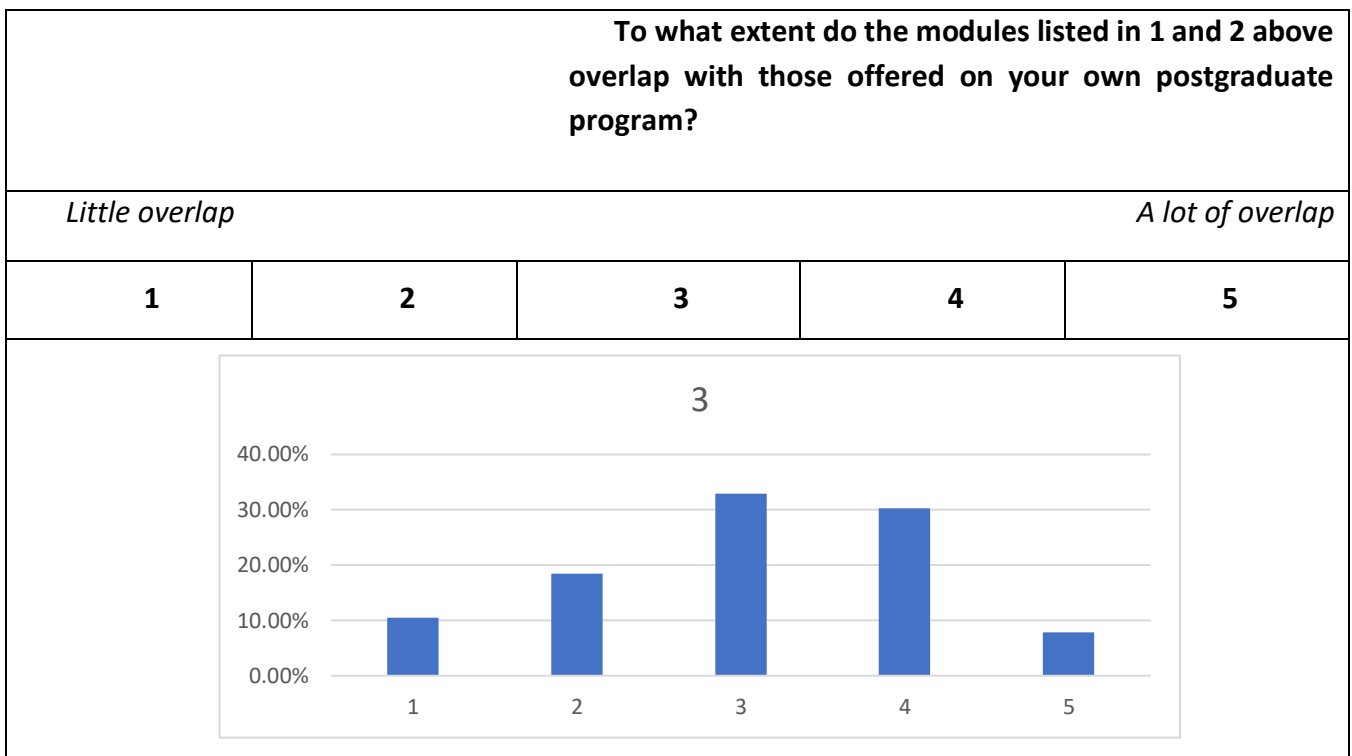
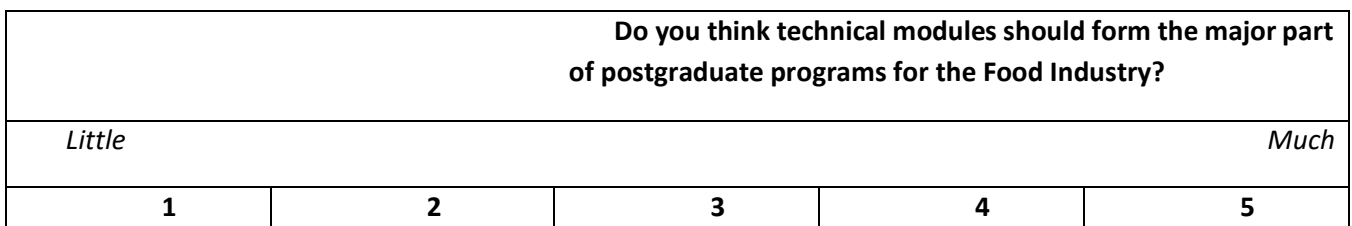


Table 11 Opinion regarding overlaps of modules



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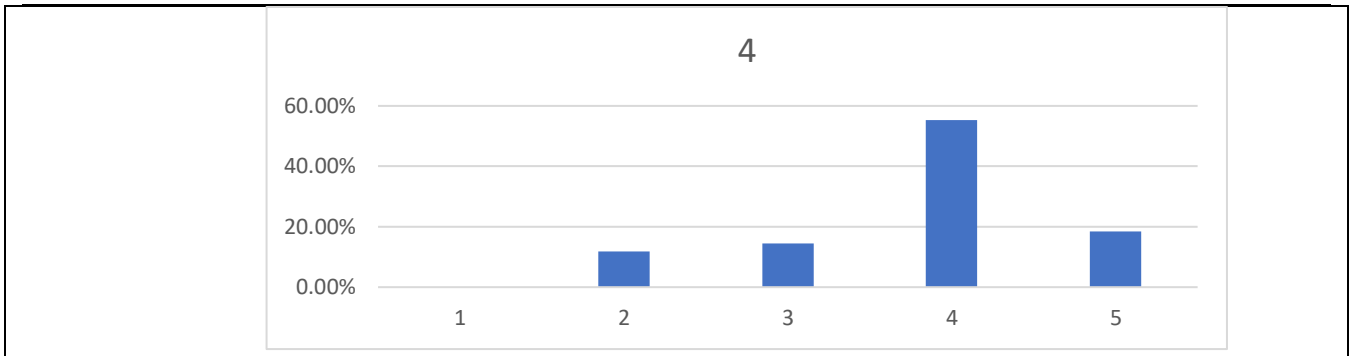


