



## Deliverable 2.4. Design of STEPS courses

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## EXECUTIVE SUMMARY

The MSc STEPS program course - *“Sustainable food production systems”* - aims to analyse and to put into service the agri-food production chains, while it is considered to have a considerable impact on economic, social and environmental points. This master program emphasizes the application of quantitative tools for assessing the performance of sustainability.

Descriptions of the MSc program courses are provided along with the key scientific topics addressed. The courses efficiency and relevance are presented based on high-level learning outcomes. The design provided guidelines for the development of the content of the courses, the educational methodologies and material, the utilisation of ICT tools, the combination of traditional teaching with student-centred or blended learning approaches etc. ECTS credits assigned to courses, in accordance with the estimated workload in terms of formal lectures, laboratory activities, projects and reports to be delivered by students, individual or team-based activities.

This report presents the design of STEPS courses.

Scientific staff of AUT, UHZ, UNBI, USAMVB and ReadLab design the courses related to food engineering, quality and safety.

Scientific staff of UET, UHZ, UC, UNSA, CULS, AUA and ReadLab design the courses related to Food production systems management.

Ministry of education, science, culture and sport of Una-Sana Canton (MESCS USK) partner provided guidelines in order to ensure that the courses of the MSc programme are designed in accordance with the requirements of the educational systems of the partner countries.

## **1. INTRODUCTION**

### **1.1 SCOPE**

Modern agriculture and the closely related production and distribution of food are complex activities with ever-increasing interactions with the natural, social and economic environment. Understanding and changing paradigms of ongoing education and training effort of experts is achieved through these programs of study on agriculture and food technology.

This report provides the design of the courses which developed under the two working groups analysed in D2.1 and by the teaching staff of HEIs and EU partners presented in D2.2.

### **1.2 TARGET GROUPS**

This report is addressed to the partners of the STEPS project, as well as to the interested teaching staff, students, trainees, administrative and technical staff.

### **1.3 STRUCTURE**

Chapter 1 contains an overview of this document, providing its Scope, the target groups and Structure.

Chapter 2: provides information on design of Steps course description and

Chapter 3: includes the conclusions and recommendations.

## **2. DESIGN OF STEPS COURSE DESCRIPTION**

### **2.1 STEPS Master program in HEI's Institution**

According to STEPS project plans, the master study programs will be implemented at universities in the Western Balkan countries (Albania, Bosnia and Herzegovina and Kosovo).

This programme was structured based on ECTS credits. For Agricultural University of Tirana, European University of Tirana, University "Haxhi Zeka" of Peja, Universum College and University of Sarajevo, the STEPS Master program will be organised into four semesters and will account a total of 120 ECTS credits. For the University of Bihac, STEPS Master will be of one year, with 60 ECTS credits.

The Course Curriculum includes both Core Courses and Elective courses.

According to the target groups and the analysis of needs, the scientific background and the experience of the partners, the courses/subjects have been organized in two groups:

- 
- Group 1 - Food engineering, quality and safety;
  - Group 2 - Food production systems management.
  - Each semester will be developed on 15 weeks/semester.

The **Core Courses** will be mandatory for all HEI's universities. For the first semester will be 3 courses from Group I and 3 courses from Group II, meaning a total of 6 core courses, with 5 ECTS per course and a total of 30 ECTS. In Albania courses will have 6 ECTS, so the core courses will comprise 36 ECTS in total.

The Core Courses are:

- Fundamentals of sustainable agri-food systems;
- Agricultural and food industry waste management;
- Advanced food science and technology;
- Governance, policy and legislation in the agri-food sector;
- Food Ethics;
- Research Methodologies and Tools.

The **Elective courses** will consider the specificity and expertise of each HEIs institution. The second and third semesters of study are created separately for each of the HEI universities that will implement the study program, according to the capacities of the university and the results of stakeholder analysis based on the labor market requirements. The elective courses have 5 ECTS per course and a total of 30 ECTS/semester, and Universum College has 7.5 ECTS per each course with a total 30 ECTS/semester.

All these information are presented in the next four tables.



**2<sup>nd</sup> year**

No.	Course title	Formative category	3 <sup>rd</sup> Semester (15 weeks)						4 <sup>th</sup> Semester (15 weeks)						Total per semester ECTS
			Lect.	S.	Lab.	P.	ECTS	ET	Lect.	S.	Lab.	P.	ECTS	ET	
<b>III. ELECTIVE COURSES</b>															
1	Management of Sustainable Food Supply Chain	Elective; MFPS	30	30			6	W+O							6
2	Marketing of Sustainable Agri-Food Products	Elective; MFPS	30	30			6	W+O							6
3	Innovation and Entrepreneurship for Sustainable Food Production Systems	Elective; MFPS	30	30			6	W+O							6
4	Sustainable Food Value Chain Management	Elective; MFPS	30	30			6	W+O							6
5	Consumer science and sustainable consumption	Elective; MFPS	30	30			6	W+O							6
6	Data Analysis and Decision-making	Elective; MFPS	30	30			6	W+O							6
7	Total Quality Management in the Agri-Food Sector	Elective; MFPS	30	30			6	W+O							6
8	Business economics and international trade in the agri-food sector	Elective; MFPS	30	30			6	W+O							6
<b>Total elective courses: ECTS/semester</b>							<b>30</b>								<b>30</b>
1	Professional Practice	Compulsory							0			60	6	W+O	6
2	<b>MASTER THESIS</b>	Compulsory							0		240		24	W+O	24
<b>Total compulsory professional practice and master thesis: ECTS/semester</b>													<b>30</b>		<b>30</b>
<b>Total year courses: ECTS/year</b>							<b>30</b>						<b>30</b>		<b>60</b>



**Table 2. STEPS MASTER COURSE IN BOSNIA AND HERTEGOVINA  
Course Curriculum for UNSA**

**1<sup>st</sup> year**

No.	Course title	Formative category	1 <sup>st</sup> Semester (15 weeks)						2 <sup>nd</sup> Semester (15 weeks)						Total per semester ECTS
			Lect.	S.	Lab.	P.	ECTS	ET	Lect.	S.	Lab	P.	ECTS	ET	
<b>I. CORE COURSES</b>															
1	Fundamentals of food production systems	Core; FEQS	30	-	15	-	5	W							5
2	Agricultural and food industry waste management	Core; FEQS	30	15	-	-	5	W							5
3	Advanced food science and technology	Core; FEQS	15	-	30	-	5	W							5
4	Governance, policy and legislation in the agri-food sector	Core; MFPS	30	15	-	-	5	W + O							5
5	Food Ethics	Core; MFPS	30	15	-	-	5	W							5
6	Research methodologies and tools	Core; MFPS	15	15	-	15	5	W+ O							5
<b>Total core courses: ECTS/semester</b>							<b>30</b>								<b>30</b>
<b>II. ELECTIVE COURSES</b>															
1	Sustainable land management	Elective; MFPS							30	-	15	-	5	W + O	5
2	Waste and recycling technologies in agriculture	Elective; FEQS							30	-	-	15	5	W + O	5
3	Nutritionism	Elective; FEQS							30	15	-	-	5	Written	5
4	Rural development	Elective; MFPS							30	15	-	-	5	W	5
5	Harvesting and post-harvesting technologies for agricultural products	Elective; FEQS							30	15	-	-	5	W	5
6	Low input agriculture	Elective; FEQS							30	-	15	-	5	W	5
7	Consumer science and sustainable consumption	Elective; MFPS							30	15	-	-	5	W	5
8	Total quality management in the agri-food sector	Elective; MFPS							15	-	15	15	5	W + Practical	5
9	Agri-food economics	Elective; MFPS							30	-	-	15	5	W	5
10	Business economics and international trade in the agri-food sector	Elective; MFPS							30	-	-	15	5	W	5
<b>Total elective courses: ECTS/semester</b>													<b>30</b>		<b>30</b>
<b>Total year courses: ECTS/year</b>							<b>30</b>						<b>30</b>		<b>60</b>

## 2<sup>nd</sup> year

No.	Course title	Formative category	3rd Semester (15 weeks)						4th Semester (15 weeks)						Total per semester ECTS	
			Lect.	S.	Lab.	P.	ECTS	ET	Lect.	S.	Lab.	P.	EC TS	ET		
<b>III. ELECTIVE COURSES</b>																
1	Sustainable technology of dairy products	Elective; FEQS	30	-	15	-	5	W + O								5
2	Sustainable technology of fruit and vegetable processing products	Elective; FEQS	30	-	15	-	5	W + O								5
3	Sustainable technology of meat products	Elective; FEQS	30	-	15	-	5	W + O								5
4	Sustainable technology of wine, beer and spirits	Elective; FEQS	30	-	15	-	5	W + O								5
5	Sustainable technology of bakery products	Elective; FEQS	30	-	15	-	5	W + O								5
6	Packaging technology	Elective; FEQS	15	-	15	15	5	W + O								5
7	Innovation and entrepreneurship for sustainable food production systems	Elective; MFPS	30	15	-	-	5	W								5
8	Marketing of sustainable agri-food products	Elective; MFPS	30	15	-	-	5	W								5
9	Project cycle management	Elective; MFPS	30	-	-	15	5	W								5
10	Sustainable food value chain management	Elective; MFPS	30	-	-	15	5	W								5
<b>Total optional courses: ECTS/semester</b>							<b>30</b>									<b>30</b>
1	<b>MASTER THESIS</b>	<b>Compulsory</b>												<b>30</b>	<b>Oral</b>	<b>30</b>
<b>Total compulsory master thesis: ECTS/semester</b>														<b>30</b>		<b>30</b>
<b>Total year courses: ECTS/year</b>							<b>30</b>							<b>30</b>		<b>60</b>

