



Deliverable 2.3

TRAIN-CE-FOOD

Curriculum for higher education level:

CIRCULAR ECONOMY AND ENTREPRENEURSHIP IN FOOD SUPPLY CHAIN



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1. INTRODUCTION

As argued by the European Commission, Europe's economic growth and jobs depend on its ability to support the growth of enterprises. Entrepreneurship creates new companies, opens up new markets, and nurtures new skills. Thus, the Commission is encouraging people to become entrepreneurs and try to make it easier for them to set up and grow their businesses.

In this sense, the development of the entrepreneurial capacity of European citizens and organizations has been one of the key policy objectives for the EU and Member States for many years. There is a growing awareness that entrepreneurial skills, knowledge and attitudes can be learned and in turn lead to the widespread development of entrepreneurial mind-sets and culture, which benefit individuals and society as a whole.

The European Commission first referred to the importance of entrepreneurship education in 2003, in the European Green Paper on Entrepreneurship in Europe. By 2006, the European Commission had identified a 'sense of initiative and entrepreneurship' as one of the eight key competences necessary for all members of a knowledge-based society. The 2008 *Small Business Act for Europe*, the 2012 *Communication on Rethinking Education*, the 2013 *Entrepreneurship Action Plan 2020*, and more recently the New Skills Agenda for Europe, have kept the need to promote entrepreneurship education and entrepreneurial learning under the spotlight. This has led to a wealth of initiatives across Europe.

The proposed 'A New Skills Agenda for Europe: Working together to strengthen human capital, employability and competitiveness'¹ address the skills challenges that Europe is currently facing. The aim is that everyone should have the key set of competences needed for personal development, social inclusion, active citizenship and employment. These competences include literacy, numeracy, science and foreign languages, as well as more transversal skills such as digital competence, entrepreneurship competence, critical thinking, problem solving or learning to learn.

To describe the entrepreneurship competence and establish the basis for a common understanding across the EU, the JRC, in partnership with DG Employment, Social Affairs and Inclusion, developed the Entrepreneurship Competence Framework², also known as EntreComp. It offers a tool to improve the entrepreneurial capacity of European citizens and

¹ <https://ec.europa.eu/social/main.jsp?catId=1223&langId=en>

² <https://ec.europa.eu/jrc/en/entrecomp>



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organizations and eventually to have a positive impact on the mobility, employability, and active participation of citizens in society and the economy. The framework aims to build consensus around a common understanding of entrepreneurship competence by defining three competence areas, a list of 15 competences, learning outcomes and proficiency levels, which current and future initiatives can refer to.

Furthermore, the Commission discussed the importance of the circular economy (CE), bringing major economic benefits, contributing to innovation, growth, and job creation³. Circular economy encourages sustainability and competitiveness in the long term, and helps saving costs for European industries, unlocking new business opportunities, and creating local low and high-skilled jobs.

The EU identified food issues as a priority area, promoting circular economy. On May 6th 2019, the Commission reported that each year around 20 % of food produced in the EU is lost or wasted, causing unacceptable social, environmental, and economic harm. EU is committed to solving this problem and putting its food system onto a sustainable path. Preventing food waste was identified as one of priority areas in the Circular Economy Action Plan⁴ adopted by the Commission in December 2015. Furthermore, food waste is one of ten major indicators of the Circular Economy Monitoring Framework⁵, telling us how advanced we are in the transition from linear “make-use-dispose” to circularity, where loss of resources is minimized.

Moreover, as reported by the European Commission the EU unemployment statistics shows a large youth unemployment, e.g. more than 3.3 million young people (aged 15-24 years) are unemployed in 2019 in the EU. In 2018, more than 5.5 million young people (aged 15-24 years) were neither in employment nor in education or training (NEETs). However, the rate is still very high and there are vast differences between countries⁶. Young people face specific challenges in the transition from school to work. Being new to the labor market, they are less likely to find a job or are often employed on temporary and part-time contracts.