Table 12 Technical modules importance

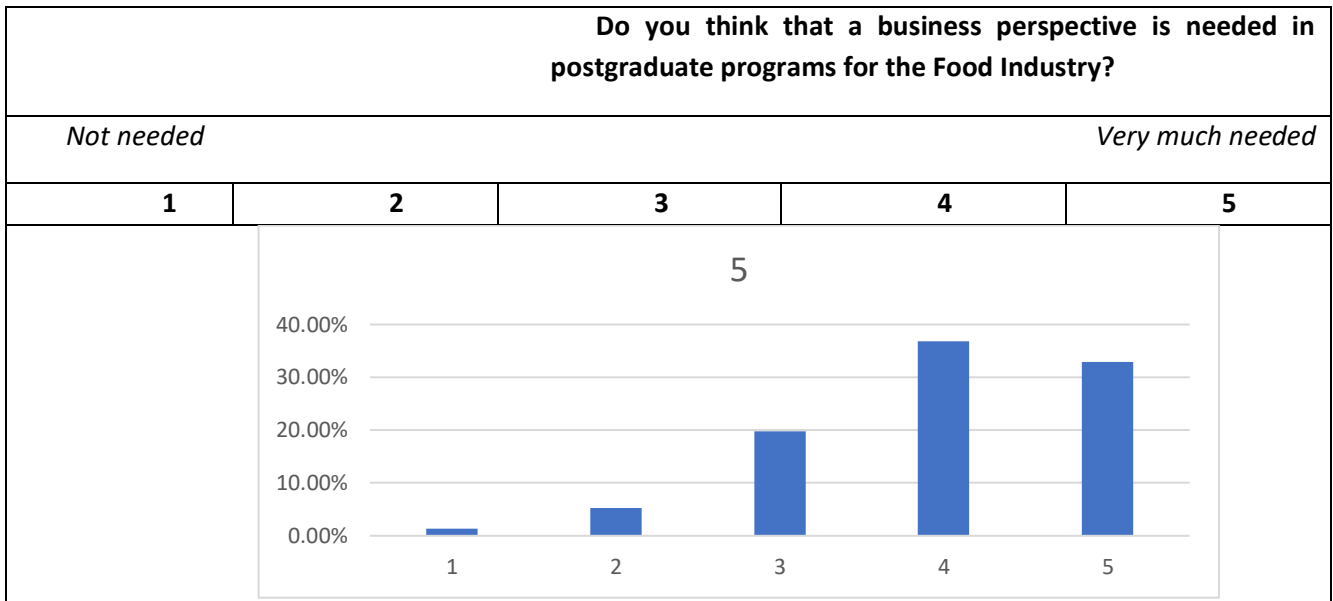
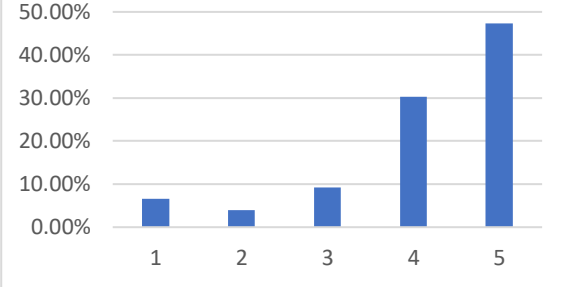
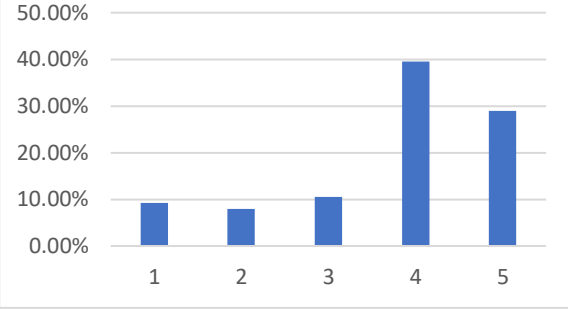
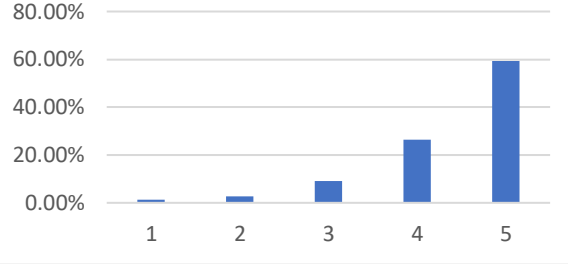
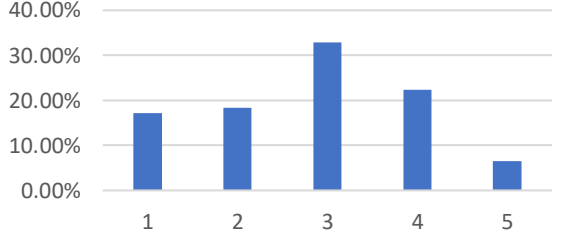


Table 13 Opinion on the business perspective

	What do you see as the competitive advantage/unique selling point of your own program?				
	<i>To a small extent</i>		<i>To a large extent</i>		
Unique selling point	1	2	3	4	5
Educational					