**Table 3. STEPS MASTER COURSE IN BOSNIA AND HERTEGOVINA**  
**Course Curriculum for UNBI**

**1<sup>st</sup> year**

No.	Course title	Formative category	1 <sup>st</sup> Semester (15 weeks)						2 <sup>nd</sup> Semester (15 weeks)						Total per semester ECTS	
			Lect.	S.	Lab.	P.	ECTS	ET	Lect.	S.	Lab	P.	ECTS	ET		
<b>I. CORE COURSES</b>																
1	Fundamentals of Agri-Food Production Systems	Core; FEQS	45	15	-	15	5	W +O								5
2	Agricultural and Food Industry Waste Management	Core; FEQS	30	15	15	-	5	W +O								5
3	Advanced Food Science and Technology	Core; FEQS	30	15	15	-	5	W +O								5
4	Governance, Policy and Legislation in the Agri-Food Sector	Core; MFPS	15	15	-	15	5	W +O								5
5	Food Ethics	Core; MFPS	30	15	-	15	5	W +O								5
6	Research Methodologies and Tools	Core; MFPS	30	15	-	15	5	W +O								5
<b>Total core courses: ECTS</b>							<b>30</b>									<b>30</b>
<b>II. ELECTIVE COURSES (min 15 ECTS)</b>																
1	Sustainable Land Management	Elective; MFPS							30	15	15	-	5	W +O		5
2	Harvesting and Post-Harvesting Technologies for Agricultural Products	Elective; FEQS							30	15	15	-	5	W +O		5
3	Low Input Agriculture	Elective; FEQS							30	15	-	15	5	W +O		5
4	Total Quality Management in the Agri-Food Sector	Elective; MFPS							30	15	-	15	5	W +O		5
5	Sustainable Technology of Dairy Products	Elective; EQS							30	15	15	-	5	W +O		5
6	Sustainable Technology of Meat Products	Elective; EQS							30	15	15	-	5	W +O		5

7	Sustainable Animal Production	Elective; FEQS							30	15	-	15	5	W +O	5
8	Sustainable Plant Production	Elective; FEQS							30	15	-	15	5	W +O	5
9	Animal Food Technology Science	Elective; FEQS							30	15	15	15	5	W +O	5
10	Marketing of Sustainable Agri-Food Products	Elective; MFPS							30	15	-	15	5	W +O	5
<b>Total elective courses: ECTS</b>													<b>min 15</b>		<b>30</b>
	<b>Master thesis</b>	<b>Compulsory</b>											<b>15</b>	Oral	
<b>Total year courses: ECTS/year</b>													<b>30</b>		<b>60</b>

**Table 4. STEPS MASTER COURSE IN KOSOVO  
Course Curriculum for UHZ and UC**

**1<sup>st</sup> year**

No.	Course title	Formative category	1 <sup>st</sup> Semester (15 weeks)						2 <sup>nd</sup> Semester (15 weeks)						Total per semester ECTS
			Lect.	S.	Lab.	P.	ECTS	ET	Lect.	S.	Lab	P.	ECTS	ET	
<b>I. CORE COURSES</b>															
1	Fundamentals of food production systems	Core; FEQS	30		30		5	W+ O							5
2	Agricultural and food industry waste management	Core; FEQS	30		30		5	W+ O							5
3	Advanced food science and technology	Core; FEQS	30		30		5	W+ O							5
4	Governance, policy and legislation in the agri-food sector	Core; MFPS	30	15	15		5	W+ O							5
5	Food Ethics	Core; MFPS	30	15	15		5	W+ O							5
6	Research methodologies and tools	Core; MFPS	30	15	15		5	W+ O							5
<b>Total core courses: ECTS/semester</b>							<b>30</b>								<b>30</b>
<b>II. ELECTIVE COURSES</b>															
1	Quality System Development, Management and Shelf Life Assessment of Food	Elective; FEQS							30		30		5	W+ O	5
2	Quality and Sustainability of Plant-source Food Production	Elective; FEQS							30		30		5	W+ O	5
3	Traceability systems of food products	Elective; FEQS							30		30		5	W+ O	5
4	Nutrition	Elective; FEQS							30		30		5	W+ O	5
5	Innovative practices of harvesting and post harvesting	Elective; FEQS							30		30		5	W+ O	5
6	Sustainable Ecology for Fish Management and Conservation	Elective; FEQS							30		30		5	W+ O	5
7	Environmental Chemistry towards Food Processing	Elective; FEQS							30		30		5	W+ O	5
<b>Total elective courses: ECTS/semester</b>													<b>30</b>		<b>30</b>
<b>Total year courses: ECTS/year</b>							<b>30</b>						<b>30</b>		<b>60</b>

## 2<sup>nd</sup> year

No.	Course title	Formative category	3rd Semester (15 weeks)						4th Semester (15 weeks)						Total per semester ECTS
			Lect.	S.	Lab.	P.	ECTS	ET	Lect.	S.	Lab.	P.	ECTS	ET	
<b>III. ELECTIVE COURSES</b>															
1	Sustainable technology of dairy products	Elective; FEQS	30		30		5	W + O							5
2	Sustainable technology of fruit and vegetable processing products	Elective; FEQS	30		30		5	W + O							5
3	Sustainable Use of the plant protection products	Elective; FEQS	30		30		5	W + O							5
4	Sustainable technology of wine, beer and spirits	Elective; FEQS	30		30		5	W + O							5
5	Sustainable technology of bakery products	Elective; FEQS	30		30		5	W + O							5
6	Consumer science and sustainable consumption	Elective; FEQS	30		30		5	W + O							5
7	Innovation and entrepreneurship for sustainable food production systems	Elective; MFPS	30		30		5	W							5
8	Marketing of sustainable agri-food products	Elective; MFPS	30		30		5	W							5
9	Total quality management in the agri-food sector	Elective; MFPS	30		30		5	W							5
10	Sustainable food value chain management	Elective; MFPS	30		30		5	W							5
<b>Total optional courses: ECTS/semester</b>							30								30
1	<b>MASTER THESIS</b>	<b>Compulsory</b>											<b>30</b>	<b>Oral</b>	<b>30</b>
<b>Total compulsory master thesis: ECTS/semester</b>													<b>30</b>		<b>30</b>
<b>Total year courses: ECTS/year</b>							<b>30</b>						<b>30</b>		<b>60</b>

## Course Curriculum for UC

### 2<sup>nd</sup> year

No.	Course title	Formative category	3 <sup>rd</sup> Semester (15 weeks)						4 <sup>th</sup> Semester (15 weeks)						Total per semester ECTS
			Lect.	S.	Lab.	P.	ECTS	ET	Lect.	S.	Lab.	P.	ECTS	ET	
<b>III. ELECTIVE COURSES</b>															
1	Management of Sustainable Food Supply Chain	Elective; FEQS	30	5	13	25	7.5	W+O							7.5
2	Marketing of Sustainable Agri-Food Products	Elective; FEQS	26	8	13	30	7.5	W+O							7.5
3	Innovation and Entrepreneurship for Sustainable Food Production Systems	Elective; FEQS	30	5	13	25	7.5	W+O							7.5
4	Sustainable Food Value Chain Management	Elective; FEQS	30	8	8	30	7.5	W+O							7.5
5	Consumer science and sustainable consumption	Elective; FEQS	26	13	5	30	7.5	W+O							7.5
6	Data Analysis and Decision-making	Elective; FEQS	30		13	30	7.5	W+O							7.5
7	Total Quality Management in the Agri-Food Sector	Elective; MFPS	30	13	13	15	7.5	W+O							7.5
Total optional courses: ECTS/semester							30								
1	Master thesis	Compulsory							39	20	50	45	30	W+O	30
Total compulsory master thesis: ECTS/semester													30		30
Total year courses: ECTS/year							30						30		60

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**Scientific staff** of the partner countries of HEIs and EU countries are organised in working groups, according to the courses that HEIs delivered during the implementation of the MSc program and assess their needs in terms of specific scientific topics that will be included in the course content.

All consortium partners were identified in these working groups by a list of names and the contact information of each person according to their scientific background and STEPS Course Description (Table 6).

The main responsibility of EU institutions is the transfer of knowledge on scientific, technical and organizational aspects, which will boost the level of education and the capacity of HEIs partner countries.

Scientific staff from HEIs partner countries provided major contribution to the design of courses. Skills in Science, Technology, Engineering and Mathematics (STEM) are becoming an increasingly important part of basic literacy in today's knowledge economy. Scientific staff from EU partner countries offered guidance on the interrelation of scientific topics addressed by the courses and on the development of STEMS curriculum, which, based on the idea of educating students, means four specific disciplines — science, technology, engineering and mathematics — in an interdisciplinary and applied approach. Rather than teach those four disciplines as separate subjects, STEM integrates them into a cohesive learning paradigm based on real-world applications.

Through STEM, students develop key skills including:

- problem solving
- creativity
- critical analysis
- teamwork
- independent thinking
- initiative
- communication
- digital literacy.

## **2.2. Methodology to Design the Course Description**

The mission of the STEPS MSc program is justified by elements of relevance and opportunity in relation to the objectives of education and scientific research, as well as with the national qualification list and, respectively, with the requirements of the labour market.

All these documents (Course Curriculum, List of Courses – Core and Elective, Number of Hours per activity, Number of ECTS per course, Names of Teachers, List of Topics for lectures and List of topics for



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practical applications) have been in direct connection with the documents for the accreditation elaborated at National level by HEIs universities.

Descriptions of the MSc program courses will be provided along with the key scientific topics addressed. Courses efficiency and relevance will be presented based on high-level learning outcomes. The design will also provide guidelines for the development of the content of the courses, the educational methodologies and material, the utilisation of ICT tools, the combination of traditional teaching with student-centred or blended learning approaches etc.