In this context, TRAIN-CE-FOOD project comprehensively covers the most important EU priorities and at the same time fosters the concept of triangle integration to achieve wishful results. The main objective of TRAIN-CE-FOOD project is acquiring innovative specialized competences for young people, by empowering them to make use of entrepreneurship and

³ https://ec.europa.eu/environment/topics/circular-economy_en

⁴ <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>

⁵ <https://ec.europa.eu/eurostat/web/circular-economy/indicators/monitoring-framework>

⁶ <https://ec.europa.eu/social/main.jsp?catId=1036>



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cooperative skillsets and mindsets, which will enable them to create much more efficient cooperative solutions and business models in the field of CE and food supply chains via open online learning, face-to-face workshops, and in-depth remote coaching. The specific objectives of the project are:

- to develop and design curricula for secondary/higher education level focused on entrepreneurship and circular economy in the food supply chain, raising awareness/knowledge,
- develop and design an open (Open Educational Resources) OER platform with 3 integrated education modules supported by an e-textbook to ensure that learners will acquire skills, competencies and knowledge – modules will be integrated in learning/teaching at the secondary and university levels,
- create training material to be used at face-to-face workshops, focusing on interaction with peers and business world, and training material for in-depth remote coaching with business mentors,
- implement/testing/piloting modules at the short-term trainings, and
- implement in-depth remote coaching with establishing at least 3 cooperative start-ups.

The aim of this deliverable D2.3 is to present a curriculum for integrating entrepreneurship and cooperative knowledge in the field of CE innovative food supply chain business models dedicated to the Higher Education Level (University), to promote skills and tools to help young people develop business ideas that allow them self-employment in the current context of lack of opportunities to find a job. This curriculum is the first step of a training programme, consisting of 3 e-learning modules and an OER platform. Trainers/professors can use the material produced by the project in the framework of their training/learning activities, thus contributing to dissemination and exploitation of the project results.



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2. METHODS AND APPROACHES

In this section, we present the process of curriculum development and its content creation for the higher education level in the fields of circular economy and entrepreneurship in the food supply chain. Curriculum is defined as the knowledge and skills that are expected from students to learn, which includes learning objectives they are expected to meet; the units and lessons that are taught; the assignments and projects given to students; materials of different types used in a course; and the tests, assessments, and other methods used to evaluate student learning.

a) Process of the curriculum development

In the online meetings held between August and October of 2020, partners agreed how to carry out this process of curricula development. In Table 1, the dates of the online meetings took place are presented, as well as the main content and decisions about the topics, outline and partner's tasks for D 2.2 and D 2.3.

Table 1: Meeting distribution for D 2.2 and D 2.3

Meeting date	Meeting content
AVG 18 2020	Introductory meeting for D 2.2. and D 2.3 overview (expected results), distribution of the tasks for curriculums development
AVG 28 2020	Follow-up meeting to check the brainstorming proposals for curriculums template → draft version of the template is shared among partners via online tool
SEPT 17 2020	Check-up meeting on the progress within partner's tasks
OCT 13 2020	Online discussion about possible improvements of the prepared curriculums so far
OCT 22 2020	Instructions for curriculums final version are given to partners and collaborative check of the work is carried out in comparison to project objectives
OCT 27 2020	Discussion before final proof-reading of WP2 leader and quality manager

First step was to identify the gaps in universities' curricula of the countries covered by the project, since the preparation of topics in this curriculum is closely related to the knowledge, skills and competences to be gained in order to improve those gaps. For this, the works



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developed in WP1 were used, mainly the deliverables D1.1 Analysis of competencies and D1.3 State-of-the-art report, where all partners identified the knowledge and competencies lacking in Universities' curricula.

Both reports show that at the university level curricula are mainly focused on sustainable development closely related to educational cover of the institution (e.g., textile, tourism, electronic, accountancy) that further show necessity for CE curriculum.

With regards to competences, for example in Fig 1 it is visible that all participants stated *“develop and commercialize innovative food related technologies”* as a competence that they mostly lack for establishing a circular economy business model in the field of food supply chain followed by recover food waste.