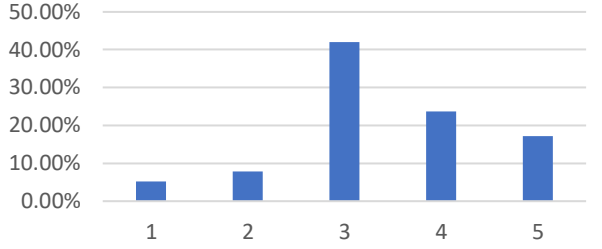
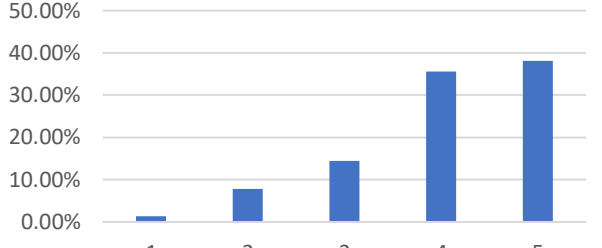
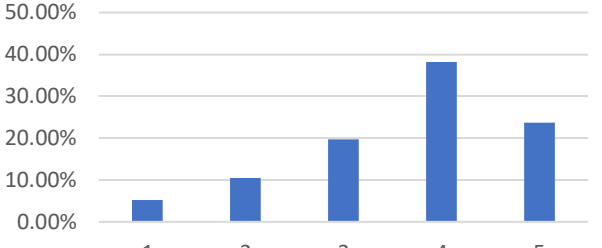
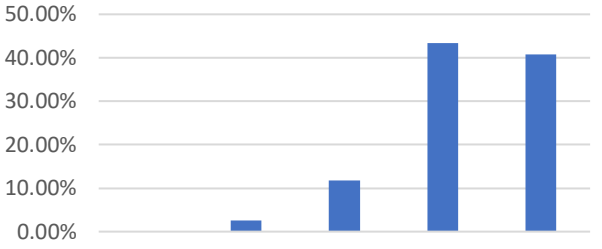
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<p>The industrial food processing</p>		<p>6.1</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~6.00%</td> </tr> <tr> <td>2</td> <td>~4.00%</td> </tr> <tr> <td>3</td> <td>~9.00%</td> </tr> <tr> <td>4</td> <td>~30.00%</td> </tr> <tr> <td>5</td> <td>~48.00%</td> </tr> </tbody> </table>	Category	Percentage	1	~6.00%	2	~4.00%	3	~9.00%	4	~30.00%	5	~48.00%	
Category	Percentage														
1	~6.00%														
2	~4.00%														
3	~9.00%														
4	~30.00%														
5	~48.00%														
<p>Food packaging and labelling</p>		<p>6.2</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~9.00%</td> </tr> <tr> <td>2</td> <td>~8.00%</td> </tr> <tr> <td>3</td> <td>~10.00%</td> </tr> <tr> <td>4</td> <td>40.00%</td> </tr> <tr> <td>5</td> <td>~29.00%</td> </tr> </tbody> </table>	Category	Percentage	1	~9.00%	2	~8.00%	3	~10.00%	4	40.00%	5	~29.00%	
Category	Percentage														
1	~9.00%														
2	~8.00%														
3	~10.00%														
4	40.00%														
5	~29.00%														
<p>Food quality</p>		<p>6.3</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~1.00%</td> </tr> <tr> <td>2</td> <td>~2.00%</td> </tr> <tr> <td>3</td> <td>~8.00%</td> </tr> <tr> <td>4</td> <td>~25.00%</td> </tr> <tr> <td>5</td> <td>60.00%</td> </tr> </tbody> </table>	Category	Percentage	1	~1.00%	2	~2.00%	3	~8.00%	4	~25.00%	5	60.00%	
Category	Percentage														
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3	~8.00%														
4	~25.00%														
5	60.00%														
<p>Logistics and Transportation</p>		<p>6.4</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~17.00%</td> </tr> <tr> <td>2</td> <td>~18.00%</td> </tr> <tr> <td>3</td> <td>33.00%</td> </tr> <tr> <td>4</td> <td>~22.00%</td> </tr> <tr> <td>5</td> <td>~7.00%</td> </tr> </tbody> </table>	Category	Percentage	1	~17.00%	2	~18.00%	3	33.00%	4	~22.00%	5	~7.00%	
Category	Percentage														
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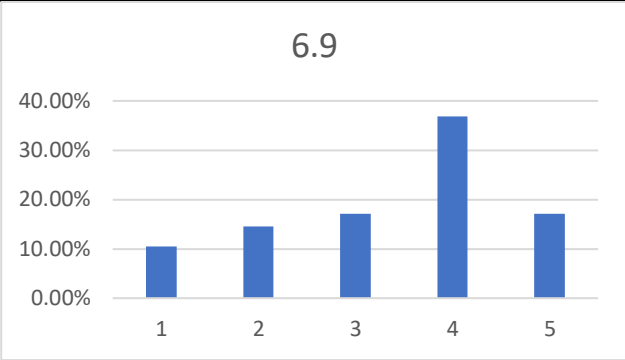
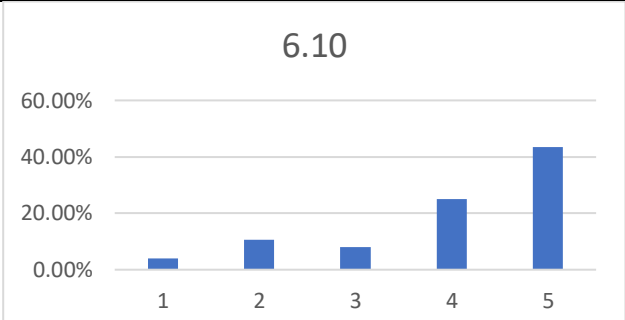
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<p>Traditional foods – Superfoods</p>		<p>6.5</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~5%</td> </tr> <tr> <td>2</td> <td>~8%</td> </tr> <tr> <td>3</td> <td>~42%</td> </tr> <tr> <td>4</td> <td>~23%</td> </tr> <tr> <td>5</td> <td>~17%</td> </tr> </tbody> </table>	Category	Percentage	1	~5%	2	~8%	3	~42%	4	~23%	5	~17%	
Category	Percentage														
1	~5%														
2	~8%														
3	~42%														
4	~23%														
5	~17%														
<p>Foods and Health</p>		<p>6.6</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~1%</td> </tr> <tr> <td>2</td> <td>~8%</td> </tr> <tr> <td>3</td> <td>~15%</td> </tr> <tr> <td>4</td> <td>~35%</td> </tr> <tr> <td>5</td> <td>~38%</td> </tr> </tbody> </table>	Category	Percentage	1	~1%	2	~8%	3	~15%	4	~35%	5	~38%	
Category	Percentage														
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3	~15%														
4	~35%														
5	~38%														
<p>Entrepreneurship in Food Industry</p>		<p>6.7</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~5%</td> </tr> <tr> <td>2</td> <td>~10%</td> </tr> <tr> <td>3</td> <td>~20%</td> </tr> <tr> <td>4</td> <td>~38%</td> </tr> <tr> <td>5</td> <td>~23%</td> </tr> </tbody> </table>	Category	Percentage	1	~5%	2	~10%	3	~20%	4	~38%	5	~23%	
Category	Percentage														
1	~5%														
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3	~20%														
4	~38%														
5	~23%														
<p>Innovation in Foods</p>		<p>6.8</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>~0%</td> </tr> <tr> <td>2</td> <td>~2%</td> </tr> <tr> <td>3</td> <td>~11%</td> </tr> <tr> <td>4</td> <td>~43%</td> </tr> <tr> <td>5</td> <td>~40%</td> </tr> </tbody> </table>	Category	Percentage	1	~0%	2	~2%	3	~11%	4	~43%	5	~40%	
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2	~2%														
3	~11%														
4	~43%														
5	~40%														