The Course Description will include:

- course unit title;
- type of course (core or elective);
- semester of delivery;
- number of ECTS credits;
- course description and link with the problems and needs that it intends to address;
- scientific topics, methods and approaches that will be analysed in relation to the specific problems and needs;
- high-level learning outcomes;
- course contents and proposed sections;
- teaching methods and learning activities proposed, including laboratory experiments and software simulations;
- proposed evaluation methods and grading criteria.

During the last period (January – March 2020) there were permanent consultations regarding the descriptions for each course included in List of Courses from D2.1 report.

Also, according to the methodology proposed during the meeting in Sarajevo from December, the teaching staff of HEIs partners that are responsible for each course according to the competencies, developed the Course Description in English, based on a Template proposed by the Greek teams, AUA and Read Lab (Annex 1).

During the Sarajevo meeting, the participants were organised in working groups based on their specialization and background, in order to prepare the MSc content and the learning outcomes for each course. The list of courses and the Curricula, which is summarized in D2.1, was given to each partner in order to elaborate the Course description following these aspects: title of course, if the description already exist or not, the category of the course (engineering or managerial), type of course (core or elective). Each partner proposed the teacher who will elaborate the Course Description and gave the detailed contact. Also, was proposed the team leader from EU supporting partners.

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All participants contributed by filling all necessary information and after that, they were split in subgroups in order to create the general description and learning outcomes. The working groups gave priority to the core courses, equally dividing 3 courses per each group (engineering and managerial), and some of elective courses. For the staff responsible for the course that was not present in the meeting, were given only the names and contacts. After the compilation in accordance with the template provided by the Program countries, the general description of the courses was made, including list of references, topics of course (10-12), the learning outcomes using Bloom's taxonomy (5-7). The whole results of the Working Groups were uploaded on Google Drive and were presented by the expert representative of each subgroups. It was recommended for the core courses to be unified for all partners according to 5 ECTS (AUT and EUT is using 6 ECTS, and UC using 7.5 ECTS). These were the preliminary info and it should be consulted with other colleagues, and a coordinator per team for each course, should be for HEIs partners, because the program partners are reviewers.

The EU partners were monitors and discussed with each responsible person for the information included in the description.

Each HEIs partner elaborated its own Course Description according to the internal rules included in the documents for the Accreditation Procedures. We are presenting in this material only one example of Course Description for each HEIs participant, for only one Core Courses - "Fundamentals in sustainable agri food systems" (Annex 2). The other Courses Descriptions for 5 of Core Courses and 72 of Elective Courses will be present in platforms of courses and also are part of Reports for Accreditation Master Program in HEIs countries..

For this task, the scientific staff from all HEIs partners was organised in working groups (Table 6) based on the two groups of courses and on their scientific background and capacity:

- Courses related to food engineering, quality and safety will be designed by AUT, UHZ, and UNBI. Scientific staff of USAMVB and ReadLab will act mainly as mentors for their colleagues from the HEIs partner countries.

- Courses related to food production systems management will be designed by EUT, UC and UNSA. Scientific staff of CULS, AUA and ReadLab will act mainly as mentor for their colleagues from HEIs partner countries.

Also, scientific staff of HEIs partners will be involved in the development of educational material, research labs, experiments simulations and accompanying material for the STEPS platform.

**Table 6. STEPS STRUCTURE: LIST OF THE COURSES THAT ARE PROPOSED BY PC HEIs, TEACHING STAFF +EMAILS, TEAM LEADER FOR PC & TEAM LEADER FOR PROGRAM COUNTRIES**

- GROUP I: Food engineering, quality and safety**

<b>Title of courses</b>	<b>General course description/ Person responsible/Team leader for HEIs partners and team leader support</b>	<b>Team Support<sup>1</sup>: program country</b>
Fundamentals of sustainable agri food systems	<b>FEQS core course</b> AUT: Dr. Luziana Hoxha (lhoxha@ubt.edu.al), Dr. Alketa Shehaj (ashehaj@ubt.edu.al) UNSA: Prof.dr. Sabahudin Bajramovic (s.bajramovic@ppf.unsa.bo) UNBI: Prof. As. Emir Mujic (emir.mujic@unbi.bo), Suzana Jahić, Vildana Jogić UHZ : Prof. As. Nexhdet Shala (neshdel.shala@unhz.eu) Supporter: USAMVB, Lect.dr. Maria Toader (mirelatoadervali@yahoo.com) and CULS: Prof.dr. Lošťák Michal (lostak@pef.czu.cz)	Lect.dr. Maria Toader Prof.dr. Roman Gheorghe Valentin Lect. dr. Alina Maria Ionescu Prof.dr. Viorel Ion Prof.dr. Lošťák Michal Prof. dr. Mircea Mihalache
Agricultural and food industry waste management	<b>FEQS core course</b> AUT: Prof. Assoc. Anila Kopali (anilakopali@gmail.com), Dr.Anisa Peculi (apeculi@ubt.edu.al) UNSA: Prof.dr. Zlatan Saric (a.saric@ppf.unsa.bo) UNBI: Jasmina Ibrahimpašić (jasmina.ibrahimpasic@unbi.ba), Halid Makić (halid.makic@unbi.ba ) UHZ: Prof.As.dr.Ilir Morina (ilir.morina@unhz.eu) Support: USAMVB, Lect.dr. Mirela Elena Dusa (myreille81@yahoo.com)	Lect.dr. Maria Toader Lect.dr. Mirela Elena Dusa
Advanced food science and technology	<b>FEQS core course</b> AUT: Prof. Dr. Renata Kongoli (rkongoli@ubt.edu.al), Dr. Ilir Lloha, Dr. Fatbardha Lamce	Lect.dr. Maria Toader Lect.dr. Adrian Gheorghe Basa Assoc.Prof. Lenuta Iuliana Epure

<sup>1</sup>review the syllabus developed by Partner HEIs

	UNSA: Prof.dr. Nermina Spaho (n.spaho@ppf.unsa.bo) UNBI: Melisa Oraščanin (melisa.orascanin@unbi.ba melissa.bajramovic@gmail.com ), Mejra Bektašević UHZ: Prof.As.dr.Arsim Elshani (arsim.elshani@unhz.eu) Support: USAMVB, Lect.dr. Adrian Gheorghe Basa (adibasa@yahoo.com)	
Quality System Development, Management and Shelf Life Assessment of Food	<b>FEQS elective course</b> AUT : Prof. Dr. Renata Kongoli (rkongoli@ubt.edu.al), Dr. Ariola Morina UHZ: Astrit Bilalli (astrit.bilalli@unhz.eu) Support: USAMVB, Prof.dr. Gheorghe Valentin Roman (romangv@yahoo.com), Lect.dr. Maria Toader (mirelatoadervali@yahoo.com)	Prof.dr. Gheorghe Valentin Roman, Lect.dr. Maria Toader
Quality and Sustainability of Animal-source Food Production	<b>FEQS elective course</b> AUT: Prof. Myqerem Tafaj (mtafaj@ubt.edu.al) UHZ: Nazmi Hasanaj (nazmi.hasanaj@ubhz.eu) Support: USAMVB, Lect.dr Maria Toader (mirelatoadervali@yahoo.com)	Lect.dr Maria Toader Lect.dr. Cosmin Sonea
Quality and Sustainability of Plant-source Food Production	<b>FEQS elective course</b> UHZ : Prof. As. Dr. Nazmi Hasanaj (nazmi.hasanaj@ubhz.eu) Support: USAMVB: Prof.dr. Viorel Ion (vioreliona@gmail.com)	Lect. dr. Maria Toader Prof.dr. Viorel Ion
Traceability systems of food products	<b>FEQS elective course</b> AUT: Dr. Enkeleda Berberi, Dr. Luziana Hoxha (lhoxha@ubt.edu.al) UHZ: Ibrahim Hoxha (ibrahim.hoxa@unhz.eu) Support: USAMVB, Lect. dr. Maria Toader (mirelatoadervali@yahoo.com) CULS: Prof.dr. Michal Lostak (lostak@pef.czu.cz), Petra Sanova (sanova@pef.czu.cz)	Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Lect.dr. Alina Maria Ionescu, Prof.dr. Lošťák Michal
Innovative product development	<b>FEQS elective course</b> AUT: Dr. Klotilda Marku (ksula@ubt.edu.al) Support: Lect. dr. Maria Toader (mirelatoadervali@yahoo.com) CULS: Prof.dr. Lošťák Michal ( lostak@pef.czu.cz), Lukas Zagata (zagata@pef.czu.cz)	Lect. dr. Maria Toader, Prof.dr. Lošťák Michal