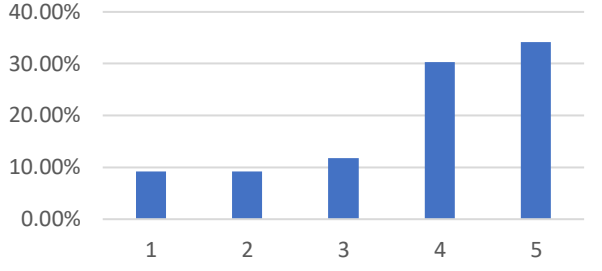
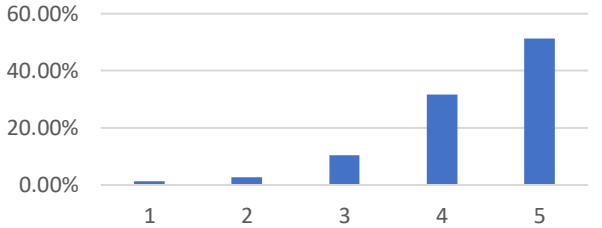
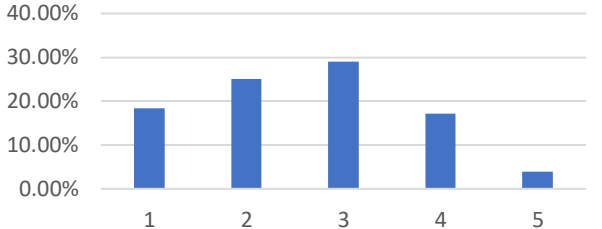
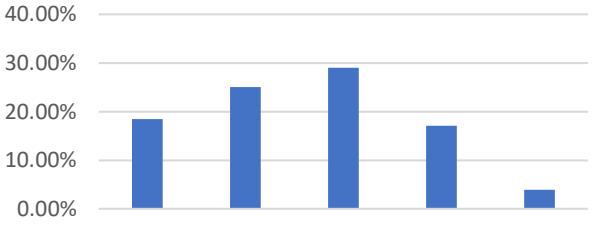
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<p>Marketing in Food Products</p>	 <table border="1"> <caption>Data for Marketing in Food Products Chart</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10.00%</td> </tr> <tr> <td>2</td> <td>15.00%</td> </tr> <tr> <td>3</td> <td>18.00%</td> </tr> <tr> <td>4</td> <td>38.00%</td> </tr> <tr> <td>5</td> <td>18.00%</td> </tr> </tbody> </table>	Category	Percentage	1	10.00%	2	15.00%	3	18.00%	4	38.00%	5	18.00%
Category	Percentage												
1	10.00%												
2	15.00%												
3	18.00%												
4	38.00%												
5	18.00%												
<p>Other</p>	<p><i>Close relationship with the real (business / industrial) world through internships and projects for companies.</i></p> <p><i>Food Safety, Food Analysis</i></p> <p><i>Food Safety</i></p> <p><i>Organizational Economics Approach</i></p> <p><i>Institutional network</i></p> <p><i>Diverse student backgrounds</i></p> <p><i>Economics and Business</i></p> <p><i>Holistic approach to food safety including pre and post-harvest</i></p> <p><i>Food Science and Technology - advanced aspects thereof</i></p> <p><i>Food control and legislation</i></p> <p><i>"Farm to fork" perspective</i></p> <p><i>Research in the field of food science</i></p> <p><i>Food engineering</i></p> <p><i>Engineering aspects</i></p>												
<p>Academic</p>													
<p>Staff</p>	 <table border="1"> <caption>Data for Staff Chart</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>5.00%</td> </tr> <tr> <td>2</td> <td>10.00%</td> </tr> <tr> <td>3</td> <td>8.00%</td> </tr> <tr> <td>4</td> <td>25.00%</td> </tr> <tr> <td>5</td> <td>45.00%</td> </tr> </tbody> </table>	Category	Percentage	1	5.00%	2	10.00%	3	8.00%	4	25.00%	5	45.00%
Category	Percentage												
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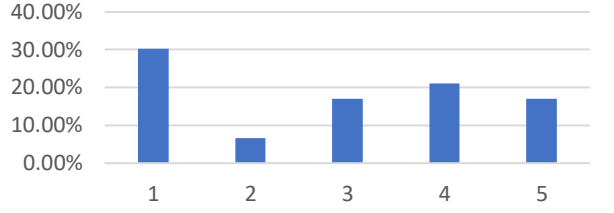
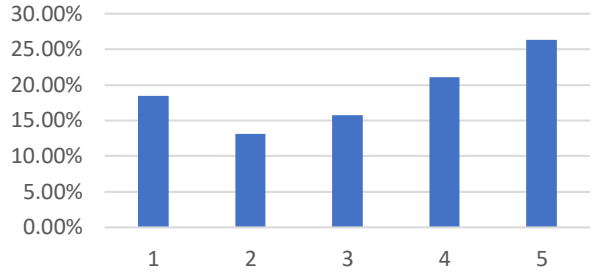
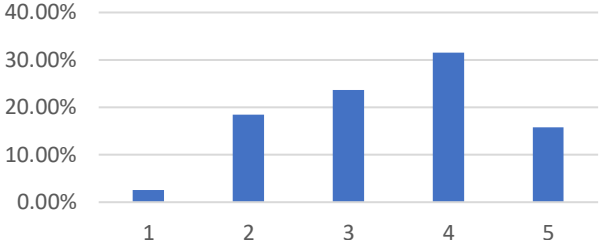
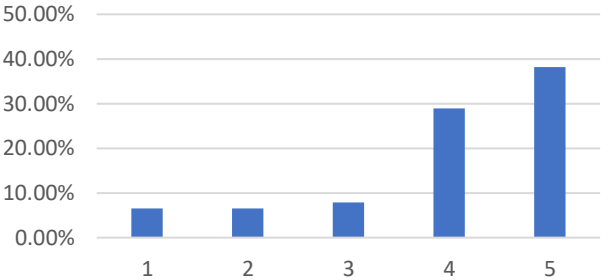
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<p>Links with Research programmes</p>		<p style="text-align: center;">6.11</p>  <table border="1"> <caption>Data for Chart 6.11</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>10.00%</td> </tr> <tr> <td>2</td> <td>10.00%</td> </tr> <tr> <td>3</td> <td>12.00%</td> </tr> <tr> <td>4</td> <td>30.00%</td> </tr> <tr> <td>5</td> <td>35.00%</td> </tr> </tbody> </table>	Category	Percentage	1	10.00%	2	10.00%	3	12.00%	4	30.00%	5	35.00%	
Category	Percentage														
1	10.00%														
2	10.00%														
3	12.00%														
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<p>Cooperation with other universities/institutes</p>		<p style="text-align: center;">6.12</p>  <table border="1"> <caption>Data for Chart 6.12</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2.00%</td> </tr> <tr> <td>2</td> <td>3.00%</td> </tr> <tr> <td>3</td> <td>10.00%</td> </tr> <tr> <td>4</td> <td>30.00%</td> </tr> <tr> <td>5</td> <td>50.00%</td> </tr> </tbody> </table>	Category	Percentage	1	2.00%	2	3.00%	3	10.00%	4	30.00%	5	50.00%	
Category	Percentage														
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4	30.00%														
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<p>Laboratories</p>		<p style="text-align: center;">6.13</p>  <table border="1"> <caption>Data for Chart 6.13</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>18.00%</td> </tr> <tr> <td>2</td> <td>25.00%</td> </tr> <tr> <td>3</td> <td>28.00%</td> </tr> <tr> <td>4</td> <td>17.00%</td> </tr> <tr> <td>5</td> <td>4.00%</td> </tr> </tbody> </table>	Category	Percentage	1	18.00%	2	25.00%	3	28.00%	4	17.00%	5	4.00%	
Category	Percentage														
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<p>Research/Publications</p>		<p style="text-align: center;">6.14</p>  <table border="1"> <caption>Data for Chart 6.14</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>18.00%</td> </tr> <tr> <td>2</td> <td>25.00%</td> </tr> <tr> <td>3</td> <td>28.00%</td> </tr> <tr> <td>4</td> <td>17.00%</td> </tr> <tr> <td>5</td> <td>4.00%</td> </tr> </tbody> </table>	Category	Percentage	1	18.00%	2	25.00%	3	28.00%	4	17.00%	5	4.00%	
Category	Percentage														
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<p>Other</p>	-----														
<p>Operational</p>															

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Distance Learning		<p style="text-align: center;">6.15</p>  <table border="1"> <caption>Data for Chart 6.15</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>30.00%</td> </tr> <tr> <td>2</td> <td>7.00%</td> </tr> <tr> <td>3</td> <td>17.00%</td> </tr> <tr> <td>4</td> <td>21.00%</td> </tr> <tr> <td>5</td> <td>17.00%</td> </tr> </tbody> </table>	Category	Percentage	1	30.00%	2	7.00%	3	17.00%	4	21.00%	5	17.00%	
Category	Percentage														
1	30.00%														
2	7.00%														
3	17.00%														
4	21.00%														
5	17.00%														
E-class/Moodle platforms		<p style="text-align: center;">6.16</p>  <table border="1"> <caption>Data for Chart 6.16</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>18.00%</td> </tr> <tr> <td>2</td> <td>13.00%</td> </tr> <tr> <td>3</td> <td>16.00%</td> </tr> <tr> <td>4</td> <td>21.00%</td> </tr> <tr> <td>5</td> <td>26.00%</td> </tr> </tbody> </table>	Category	Percentage	1	18.00%	2	13.00%	3	16.00%	4	21.00%	5	26.00%	
Category	Percentage														
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Libraries		<p style="text-align: center;">6.17</p>  <table border="1"> <caption>Data for Chart 6.17</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.00%</td> </tr> <tr> <td>2</td> <td>18.00%</td> </tr> <tr> <td>3</td> <td>23.00%</td> </tr> <tr> <td>4</td> <td>31.00%</td> </tr> <tr> <td>5</td> <td>16.00%</td> </tr> </tbody> </table>	Category	Percentage	1	3.00%	2	18.00%	3	23.00%	4	31.00%	5	16.00%	
Category	Percentage														
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3	23.00%														
4	31.00%														
5	16.00%														
Full time course (1 year)		<p style="text-align: center;">6.18</p>  <table border="1"> <caption>Data for Chart 6.18</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>7.00%</td> </tr> <tr> <td>2</td> <td>7.00%</td> </tr> <tr> <td>3</td> <td>8.00%</td> </tr> <tr> <td>4</td> <td>29.00%</td> </tr> <tr> <td>5</td> <td>38.00%</td> </tr> </tbody> </table>	Category	Percentage	1	7.00%	2	7.00%	3	8.00%	4	29.00%	5	38.00%	
Category	Percentage														
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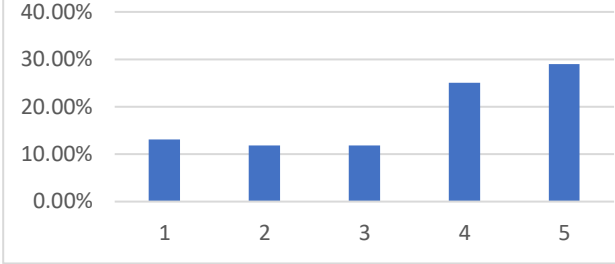
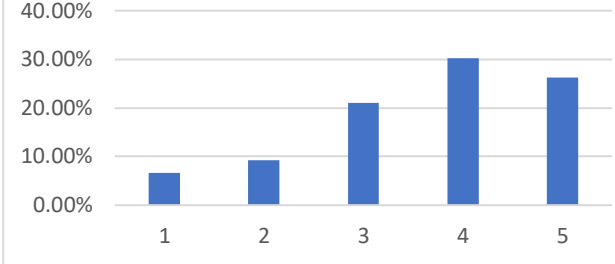
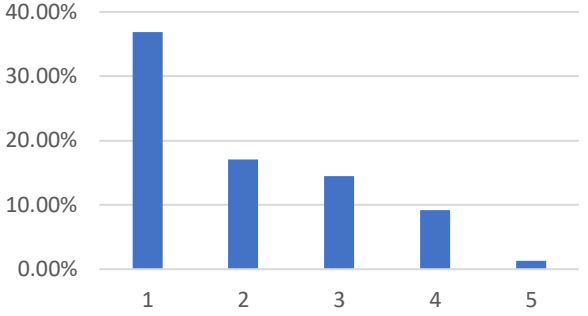
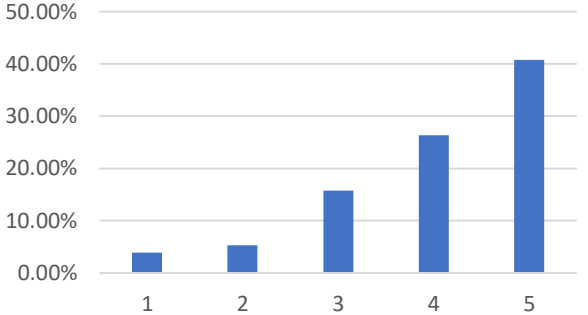
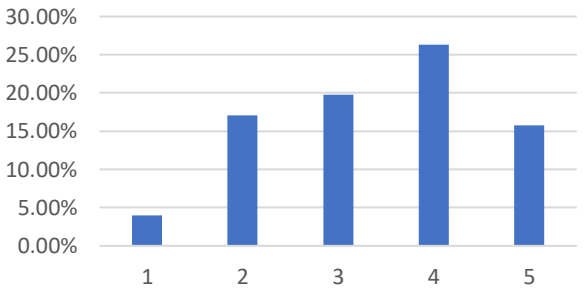
Part time course (2 years)	<div style="text-align: center;">6.19</div> 
Fees	<div style="text-align: center;">6.20</div> 
Other	<p>2 opportunities to manage real-life projects for companies</p> <p>Full time course (2 years)</p> <p>Participation of three European Universities and travelling of all students to each of them</p> <p>Subject matter and staff, accreditation from professional association</p> <p>full access to laboratory and cooperation with food industry</p> <p>Affiliation to the Agricultural University of Athens, joint organization with Food Science Department of AUA</p> <p>Scholarships for grad students</p>