<p>Harvesting and post-harvesting technologies for agricultural products</p> <p>- it is about technologies to harvest the agricultural products, storage types, quality indexes for processing</p>	<p><b>FEQS elective course</b>                  UNSA: Prof.dr. Pakeza Drkenda (p.drkenda@ppf.unsa.bo)                  UNBI: Vildana Jogio (vildana.gojic@unbi.bo), Azra Skender                  Support: USAMVB, Prof.dr. Gheorghe Valentin Roman (romangv@yahoo.com), and                  Read Lab: Alexandros Vouros (vourosalex@gmail.com)</p>	<p>Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Prof.dr Viorel Ion, Lect.dr. Adrian Gheorghe Basa, Assos. Prof. dr. Lenuta Iuliana Epure, Ph.D.Alexandros Vouros</p>
<p>Innovative practices of harvesting and post harvesting</p> <p>-it is about procedure to harvest and processing flow of products</p>	<p><b>FEQS elective course</b>                  AUT: Dr. Erjon Mamoci (mamocie@ubt.edu.al), Prof. Indrit Kullaj (ekullaj@ubt.edu.al)                  UHZ: Prof.As.dr. Bakir Kelmendi (bahir.kelmendi@unhz.eu)                  Support: USAMVB: Prof.dr. Gheorghe Valentin Roman (romangv@yahoo.com) and                  Readlab: Alexandros Vouros (vourosalex@gmail.com)</p>	<p>Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Prof.dr Viorel Ion, Ph.D.Alexandros Vouros</p>
<p>Ecological sustainability for Fish Management and Conservation</p>	<p><b>FEQS: elective course</b>                  AUT- Prof. Spase Shumka (sshumka@ubt.edu.al)                  UHZ: Dr.As.Astrit Bilalli (astrit.bilalli@unhz.eu)                  Support: USAMVB: Lect.dr. Maria Toader (mirelatoadervali@yahoo.com) and                  CULS: Michal Lostak: lostak@pef.czu.cz; will provide contacts to prof. Lukas Kalous, and                  Read Lab: Ph.D.Alexandros Vouros (vourosalex@gmail.com)</p>	<p>Lect. dr. Maria Toader, Lect.dr. Cosmin Sonea, Ph.D.Alexandros Vouros</p>
<p>Environmental Chemistry towards Food Processing</p>	<p><b>FEQS: elective course</b>                  AUT: Dr. Mariola Kodra (mkodra@ubt.edu.al)                  UHZ: Prof.As. dr. Naser Bajraktari (naser.bajraktari@ubhz.eu)                  Support: USAMVB: Lect.dr. Maria Toader (mirelatoadervali@yahoo.com)</p>	<p>Lect. dr. Maria Toader</p>
<p>Nutrition</p>	<p><b>FEQS elective course</b>                  UNSA: Prof.dr. Izada Talić (i.talijc@ppf.unsa.bo)                  UHZ: Prof.As. dr. Agim Rysha (agim.rysha@unhz.eu)                  Support: Prof.dr. Gheorghe Valentin Roman</p>	<p>Prof.dr. Gheorghe Valentin Roman, Lect.dr. Maria Toader</p>

	(romangv@yahoo.com)	
Sustainable technology of dairy products	<b>FEQS elective course</b> UNSA: Prof.dr. Zlatan Saric (z.saric@ppf.unsa.bo) UNBI: Suzana Janic (suzana.janic@unbi.bo), Edina Šertović UHZ: Prof.As.dr.Arsim Elshani (arsim.elshani@unhz.eu) Support: USAMVB: Lect.dr. Maria Toader (mirelatoadervali@yahoo.com)	Lect. dr. Maria Toader, Lect.dr. Cosmin Sonea Lect.dr. Mirela Elena Dusa, Lect.dr. Alina Maria Ionescu
Sustainable technology of fruit and vegetable processing products	<b>FEQS elective course</b> UNSA: Prof.dr. Asima Akagic (a.akagic@ppf.unsa.bo) UNBI: Vildana Jagic (jagic.vildana@unbi.bo) UHZ: Prof.As.dr.Defrime Berisha (defrime.berisha@unhz.eu) Support: USAMVB: Assoc. Prof. dr. Lenuta Iuliana Epure (iulialenu@gmail.com)	Lect.dr. Maria Toader, Assoc. Prof. dr. Lenuta Iuliana Epure
Sustainable technology of wine, beer and spirits	<b>FEQS elective course</b> UNSA: Prof.dr.Milenko Blesic (m.blesic@ppf.unsa.bo) UHZ : Prof.As.dr.Nexhdet Shala (nexhdet.shala@unhz.eu) Support: USAMVB: Lect. dr. Maria Toader (mirelatoadervali@yahoo.com) CULS: Prof.dr. Lošťák Michal	Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Lect.dr. Mirela Elena Dusa, Lect.dr. Alina Maria Ionescu
Sustainable technology of bakery products	<b>FEQS elective course</b> UNSA: Prof.dr. Sanja Oreevic Zuljicic (s.orunceric.zuljicic@ppf.unsa.bo) UHZ : Prof.As. dr. Ibrahim Hoxha (ibrahim.hoxha@unhz.eu) Support: USAMVB, Lect. dr. Maria Toader, (mirelatoadervali@yahoo.com) CULS: Prof.dr. Lošťák Michal	Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Prof.dr. Viorel Ion Prof.dr. Lošťák Michal
Waste and recycling technologies in agriculture	<b>FEQS elective course</b> UNSA: Prof. Dr. Mirha Djikic (m.djikic@ppf.unsa.bo) UNBI : Jasmina Ibrahimposic (jasmina.ibrahinposic@unbi.bo) Support: USAMVB: Prof.dr. Mircea Mihalache (mihalachemircea@yahoo.com), Lect. dr. Mirela Elena Dusa (myreille81@yahoo.com)	Lect. dr. Maria Toader, Prof.dr. Mircea Mihalache, Prof.dr. Gheorghe Valentin Roman, Lect.dr. Mirela Elena Dusa
Low input agriculture	<b>FEQS elective course</b>	Lect. dr. Maria Toader, Eng. dr.

	UNSA: Prof.dr. Mirha Djikic (m.djikic@ppf.unsa.bo) UNBI : Emir Mujic (emir.mujic@unbi.bo), Vildana Jogić Dinko Bećirspahić Support: USAMVB: Lect. dr. Maria Toader (mirelatoadervali@yahoo.com), Eng. dr. Andrei Radu Popovici (omuletu@gmail.com)	Andrei Radu Popovici
Sustainable technology of meat products	<b>FEQS elective course</b> UNSA: Prof.dr. Amir Ganic (a.ganic@ppf.unsa.bo) UNBI: Suzana Janic (suzana.janica@unbi.bo), Emir Mujić Supporter:USAMVB: Lect.dr. Maria Toader (mirelatoadervali@yahoo.com)	Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Lect.dr. Cosmin Sonea
Sustainable animal production	<b>FEQS elective course</b> UNBI: Vilic Husein (husein.vilic@unibi.bo), Emir Mujić Support: USAMVB: Lect. Maria Toader (mirelatoadervali@yahoo.com)	Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Lect.dr. Cosmin Sonea
Sustainable plant production	<b>FEQS elective course</b> UNBI: Vildana Jagic (vildana.vilic@unbi.bo), Azra Skender Dinko Bećirspahić Support: USAMVB: Lect.dr. Maria Toader (mirelatoadervali@yahoo.com)	Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Lect.dr. Alina Maria Ionescu Lect.dr. Mirela Elena Dusa
Animal Food Technology Science	<b>FEQS elective course</b> UNBI: Suzana Jahić, Melisa Oraščanin, Emir Mujic (emir.mujic@unbi.bo) Support: USAMVB: Lect.dr. Maria Toader (mirelatoadervali@yahoo.com), Lect. dr. Cosmin Sonea (cosmin_sn@yahoo.com)	Lect. dr. Maria Toader, Prof.dr. Gheorghe Valentin Roman, Lect.dr. Cosmin Sonea
Packaging technology	<b>FEQS elective course</b> UNSA: Prof.dr. Nermina Spaho (n.spaho@ppf.unsa.bo) Support: USAMVB: Eng. dr. Andrei Radu Popovici (omuletu@gmail.com)	Lect.dr. Maria Toader, Eng.dr. Andrei Radu Popovici

• **GROUP II: Food production systems management working group**

List of courses	General course description	Team Support: program country
Governance, policy and legislation in the agri-food sector	<b>FMSC core course</b> EUT: Arlinda Ymeraj(arlinda.ymeraj@uet.edu.al) UNSA: Milenko Blesić (m.blesic@ppf.unsa.ba) UNBI: Jasmina Ibrahimpašić, Genç Trnavci, ( <i>Faculty of Law, UNBI</i> ) UHZ: Prof.Asoc. Sabiha Shala (sabiha.shala@unhz.eu) Support: CULS, Prof.dr Michal Lostak (lostak@pef.czu.cz)	Prof.dr. Lošťák Michal
Food Ethics	<b>FMSC core course</b> EUT: Klementin Mile (klementin.mile@uet.edu.a) UNSA: Irzada Taljić (i.taljic@ppf.unsa.ba) UHZ: Prof.As. Agim Rysha ( <b>agim.rysha@unhz.eu</b> ) UNBI: Suzana Jahić (sahinovic.refik@unbi.ba), Mejra Bektašević, Edina Šertović Support: CULS, Prof.dr. Lukas Zagata: zagata@pef.czu.cz, Michal Lostak: lostak@pef.czu.cz	Prof.dr. Lošťák Michal
Research methodologies and tools	<b>FEQS core course</b> AUT: Prof. Dr. Renata Kongoli (rknogoli@ubt.edu.al) UNSA: Mirsad Kurtović (kurtovic.mirsad@live.com) UNBI: Refik Šahinović (sahinovic.refik@unbi.ba), Halid Makić UHZ: Prof.Dr.Fadil Millaku (fadil.millaku@unhz.eu) UC: Luan Vardari (luan.vardari@universum-ks.org) Supporter: AUA, Panagiotis Trivellas (ptrivel@yahoo.com), Panagiotis Reklitis (preklitis@yahoo.com)	Panagiotis Trivellas, Panagiotis Reklitis
Marketing of sustainable agri-food products	<b>FMSC: elective course</b> EUT: Kreshnik Bello (kreshnik.bello@uet.edu.al) UNSA: Aleksandra Nikolic (a.nikolic@ppf.unsa.bo) UNBI: Halid Makić (halid.makic@unbi.ba), Arnela Nanić, ( <i>Faculty of Economics, UNBI</i> ) UHZ: Prof.Asoc. Afrim Selimaj (afrim.selimaj@unhz.eu) UC: Gezim Turkeshi (gezim.turkeshi@universum-ks.org) Supporter: AUA, Damianos Sakas (damianos.sakas@gmail.com)	Damianos Sakas



Total quality management in the agri-food sector	<b>FMSC: elective course</b> EUT: Ermira Qosja (ermira.qosja@uet.edu.al) UNSA: Mirza Uzunović (m.uzunovic@ppf.unsa.ba) UNBI: Halid Makić (halid.makic@unbi.ba), Husejin Keran UHZ Prof.Asoc.Ibish Mazreku (ibish.mazreku@unhz.eu) UC: Luan Vardari (Luan.vardari@universum-ks.org) Supporter: AUA Giannis Tsoulfas (giannis@aua.gr), and Readlab Yannis Mouzakis (ymouzakis@gmail.com)	Giannis Tsoulfas, Yannis Mouzakis
Sustainable food value chain management	<b>FMSC: elective course</b> UNSA: Mirza Uzunović (m.uzunovic@ppf.unsa.ba) UHZ: Prof.Asoc.Florin Peci (florin.peci@unhz.eu) Supporter: AUA, Giannis Tsoulfas (giannis@aua.gr) Readlab, Yannis Mouzakis (ymouzakis@gmail.com)	Giannis Tsoulfas, Yannis Mouzakis
Management of Sustainable Food Supply and Value Chain	<b>FMSC elective course</b> EUT: Irina Canco (Irina.canco@uet.edu.al) UC: Arben Jusufi (Arben.jusufi@universum-ks.org) Support: AUA Giannis Tsoulfas (giannis@aua.gr) and Readlab: Yannis Mouzakis (ymouzakis@gmail.com)	Giannis Tsoulfas, Yannis Mouzakis
Innovation and Entrepreneurship for Sustainable Food Production Systems	<b>FMSC elective course</b> EUT: Besarta Vladi (besarta.vladi@uet.edu.al), Ani Mbrica UHZ: Prof.Asoc.Halit Shabani (halit.shabani@unhz.eu) UC: Uran Rraci - uran.rraci@universum-ks.org. Support: CULS, Michal Lostak: lostak@pef.czu.cz; Lukas Zagata: zagata@pef.czu.cz	Prof.dr. Lošťák Michal
Sustainable Food Value Chain Management	<b>FMSC elective course</b> EUT: Irina Canco (Irina.canco@uet.edu.al) UNSA: Mirza Uzunović (m.uzunovic@ppf.unsa.ba) UHZ: Prof.Asoc. Florin Peci (florin.peci@unhz.eu) Support: AUA Giannis Tsoulfas (giannis@aua.gr)	Giannis Tsoulfas, Yannis Mouzakis
Consumer science and sustainable consumption	<b>FMSC elective course</b> EUT: Elena Kokthi (Elena.kokthi@uet.edu.al) UNSA: Nermina Spaho (n.spaho@ppf.unsa.ba) UHZ: Mirza Uzunović (mirza.uzunovic@unhz.eu) UC: Uran Rraci (uran.rraci@universum-ks.org), Sejdi Xhemajli	Prof.dr. Lošťák Michal

	Support: CULS: Lukas Zagata (zagata@pef.czu.cz)	
Data Analysis and Decision-making	<b>FMSC elective course</b> EUT: Irina Canco (Irina.canco@uet.edu.al) UC: Muhamet Hajdari (mhamet.hajdari@universum-ks.org) Support: AUA Katerina Marinagi (katmarinagi@gmail.com)	Katerina Marinagi
Sustainable land management	<b>FMSC elective course</b> UNSA: Melisa Ljuša (m.ljusa@ppf.unsa.ba) UNBI: Emir Mujić, Mirsad Ičanović, Fatima Muhamedagić Support CULS: Prof.dr. Michal Lostak: lostak@pef.czu.cz	Prof.dr. Lošťák Michal
Rural development	<b>FMSC elective course</b> UNSA: Sabahudin Bajramović (s.bajramovic@ppf.unsa.ba) Support: CULS: Prof.dr. Lošťák Michal	Prof.dr. Lošťák Michal
Agri-food economics	<b>FMSC elective course</b> UNSA: Vedad Falan (v.falan@ppf.unsa.ba) Support: CULS: Prof.dr. Lošťák Michal lostak@pef.czu.cz	Prof.dr. Lošťák Michal
Business economics and international trade in the agri-food sector	<b>FMSC elective course</b> EUT: Selami Xhepa (selami.xhepa@uet.edu.al) UNSA: Aleksandra Nikolić (a.nikolic@ppf.unsa.ba) Support: CULS: Jakub Husak (husak@pef.czu.cz)	Prof.dr. Jakub Husak
Project cycle management	<b>FMSC elective course</b> EUT: Elena Kokthi (elena.kokthi@uet.edu.al) UNSA: Dragana Ognjenovi (d.ognjenovic@ppf.unsa.ba) Support: CULS: Jakub Husak (husak@pef.czu.cz)	Prof.dr. Jakub Husak

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### 3. CONCLUSIONS

The most important conclusions drawn from this report are:

- The material presents the Design of STEPS Master Course according to the List of Courses and List of teaching staff included in D2.1 and D2.2 reports.

-The scientific staff from all partners was organised in working groups, based on the two groups of courses (*Food engineering, quality and safety* and *Food production systems management*) and their scientific background and capacity.

-The Course Description was the responsibility of the six HEIs universities partners. The EU partners were monitors for this activity.

-The Course Description forms included the following data: the institution that is organizing the course, the teaching staff, list of topics of course and number of hours and evaluation.

-All these documents regarding the Course description has been correlated with Course Curriculum, List of Courses – Core and Elective, number of hours per activity, number of ECTS per course, names of teachers, List of topics for lectures are in direct connection with the documents for the accreditation elaborated at National level by HEIs universities.

-Each HEIs partner elaborated its own Course Description according to the internal rules included in the documents for National Accreditation Procedures.

### 4. References

-MSc in Sustainable Food Production Systems / STEPS - Detailed description of the project.

-WP2 of STEPS project proposal, 2019, D2.1 report –Steps structure and courses.

-WP2 of STEPS project proposal, 2019, D2.2 report – Selection of faculty staff and organisation in working groups report.

## 5. ANEXX 1- EXAMPLE OF COURSE DESCRIPTION

### COURSE DESCRIPTION

#### 1.GENERAL

<b>SCHOOL</b>		
<b>DEPARTMENT</b>		
<b>STUDY LEVEL</b>	Postgraduate	
<b>COURSE CODE</b>	XYZ	
<b>COURSE TITLE</b>		
<b>SEMESTER</b>	Select	
<b>COURSE DURATION (weeks)</b>	13	
<b>WEEKLY TEACHING HOURS</b>		
<b>CREDITS/ECTS</b>	6	
<b>TEACHING ACTIVITIES</b>	Theory lectures	... hours/week
	Exercise / problem solving	... hours/week
	Labs	... hours/week
	Study visit(s)	... hours/semester
	Seminar(s)	... hours/semester
<b>COURSE TYPE</b>	Select	
<b>PREREQUISITE COURSES</b>		
<b>LECTURES AND EXAMS LANGUAGE</b>		
<b>WEB PAGE (URL)</b>		

#### 2.LEARNING OUTCOMES

The focal point of the course is ...  
 It also covers issues of ...  
 Particular emphasis is given to ...  
 Upon successful completion of the course the student will be able to:

#### 3.GENERAL COMPETENCES

Retrieve, analyse and synthesise data and information	<input type="checkbox"/>
Use advanced / innovative technologies	<input type="checkbox"/>
Adapt to new situations	<input type="checkbox"/>
Make decisions	<input type="checkbox"/>
Work autonomously	<input type="checkbox"/>
Work in teams	<input type="checkbox"/>
Work in an international environment	<input type="checkbox"/>
Work in an interdisciplinary environment	<input type="checkbox"/>
Generate new research ideas	<input type="checkbox"/>

Design and manage projects	<input type="checkbox"/>
Respect diversity, multiculturalism and gender issues	<input type="checkbox"/>
Respect the natural environment	<input type="checkbox"/>
Be critical and self-critical	<input type="checkbox"/>
Advance free, creative and inductive thinking	<input type="checkbox"/>

#### 4.COURSE CONTENT

No	Topics	Number of weeks
1.	Introduction to basic concepts	
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.	Case studies	
13.	Special topics	

#### 5.TEACHING & LEARNING

TEACHING METHOD	Select
<b>USE OF INFORMATION &amp; COMMUNICATION TECHNOLOGIES</b>	
Use of the learning management system platform of the University	<input type="checkbox"/>
Use of presentation software	<input type="checkbox"/>
Use of specialised software	<input type="checkbox"/>
Use of audiovisual material	<input type="checkbox"/>
Use of Internet applications	<input type="checkbox"/>
<b>LEARNING ACTIVITIES &amp; WORKLOAD CALCULATION</b>	
<b>Activity</b>	<b>Workload (hours/semester)</b>
Theory lectures	
Exercises & problem sessions	
Labs	
Seminar(s)	
Written assignment(s)	
Oral presentation(s)	
Study visit(s)	
.....	
Autonomous study	
Exams	2
<b>Total hours/semester</b>	150

#### 6.EVALUATION

The evaluation process may consist of:

I.Oral presentation(s)

II.Written assignment(s)

III.Written / oral final exams (theory & laboratory) which may include:

- Multiple choice questions
- Short texts development
- Exercise / problem solving
- Software applications

<i><b>Activity</b></i>	<i><b>Weight (%)</b></i>
Oral presentation(s)	
Written assignment(s)	
Written / oral exams (theory)	
Written / oral exams (labs)	

Requirements for a pass: A minimum total mark of 50%.

The exam syllabus and the evaluation criteria are presented on the learning management system platform.

## **7.SUGGESTED BIBLIOGRAPHY**

Textbooks

- 

Academic papers

- 

Reports, official documents and legal texts

- 

Articles / Viewpoints

- 

Audiovisual resources

-

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## 6. ANEXX 2. COURSE DESCRIPTION OF ACREDITATION PROCEDURES OF MASTER PROGRAM IN HEIs COUNTRIES

-Each HEIs partener present the own Course Description for Acreditation Report according to the National Legislation.