Table 14 Competitive advantage/selling point of individual Master Programs

	What is the target group for your own MSc program?				
Students	To a small extent			To a large extent	
	1	2	3	4	5

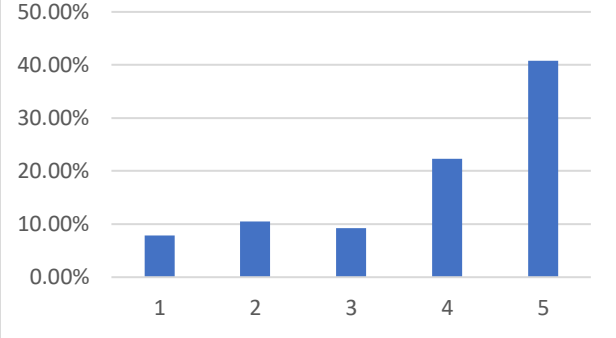
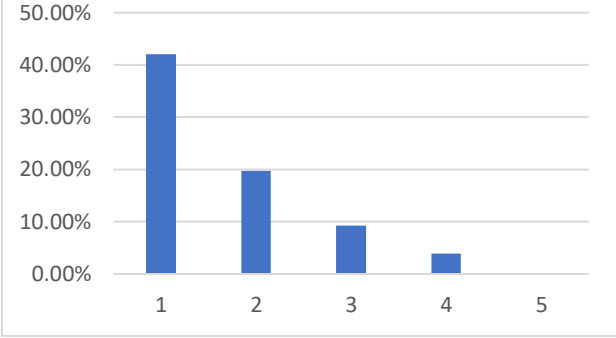
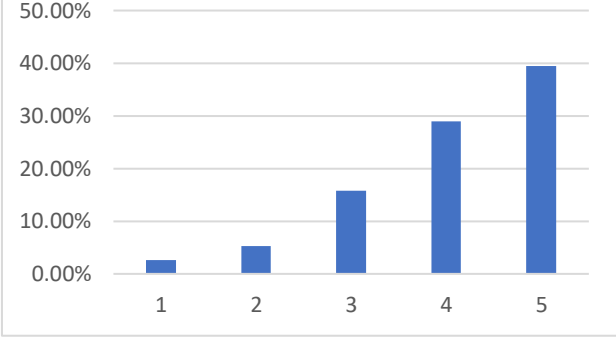
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<p>Doctors / Medical science employees</p>		<p style="text-align: center;">7.1</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>37.00%</td> </tr> <tr> <td>2</td> <td>17.00%</td> </tr> <tr> <td>3</td> <td>14.00%</td> </tr> <tr> <td>4</td> <td>9.00%</td> </tr> <tr> <td>5</td> <td>1.00%</td> </tr> </tbody> </table>	Category	Percentage	1	37.00%	2	17.00%	3	14.00%	4	9.00%	5	1.00%	
Category	Percentage														
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2	17.00%														
3	14.00%														
4	9.00%														
5	1.00%														
<p>Agriculture / Science employees</p>		<p style="text-align: center;">7.2</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4.00%</td> </tr> <tr> <td>2</td> <td>5.00%</td> </tr> <tr> <td>3</td> <td>15.00%</td> </tr> <tr> <td>4</td> <td>26.00%</td> </tr> <tr> <td>5</td> <td>40.00%</td> </tr> </tbody> </table>	Category	Percentage	1	4.00%	2	5.00%	3	15.00%	4	26.00%	5	40.00%	
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<p>Entrepreneurs</p>		<p style="text-align: center;">7.3</p>  <table border="1"> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>4.00%</td> </tr> <tr> <td>2</td> <td>17.00%</td> </tr> <tr> <td>3</td> <td>20.00%</td> </tr> <tr> <td>4</td> <td>26.00%</td> </tr> <tr> <td>5</td> <td>15.00%</td> </tr> </tbody> </table>	Category	Percentage	1	4.00%	2	17.00%	3	20.00%	4	26.00%	5	15.00%	
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<p>Engineers</p>	<p style="text-align: center;">7.4</p>  <table border="1"> <caption>Data for Engineers</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>8.00%</td> </tr> <tr> <td>2</td> <td>10.00%</td> </tr> <tr> <td>3</td> <td>9.00%</td> </tr> <tr> <td>4</td> <td>22.00%</td> </tr> <tr> <td>5</td> <td>40.00%</td> </tr> </tbody> </table>	Category	Percentage	1	8.00%	2	10.00%	3	9.00%	4	22.00%	5	40.00%
Category	Percentage												
1	8.00%												
2	10.00%												
3	9.00%												
4	22.00%												
5	40.00%												
<p>Lawyers</p>	<p style="text-align: center;">7.5</p>  <table border="1"> <caption>Data for Lawyers</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>42.00%</td> </tr> <tr> <td>2</td> <td>20.00%</td> </tr> <tr> <td>3</td> <td>10.00%</td> </tr> <tr> <td>4</td> <td>4.00%</td> </tr> <tr> <td>5</td> <td>0.00%</td> </tr> </tbody> </table>	Category	Percentage	1	42.00%	2	20.00%	3	10.00%	4	4.00%	5	0.00%
Category	Percentage												
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3	10.00%												
4	4.00%												
5	0.00%												
<p>Food business employees</p>	<p style="text-align: center;">7.6</p>  <table border="1"> <caption>Data for Food business employees</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2.00%</td> </tr> <tr> <td>2</td> <td>5.00%</td> </tr> <tr> <td>3</td> <td>16.00%</td> </tr> <tr> <td>4</td> <td>29.00%</td> </tr> <tr> <td>5</td> <td>39.00%</td> </tr> </tbody> </table>	Category	Percentage	1	2.00%	2	5.00%	3	16.00%	4	29.00%	5	39.00%
Category	Percentage												
1	2.00%												
2	5.00%												
3	16.00%												
4	29.00%												
5	39.00%												
<p>Other</p>	<p>Graduates Food tech / biotech BSc students Food Technologist food technologists Food science, chemical engineering graduates BSc science students Government authorities</p>												

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	<i>Graduates of other science-based disciplines (e.g., microbiology, public health, nutritional sciences) seeking employment in the food industry food control authorities - inspectors and government officials</i>
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Table 15 target group for your own MSc program

Regarding the importance of the business direction in the postgraduate programs, the answers reveal a small differentiation between the subjects of business administration and the subjects of entrepreneurship and innovation. The dimensions of management, such as food supply chain management, agri-food marketing and consumer behavior, are more significant, and we can say that the dimensions of entrepreneurship and innovation follow.

About the subjects of food science, we see that greater attention is focused on the items directly related to food, quality and safety, as well as to R&D activity for the food development. On the contrary, the dimensions of engineering, such as internal processes or those of packaging and labeling that are production processes, are not so prevalent. However, the study and finally the re-engineering of these processes can lead to innovation and diversification in the food products.

So, we can say that the importance of the main subject of food science and food technology is highlighted by the academic experts. Then the management dimension emerges as quite important especially in specific subjects such as quality control and marketing and then follows the engineering subjects such as production management. The dimension of innovation and entrepreneurship seems to be lacking in this qualitative assessment.

This view of the academic experts becomes even more important as they can evaluate these subjects perfectly, since they are the same as those offered in their postgraduate programs.

At any case, experts agree that the main body of such a postgraduate program should be technical courses in the field of food science (Table 1.2.13). In addition, however, experts recognize the high need for subjects such as the administrative dimension of businesses to exist in such a program (Table 1.2.14).

Regarding what they consider as important competitive advantages of their own curricula, at educational, academic and operational level, the conclusions that emerged were very interesting.

Initially, in the academic section, they consider as strengths the fields of food processing, food quality and food & health. As their lesser strength, they consider the dimensions of engineering and entrepreneurship such as Food Packaging and Labeling, Logistics and Transportation and Entrepreneurship in the Food Industry. Finally, fields such as Traditional foods - Superfoods follows.

Also, in the field of free answers, the Close Relationship with the Real (business / industrial) World through the internships and projects for companies, the Organizational Economics Approach, the Institutional Networks, etc. have been identified as important educational elements of their programs.

Then, in the academic dimension, experts are highlighting as important elements of their programs, mainly the Links with Research programs and the Cooperation with other universities / institutes. Surprise is since

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they do not recognize the importance of laboratories very high. An educational subject so close to chemistry, technology and new product development would be expected to support and present as much as possible the existence of modern laboratories.

Regarding the operation of the programs, it seems that the process of distance learning, using Moodle technology for example, is not very common. In addition, we see that universities offer both curricula of one and two years.

Finally, the experts mentioned the prospective students whom they are aiming for and whose interest they wish to spur. In this direction, agriculture science employees, engineers and food business employees are the first target and then the entrepreneurs follow. In addition, experts also reported the food technologists as well as graduates of other science-based disciplines (microbiology, public health, nutrition sciences) seeking employment in the food industry.