-In next Anexxes we present an example of Core Courses - FUNDAMENTALS OF SUSTAINABLE AGRI FOOD SYSTEMS.

### 6.1. Core Course Description for Agricultural University of Tirana and European University of Tirana, Albania

#### CORE COURSE DESCRIPTION FUNDAMENTALS OF SUSTAINABLE AGRI FOOD SYSTEMS

**Coordinator/Pedagogue of the course:** Dr. Luziana Hoxha/ Dr. Alketa Shehaj

**Load:** 6 (six), 60 hour, 30 with 30

**Course tipology:** A, base courses

**Academic Year/Semester:** First year, first semester

**Type of course:** compulsory

**Study Program:** For the students of Faculty of Biotechnology and Food, Study Program “Sustainable Food Production Systems”, for the second cycle of studies, Master of Sciences

**Code of course:** FEQS\_01

**Elektronic address of the coordinator/pedagogue of the course:** [lhoxha@ubt.edu.al/](mailto:lhoxha@ubt.edu.al)  
[ashehaj@ubt.edu.al](mailto:ashehaj@ubt.edu.al)

#### **SUMMARY AND LEARNING OUTCOMES**

The focal point of the course is to provide a basic and advanced knowledge on fundamental of food science and technology focused on sustainable agri food systems. Further on it aims to develop skills and understand concepts needed to apply critical scientific analysis to contemporary issues concerning raw material transformation and stabilization into final agrifood products, also the safety and quality control aspects.

This class will provide you skills and conceptual knowledge to understand, evaluate and critique contemporary issues on sustainability, with a strong focus in agrifood systems. This includes an overview of the main knowledge needed to understand agri-food transformation and stabilization process of food, from engineering, quality and safety point of view. We also emphasize the development of computer-based data analysis skills, formal writing and critical analysis of scientific literature.

Particular emphasis is given in sustainable approaches for food production and processing. It also covers different aspects of sustainable agrifood systems that utilise and valorise food using sustainable plant, animal and food ingredients resources production and availability as a food to local, regional and international markets.

Upon successful completion of the course the student will be able to:

- Understanding sustainability of agri food production system.
- Understand and apply key conceptual concepts relevant to conventional and advanced food production, including packaging technology.
- explains the processing of raw materials into final food products that meet new market expectations;
- understand and control the preparation of a large diversity of ingredients using additional properties to move from the raw materials into new food products;
- investigate the biological and biochemical conversions and physicochemical treatment of food from animal sources, plant sources and food ingredients.
- Demonstrate understanding, awareness and interrelations of sustainability of agro food production system.
- Identify underutilized and novel resources and their potential.
- Apply systems thinking to predict and explain issues related to food quality control and food security.
- Evaluate and solve problems in primary production and food industry related to sustainable food production and supply chain.
- Analyze and trace the quality of food during the agrifood chain.
- To write a well-organized, well-reasoned, and clear analysis of a scientific article/Evaluate scientific basis, and explain the causes of contemporary problems. Form informed opinion about the status, threats, and future of sustainable agrifood systems, and articulate these opinions by providing scientific evidence.

#### Fundamentals concepts

1. Conceptualizing and creating of sustainable food production systems.
2. Sustainable food production
3. Sustainable food processing
4. Principles and applications of Advanced Technologies for food conservation
5. Value-added products from sustainable sources of plant and animal origin, and ingredients.
6. Sustainable Food Packaging
7. Quality control and assurance
8. Etc.

#### TOPICS OF COURSE

<b>Topic I</b>	-Conceptualizing and creating sustainable food systems (Chapter I)
<b>Topic II</b>	-Building the food sustainability paradigm: research needs, complexities, opportunities (Chapter II)
<b>Topic III</b>	-Strategies for minimization of food waste and losses from farm to fork (Chapter III)
<b>Topic IV</b>	-Sustainable food production (Chapter IV)
<b>Topic V</b>	-Sustainable food production (Chapter IV)
<b>Topic VI</b>	-Sustainable food processing



	(Chapter V)
<b>Topic VII</b>	-Principles and application of innovative technology for food preservation (Chapter VI)
<b>Topic VIII</b>	-Principles and application of innovative technology for food preservation (Chapter VI)
<b>Topic IX</b>	-Value added products with sustainable plant sources. (Chapter VII)
<b>Topic X</b>	-Value added products with sustainable animal sources. (Chapter VIII)
<b>Topic XI</b>	-Nutraceutical and functional food processing technology (Chapter IX)
<b>Topic XII</b>	-Sustainable food packaging, principles and technology. (Chapter X)
<b>Topic XIII</b>	-Sustainable Sanitation in the Food Industry (Chapter XI)
<b>Topic XIV</b>	-Food Safety and Quality control & assurance (Chapter XII)
<b>Topic XV</b>	-Food quality control and traceability techniques (Chapter XIII)

**FORM OF KNOWLEDGE EVALUATION**
**ATTENDANCE:** 80%

**CONTINUOUS CONTROL:**

- Seminars, exercises, laboratory practices, course assignments.....20%
- Control task / Intermediate test (written and oral) .....20 %
- Final exam.....60 %

**LITERATURE**
**a.Base Literature, compulsory:** Written lectures,

**b.Suggested Literature:**

- Jeantet R. et al., 2016: Handbook of Food Science and Technology 1: Food Alteration and Food Quality, Wiley-ISTE.
- Blay-Palmer A. 2010. Imagining sustainable food systems: theory and practice.
- Marsden T, and Morley A, 2014. Sustainable Food Systems, Building a new paradigm. Routledge
- Galanakis C. 2018. Sustainable food systems from agriculture to industry, improving production and processing, Academic Press.

**CONCLUDING REMARKS FROM THE COURSE PEDAGOGUE:**

Laboratory practices will be held in the relevant laboratory where students will be instructed in the realization of the respective topic, students will be able to attend study visits, along with seminars, exercises and problem solving through computers and related programs.

## 6.2. Core Course Description for University of Sarajevo, Bosnia and Hertegovina

### **COURSE DESCRIPTION** **FUNDAMENTALS OF SUSTAINABLE AGRI FOOD SYSTEMS**

#### COURSE DESCRIPTION

<b>Code of the subject:</b>  XXXX	<b>Subject title: FUNDAMENTALS OF SUSTAINABLE FOOD PRODUCTION SYSTEMS</b>		
<b>Cycle: II</b>	<b>Study year: 1</b>	<b>Semester: I</b>	<b>ECTS: 5</b>
<b>Status: Compulsory (core)</b>		<b>Contact hours: 45 (L36, E6, S3)<sup>2</sup></b>	
<b>Educational staff</b>	<b>Prof. Dr. Sabahudin BAJRAMOVIĆ</b>  <b>Ass. Emir BEĆIROVIĆ</b>		
<b>Preconditions for enrolment:</b>	Without precondition		
<b>Objective(s) of the subject:</b>	<p>The objective of the course is to provide students with knowledge and skills in the field of sustainable food production systems. The course is focused on a deeper understanding of the new paradigm in the field of food production in which the focus is on the efficient and rational use of resources in all its stages, from primary agricultural production, processing, distribution, consumption to waste management. The objective of the courses is to understand existing food production systems and the challenges they face (sustainable production and consumption) and prospects of possible improvements that will increase sustainability. Food production systems will be studied on the basis of environmental, economic and social sustainability at different levels (local, national, global) with particular focus on the sustainable use of resources. The course is designed to be basically an introduction to other more specialized courses that are an integral part of this MSc program, which gives basic concept in sustainability, circular economy, looks at the importance of food from different aspects, looks at global food trends etc. The overall aim of the course is to train students for a new approach in the field of food production, while ensuring their understanding and critical analysis (to find, to understand, to apply) which should be on of the output</p>		

<sup>2</sup> L-lectures, E-exercise, S-seminar

	competencies of graduates of the study program.
<b>Thematic chapters:</b>  <i>(by weeks)</i>	<ol style="list-style-type: none"> <li>1.Introduction; master study in field of sustainable food production systems positioning; course positioning (3xL)</li> <li>2.Concept and principles of sustainability (3xL)</li> <li>3.Conceptual framework of sustainable food production systems. Limitations of current access. The wheel of the food production system. (3xL)</li> <li>4.Food production systems in the World and in Bosnia and Herzegovina. (3xL)</li> <li>5.Introduction in the concept of circular economy. Opportunities for business. Opportunities for consumers. (3xL)</li> <li>6.Future of food production - Trends (3xL)</li> <li>7.Future of food production - Challenges. (3xL)</li> <li>8.Discussion on selected topics (Trends and challenges in agriculture and food production, Global versus local food production systems). (3xE)</li> <li>9.LCA (Life Cycles Assessment) as a method of measuring of the environmental impact of a food production system (3L) <b>Partial exam</b></li> <li>10.LCA - Exercises (3xE)</li> <li>11.UN aims of sustainable development(3xL)</li> <li>12.Impacts of (bio)technology in agriculture on food production (3xL)</li> <li>13.Status of agriculture and food industry in Bosnia and Herzegovina with focus on achieved level of sustainability (3xL)</li> <li>14.Common Agricultural Policy of EU and agricultural policy of Bosnia and Herzegovina in context of sustainable food production systems (3xL)</li> <li>15.Seminar work (3xS)</li> </ol>
<b>Learning outcomes:</b>	<p>Upon completion of the course and after passing the exam, the student will have the following knowledge, skills and competences:</p> <p><b><u>Knowledge:</u></b></p> <ul style="list-style-type: none"> <li>–Understand the goals, concepts and key elements of a new sustainable approach in food production systems;</li> <li>–Distinguish the concept of circular versus linear economy related to food production;</li> <li>–Elaborate the trends and challenges facing the world's; future food production</li> <li>–Explain the assumptions for sustainable food production using examples from all its stages, from primary production, processing, distribution to waste management in different scales</li> </ul> <p><b><u>Skills:</u></b></p> <ul style="list-style-type: none"> <li>–Identify and adequately classify a particular food production system from the aspect of sustainability</li> </ul> <p><b><u>Competencies:</u></b></p> <ul style="list-style-type: none"> <li>–Ability to reasonably initiate new approaches to food production that focused on sustainability</li> <li>–Constructive participation in discussion related to the challenges of</li> </ul>