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2.2 Conclusions

The second deliverable of the first work package WP1 was the investigation of similar postgraduate study programs in Europe. In this direction the following three research areas were created with the respective universities as research leaders.

- Europe Area 1 (UCD): U.K., Ireland, Denmark, Poland, Lithuania, Latvia, Estonia, Finland, Sweden, Germany.
- Europe Area 2 (UNISA): Spain, Italy, Portugal, France, Austria, Luxemburg, Belgium, Netherlands, Turkey (UNISA).
- Europe Area 3 (UAegean): Greece, Cyprus, Bulgaria, Romania, Croatia, Slovenia, Hungary, Slovakia, Czechia, Malta.

The research has evolved into two phases:

- Research for similar postgraduate courses at universities in Europe.
- Qualitative research through questionnaires to academic experts in food science.

PART A

In the first part, researchers had to locate the corresponding postgraduate programs through an online survey. They then had to analyze and describe the curricula and draw conclusions that would be useful in the design of the FOODI master course.

An extensive survey was conducted through the Google search engine and the postgraduate research webpages. Then, specific information relating to course details, such as curricula, subject areas covered, modules studied and allocation of ECTS credits were gleaned, where possible, from each Higher Educational Institution (HEI) website.

In some cases, universities' websites did not provide information on curricula (such as the 6 Plovdiv University programs in Bulgaria), or this information was not in English. Additionally, only some HEIs offer more detailed Course, Curriculum or Module information as separate downloadable pdf files. Thus, it is somewhat difficult and largely subjective when trying to categorise those modules which are indicated, particularly in relation to categorisation as Science & Technology or Engineering, or as Entrepreneurship & Innovation.

The results of this first phase of the survey are described as follows.

A total of **134 MSc Courses** at European universities were identified.

60 postgraduate programs (45%) were found in **Europe Area 1**, with most of them in England (42%) and Ireland (18%).

39 postgraduate programs (28%) were found in **Europe Area 2**, most of them in Italy (34%).

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35 postgraduate programs (27%) were identified in **Europe Area 3**, most of them in Greece (34%).

All the selected courses are related to food and have at least a food technology/science/engineering dimension or a food innovation dimension.

However, only 5 from 60 courses in Europe Area 1, 5 from 39 in Europe Area 2 and 9 from 35 in Europe Area 3 referred specifically to Innovation and Entrepreneurship (14%).

From the above data, it is clear that the overwhelming majority of programs are targeting the regions of Food Technology, Science and Engineering and only 15%-25% of them have a more entrepreneurial perspective concerning the food industry.

This picture is also reflected in the detailed study of the curricula and the corresponding courses.

The lack of courses on entrepreneurship and innovation is made even clearer by studying curricula. Even in programs that include the concept of management, such as MBAs, the only business dimension that develops is that of quality control, law, marketing, and quantitative methods. There is therefore a large gap in the analysis of the business environment, the study of entrepreneurship and the emergence of innovation as the main pillar of the development of businesses in the food sector.

Some other major characteristics of the curricula were identified among the examined courses are international dimension; regional/industrial valorisation; curriculum flexibility; transdisciplinary. Often, it is found also some element of valorisation of local food culture or the relationship with industries in the region. Flexibility of the master course, allowing an extensive tailoring of the subjects taught, is also very frequently found.

It appears that very often the engineering dimension is less significant. Also, the innovation dimension is frequently lacking in the curricula examined. Less frequently but still significant is the number of curricula with little or no credits dedicated to entrepreneurship. Therefore, the weakness of the curricula with respect to the expected design of FOODI where categorized in the following cases: less entrepreneurship; less innovation; less engineering; less training.

All the above mentioned MSc courses includes a Master Thesis for the completion of the course.

Finally, the duration of the programs ranges from 3 to 4 semesters of study with a corresponding educational result of 90 – 120 ECTS.

PART B

For the second part of the research, European universities created lists of qualified academics who could participate in the research and with their opinion contribute to the creation of FOODI Master Course.

From this sample, researchers received answers from **75 Academic Experts** from whole the Europe.

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A weakness of the research is the fact that although the largest number of postgraduate programs is found in northern Europe, experts from northern Europe participating in the second part of the research are less than those of the other two regions.

However, we therefore conclude that the final panel of participants gives a representative picture of the European territory, the responses represent the whole of Europe's reality, and this way the academic experience developed in Europe on postgraduate food education programs can be safely captured.

Concerning this part's conclusions, we can mention the following.

The modules of management, such as food supply chain management, agri-food marketing and consumer behavior, are more significant, and we can say that the dimensions of entrepreneurship and innovation follow.

Concerning the food science, there is a greater attention on the modules of food quality and safety, as well as to R&D activity for the food development. On the contrary, the modules of engineering, such as internal processes or those of packaging and labeling are not so prevalent.

So, we can say that the importance of the main subject of food science and food technology is highlighted by the academic experts. Then the management dimension emerges as quite important especially in specific subjects such as quality control and marketing and then follows the engineering subjects such as production management. The dimension of innovation and entrepreneurship seems to be lacking in this qualitative assessment.

At any case, experts agree that the main body of such a postgraduate program should be technical courses in the field of food science. However, experts recognize the high need for subjects such as the business perspective in such a program.

Academic experts consider as strengths of their postgraduate programs mainly the fields of food processing, food quality and food & health. Additionally, the close relationship with the real (business / industrial) world through the internships and projects for companies as well as the institutional networks have been identified as important educational elements of their programs.

Regarding the academic reality, experts highlight as important elements of their programs, mainly the Links with Research programs and the Cooperation with other universities / institutes. As for the operational issues, the majority of the existing MSc courses offer part- and full-time curricula and there is a lack in offering distance learning programs.

Finally, the experts mentioned as prospective student, agriculture science employees, engineers and food business employees as first target and then entrepreneurs, food technologists and graduates of other science-based disciplines seeking employment in the food industry.

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