	<p>food production in the future;                  –Critical assessment of the achieved level of sustainability of modern approaches in food production systems</p>
<p><b>Teaching methods:</b></p>	<p>–Theoretical teaching through presentations and interactive discussion;                  –Independent work of students on selected topics - debate/discussion (preparation of materials for debate/discussion using recommended literature and internet sources and debate/discussion itself);                  –Seminars - presentation of student’s group tasks with active participation of all students and with explanation, suggestions and corrections by teacher.</p>
<p><b>Assessment methods and structure:</b></p>	<p><b><u>Assessment methods and criteria:</u></b></p> <p>–Attendance (max. 5 points; requirement 4 points)                  –Discussion (debate) per selected topics (max. 5 points)                  –Partial exam (max. 20 points, requirement 11 points)                  –Written student’s group assignments (max. 25 points)                  –Written final exam (max. 45 points; requirement: 24,5 points)</p> <p><b><u>Clarification of criteria and requirements</u></b></p> <p><b><u>Conditions for index signature and approach to the final exam:</u></b></p> <p><b><u>Attendance:</u></b></p> <p>–At least 80% of the attendance points or at least 60% of the attendance points under the conditions specified by law and university regulations.</p> <p><b><u>Discussion (debate) per selected topics:</u></b></p> <p>Through discussion/debate students actively participate in seeing relevant issues related to the course itself, such as global/national problems in the field of food production systems, the future of agriculture and food industry, etc. The maximum is 5 points and depend on the student's innovativeness and provocativeness.</p> <p><b><u>Partial (semester) exam:</u></b></p> <p>It covers the courses matter that the student listens in period from 2nd to 8th weeks of class. The partial exam consists of questions and answers that explain theoretical knowledge done in mentioned period. In order to successfully pass the partial exam, it is necessary for the student score 55% of the total number of points (20) or 11 points.</p> <p><b><u>Student writing assignments (seminar works):</u></b></p> <p>Student presents in his/her written and oral forms his/her individual work (group work) related to the assignment of a specific topic in the</p>

	<p>field of sustainable food production systems. The students receive instruction from the teaching staff to create their own work. The quality of the seminar work and the content of the paper with adequate comments are evaluated and can carry a maximum of 25 points.</p> <p><b><u>Final exam:</u></b></p> <p>At the final exam, the student takes the teaching material he/she has listened from 9th to the end of the class (week 15th), provided that he/she has scored at least 55% of points or 11 points in the partial exam. The final exam consists of questions and answers that explain the theoretical knowledge gained in second part of the semester (from week 9th). A student is considered to have successfully completed the final exam if he/she has achieved 55% of the total points foreseen for the final exam or 24.75 points.</p> <p><b><u>Possibilities to improve the score:</u></b></p> <p>–A student who wishes to increase the number of points scored in the passed semester exam may, with the declaration of cancellation of the passed partial exam delivered to the teacher, retake the partial exam integrated in the final written exam.</p> <p>To be eligible for teacher signature of attendance, the student must attend at least 80%, and in exceptional (justified) situation 60%.</p> <p><b><u>FORMATION OF THE FINAL GRADE:</u></b></p> <p>10 (A) - (exceptional success, without errors or with minor errors); 95 – 100 points</p> <p>9 (B) - (above average, with some errors); 85 – 94 points</p> <p>8 (C) - (average, with noticeable errors); 75 – 84 points</p> <p>7 (D) - (generally good, but with some significant errors); 65 – 74 points</p> <p>6 (E) - (meets the minimum criteria); 55 – 64 points</p> <p>5 (F,FX) - (failed, does not meet the minimum criteria); &lt; 55 points</p>
<p><b>Literature:</b></p>	<p><b><u>Obligatory:</u></b></p> <ol style="list-style-type: none"> <li>1. Bajramović, S. (2019): Unauthorized teaching material, ppt</li> <li>2. FAO (2017): The Future of Food and Agriculture - Trends and Challenges, Rome.</li> <li>3. FAO (2018): Sustainable Food Systems - Concept and</li> </ol>

	<p>Framework</p> <p><b><u>Supplementary:</u></b></p> <ol style="list-style-type: none"><li>1. Charis M. Galanakis (2018): Sustainable Food Systems from Agriculture to Industry - Improving Production and Processing, Elsevier Sciences.</li><li>2. Center for tropical agriculture - CIAT (2017): Strategic Initiative on Sustainable Food Systems</li><li>3. NCAT/ATTRA: Life Cycle Assessment of Agricultural Systems. Available at: <a href="https://attra.ncat.org/attra-pub/summaries/summary.php?pub=457">https://attra.ncat.org/attra-pub/summaries/summary.php?pub=457</a></li></ol>
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### 6.3. Core Course Description for University of Bihac, Bosnia and Hertegovina

#### **COURSE DESCRIPTION**

## FUNDAMENTALS OF SUSTAINABLE AGRI FOOD SYSTEMS

<b>Full Course Title:</b>	Fundamentals of sustainable agri food systems																						
<b>Course Code:</b>																							
<b>Study Year:</b>	/																						
<b>Semester:</b>	/																						
<b>ECTS credit value:</b>	5																						
<b>Student work-load:</b>	<p><i>For the whole semester:</i></p> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th><i>Lectures</i></th> <th><i>Tutorial/ Practical training</i></th> <th><i>e.g. Seminar</i></th> <th><i>e.g. Project</i></th> <th><i>Individual learning</i></th> <th><i>Oral presentation</i></th> <th><i>Ex ams</i></th> <th><i>TOTAL</i></th> </tr> </thead> <tbody> <tr> <td>45</td> <td>-</td> <td>15</td> <td>15</td> <td>55</td> <td>2</td> <td>3</td> <td>135</td> </tr> </tbody> </table>							<i>Lectures</i>	<i>Tutorial/ Practical training</i>	<i>e.g. Seminar</i>	<i>e.g. Project</i>	<i>Individual learning</i>	<i>Oral presentation</i>	<i>Ex ams</i>	<i>TOTAL</i>	45	-	15	15	55	2	3	135
<i>Lectures</i>	<i>Tutorial/ Practical training</i>	<i>e.g. Seminar</i>	<i>e.g. Project</i>	<i>Individual learning</i>	<i>Oral presentation</i>	<i>Ex ams</i>	<i>TOTAL</i>																
45	-	15	15	55	2	3	135																
<b>Course leader:</b>	<i>Prof. As. Emir MUJIĆ</i>																						
<b>Contact details:</b>	<b>Office:</b>	<i>ground floor, 5 office</i>			<b>e-mail:</b>	<i>ebiofax@gmail.com</i>																	
	<b>Office hours:</b>	<i>08.00 – 16.00</i>			<b>Phone:</b>	<i>037 228 275</i>																	
	<i>(Assistant)</i>																						
	<b>Office:</b>				<b>e-mail:</b>																		
	<b>Office hours:</b>				<b>Phone:</b>																		
<b>Host Study Program/ Department:</b>	<i>BILTEHNYCAL FACULTY, AGRICULTURE AND FOOD</i>																						
<b>Course status:</b>	<i>ELECTIVE</i>																						
<b>Pre-requisites:</b>	<i>Some background in agri food engineering, agriculture, food sciences and food chemistry are recommended.</i>																						
<b>Course aims:</b>	The primary objective of the course is understand the key elements of a new sustainable approach in food production systems; Distinguish concepts of economics associated with food production; Understand sustainable food production using examples from all stages,																						

	<p>from primary production, processing, distribution to waste management on different scales</p> <p>skills: Identify and adequately implement a specific food production system from a sustainability perspective</p> <p>competences: Understand a new approach to sustainability-focused food production</p> <p>Constructive participation in the debate regarding the challenges of food production in the future; Critical assessment of the achieved level of sustainability of modern approaches in food production systems.</p>
<b>Learning outcomes:</b>	<p><i>After learning the material, the student will be:</i></p> <ul style="list-style-type: none"> <li>▪ Understanding sustainability of agri food production systems. Understanding, awareness and interrelations of sustainability of agro food production system.</li> <li>▪ Identify factors that affect the production and consumption of food locally and globally, today and in the future.</li> <li>▪ Knows the prerequisites for food production and supply chain, within primary production processing, distribution and waste management.</li> <li>▪ Understands the factors of agriculture production, crop and livestock based agriculture.</li> <li>▪ Understands aspects of conventional and organic farming and knows the value of agricultural products within them.</li> <li>▪ Evaluate and solve problems in primary production and food industry related to sustainable food production and supply chain.</li> <li>▪ Plan and direct the implementation of agri food systems that optimize operating results and contribute to sustainability.</li> <li>▪ Capacity to describe and evaluate the environmental, social and economic aspects of sustainable agri food production. Identify underutilised and novel resources, and their potential.</li> <li>▪ Analyse and assess food systems from a consumer perspective.</li> <li>▪ Explain the overall purpose and principles of life cycle assessment (LCA), describe the content and explain the purpose of the analytical steps of LCA.</li> </ul>
<b>Indicative syllabus content:</b>	<p>Introduction and main features of sustainable agri-food systems (opportunities and challenges for the future sustainable production and consumption of food). Analysis of agri food systems based on environmental, economic and social sustainability at different scales (local, regional, national and global). Overview of the entire sustainable agri food production systems including primary production, processing, supply chain, distribution, consumption and waste, and relationships between them. Structure and function of agri food systems and their correlation with factors of agriculture production (crop and livestock based agriculture) Aspects of primary agricultural production (conventional and organic agriculture), value of crops and livestock products. Impact of agri food systems on biodiversity, climate change and exploitation of resources. Impact of agri food systems on animal welfare and health. Basic knowledge of food manufacturing technologies. Agri food systems and food quality and safety. Recognition of consumer's needs and evaluation of moving consumer trends. Life-cycle assessment (software-based exercises and projects). Collect, analyse and monitor the sustainability performance data of company's products and services. Life-cycle assessment (software-based exercises and projects). Decision-making, change products' life cycles for the better, and improve the company's positive</p>



	impact.																		
<b>Learning delivery:</b>	<p>Theoretical teaching through presentations and interactive discussion;                  Independent work of students on selected topics - debate/discussion (preparation of materials for debate/discussion using recommended literature and internet sources and debate/discussion itself);                  Seminars - presentation of student's group tasks with active participation of all students and with explanation, suggestions and corrections by teacher.</p>																		
<b>Assessment methods and schedule:</b>	<table border="1"> <thead> <tr> <th><i>Assessment method</i></th> <th><i>%</i></th> <th><i>Scheduled</i></th> </tr> </thead> <tbody> <tr> <td>Attendance</td> <td>5</td> <td>continuously</td> </tr> <tr> <td>Discussion</td> <td>5</td> <td>continuously</td> </tr> <tr> <td>Partial exam</td> <td>15</td> <td>8th weeks of class.</td> </tr> <tr> <td>Written student's group assignments</td> <td>25</td> <td>12<sup>th</sup> weeks of class</td> </tr> <tr> <td>Written final exam</td> <td>50</td> <td>examination deadlines</td> </tr> </tbody> </table>	<i>Assessment method</i>	<i>%</i>	<i>Scheduled</i>	Attendance	5	continuously	Discussion	5	continuously	Partial exam	15	8th weeks of class.	Written student's group assignments	25	12 <sup>th</sup> weeks of class	Written final exam	50	examination deadlines
<i>Assessment method</i>	<i>%</i>	<i>Scheduled</i>																	
Attendance	5	continuously																	
Discussion	5	continuously																	
Partial exam	15	8th weeks of class.																	
Written student's group assignments	25	12 <sup>th</sup> weeks of class																	
Written final exam	50	examination deadlines																	
<b>Assessment Rationale:</b>	<p><b>Attendance:</b> At least 80% of the attendance points or at least 60% of the attendance points under the conditions specified by law and university regulations.</p> <p><b>Discussion (debate) per selected topics:</b>                  Through discussion/debate students actively participate in seeing relevant issues related to the course itself, such as global/national problems in the field of food production systems, the future of agriculture and food industry, etc. The maximum is 5 points and depend on the student's innovativeness and provocativeness.</p> <p><b>Partial (semester) exam:</b>                  It covers the courses matter that the student listens in period from 2nd to 8th weeks of class. The partial exam consists of questions and answers that explain theoretical knowledge done in mentioned period. In order to successfully pass the partial exam, it is necessary for the student score 55% of the total number of points (20) or 11 points.</p> <p><b>Student writing assignments (seminar works):</b>                  Student presents in his/her written and oral forms his/her individual work (group work) related to the assignment of a specific topic in the field of sustainable food production systems. The students receive instruction from the teaching staff to create their own work. The quality of the seminar work and the content of the paper with adequate comments are evaluated and can carry a maximum of 25 points.</p> <p><b>Final exam:</b>                  At the final exam, the student takes the teaching material he/she has listened from 9th to the end of the class (week 15th), provided that he/she has scored at least 55% of points or 11 points in the partial exam. The final exam consists of questions and answers that explain the theoretical knowledge gained in second part of the semester (from week 9th). A student is considered to have successfully completed the final exam if he/she has achieved 55% of the total points foreseen. for the final exam or 24.75 points.</p>																		

<b>Mandatory Readings:</b>	<ol style="list-style-type: none"> <li>1. Mason, J. (2003). Sustainable agriculture (Vol. 10). Landlinks Press.</li> <li>2. Rööös, E., Patel, M., Spångberg, J., Carlsson, G., Rydhmer, L. (2016). Limiting livestock production to pasture and by-products in a search for sustainable diets. <i>Food Policy</i>, 58, 1-13.</li> <li>3. Brentrup, F., Küsters, J., Kuhlmann, H., Lammel, J. (2004). Environmental impact assessment of agricultural production systems using the life cycle assessment methodology: I. Theoretical concept of a LCA method tailored to crop production. <i>European Journal of Agronomy</i>, 20(3), 247-264.</li> <li>4. Struik, P. C., Kuyper, T. W. (2017). Sustainable intensification in agriculture: the richer shade of green. A review. <i>Agronomy for Sustainable Development</i>, 37(5), 39.</li> <li>5. Thomassen, M. A., Dalgaard, R., Heijungs, R., &amp; De Boer, I. (2008). Attributional and consequential LCA of milk production. <i>The International Journal of Life Cycle Assessment</i>, 13(4), 339-349.</li> </ol>
<b>Recommended Readings:</b>	<ol style="list-style-type: none"> <li>1. FCN food source, available at: <a href="https://foodsource.org.uk/chapter/1-overview-food-system-challenges">https://foodsource.org.uk/chapter/1-overview-food-system-challenges</a></li> <li>2. Hajer, M. A., Westhoek, H., Ingram, J., van Berkum, S., &amp; Özay, L. (2016). Food systems and natural resources. United Nations Environmental Programme.</li> <li>3. Rööös, E. (2017). The sustainable farm - does it exist?. Future Agriculture. Uppsala: Swedish University of Agricultural Sciences.</li> <li>4. F. A. O. Agriculture Organization of the United Nations. (2017). The future of food and agriculture. Trends and challenges. Rome, available at: <a href="http://www.fao.org">http://www.fao.org</a></li> <li>5. F. A. O. Agriculture Organization of the United Nations. (2017). Sustainable Food Systems - Concept and Framework, available at: <a href="http://www.fao.org">http://www.fao.org</a></li> <li>6. Goedkoop, M., Oele, M., Leijting, J., Ponsioen, T., &amp; Meijer, E. (2016). Introduction to LCA with SimaPro. PRé, available at: <a href="http://www.presustainability.com">http://www.presustainability.com</a></li> <li>7. Goedkoop, M., Oele, M., Leijting, J., Ponsioen, T., &amp; Meijer, E. (2016). SimaPro Tutorial PRé, available at: <a href="http://www.presustainability.com/download">http://www.presustainability.com/download</a></li> </ol>
<b>Important Notes:</b>	Unauthorized teaching material, ppt.
<b>Quality Assurance:</b>	Rules of study in the second cycle of the University of Bihac

#### 6.4. Core Course Description of University “Haxhi Zeka” of Peja and Universum College, Kosovo

### UNIVERSITY “HAXHI ZEKA” OF PEJA and UNIVERSUM COLLEGE

#### COURSE DESCRIPTION

#### FUNDAMENTALS OF SUSTAINABLE AGRI FOOD SYSTEMS

UNIVERSITY of "HAXHI ZEKA" - PEJË	
Academic Unit:	Faculty of Agribusiness' - Department: Food Technology
Name of subject:	Nutrition
Level:	Master
Subject status:	Elective
Study year	Year 1 <sup>st</sup> semester second
Number of hours per week:	2+2
Number of ECTS	5
Time/Location	----
Lecturer:	Prof. Ass. Dr. Agim Rysha
Contact details:	<a href="mailto:agim.rysha@unhz.eu">agim.rysha@unhz.eu</a>
Course Description	The material of the course "Nutrition" includes the basic principles of human nutrition. The course consists of a series of chapters that address the most important aspects of food intake and utilization with emphasis on nutrition education for dietary improvements of groups and individuals. This course also offers students current information on science of nutrition, the study of nutrients and of their ingestion, digestion, absorption, transport, metabolism, interaction, storage and excretion. Food group plans, the Dietary Guidelines, Food Exchange System, Recommended Dietary Allowances and other standards are reviewed to serve as a foundation for food selection.
Course objectives :	Familiarizing students with the role of nutrition, consequences of over-nutrition, under-nutrition and malnutrition, identify macronutrients and micronutrients and their interaction, diet related diseases etc.
Expected learning outcome:	Through lectures and exercises, students will be prepared to differentiate the most important nutrition aspects such as: nutrients and their function and

	metabolism, food groups, dietary guidelines, healthy food etc.		
Contribution to the student Workload ( this should correspond to student's learning outcomes)			
Activity	Hours	Days	Total
Lectures	2	13	26
Practical work	2	13	26
Contacts with lecturer/consultation	1	15	15
Seminars	1	5	5
Homework	-	-	--
Time of student's study (library or at home)	2	12	24
Final preparation for exam	2	11	22
Time spent during evaluation (tests, quiz, final exam)	1	4	4
Projects, presentation etc	1	3	3
Total (the course has 5 ECTS)			125
Teaching Methodology	The lectures will be presented through the Power Point program and there will be active discussion. Students will be divided in working groups.		
Evaluation methodology	First evaluation (up to 25% of final grade). Second rating (up to 25% of the final grade). Participation, discussion during lectures, exercises (up to 40% of final grade) Final evaluation (up to 10% of final grade)		
Literature			
Basic Literature	1.Skripta (Prezantimet nga ligjëratat) 2.Anderson, J.B., Root, M., & Garner, S. (2015). Human Nutrition: Healthy Options for Life. Burlington, MA. Jones & Bartlett Learning		
Supplementary Literature:	3. Eastwood, M. 2003. Principles of Human Nutrition, 2nd ed, Blackwell Science Ltd;		