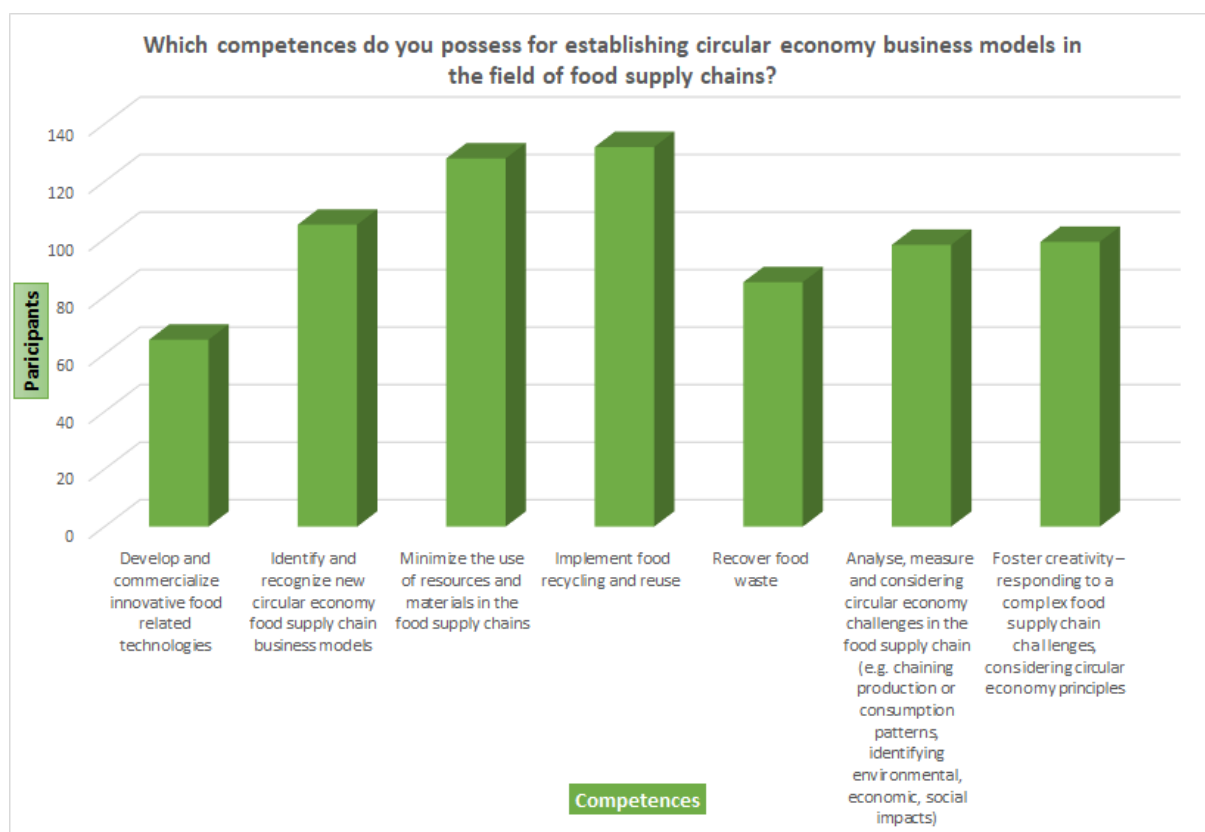


Figure 1: Competence survey in project partner’s countries (Question 14)
http://traincefood.si/wp-content/uploads/2020/11/D.1.1_Competencies-survey.pdf

Furthermore, in Fig. 2 it is visible that all the countries’ survey participants are lacking competencies in the field of development of innovative business solutions in food sector along

with waste management (implementing, recovering waste, minimizing resources) and actual circular economy principles in food related sector e.g., food supply chain. This shows a necessity for education and training in the topics covered by project curriculum and online learning modules.

Lowest scored competances in Q14_list by countries				
Austria	Slovenia	Cyprus	Croatia	Spain
Develop and commercialize innovative food related technologies	Develop and commercialize innovative food related technologies	Develop and commercialize innovative food related technologies	Develop and commercialize innovative food related technologies	Develop and commercialize innovative food related technologies
Recover food waste	Recover food waste	Recover food waste	Identify and recognize new circular economy food supply chain business models	Identify and recognize new circular economy food supply chain business models
Foster creativity – responding to a complex food supply chain challenges, considering circular economy principles	Analyse, measure and considering circular economy challenges in the food supply chain (e.g. chaining production or consumption patterns, identifying environmental, economic, social impacts)	Minimize the use of resources and materials in the food supply chains	Implement food recycling and reuse	Foster creativity – responding to a complex food supply chain challenges, considering circular economy principles

Figure 2: Lowest scored competences by partners countries (Q14)
http://traincefood.si/wp-content/uploads/2020/11/D.1.1_Competerencies-survey.pdf

Draft version of curriculum topics was prepared and uploaded to Google Drive for partners to add comments and changes. The topics have been chosen following the structure provided in the three online training modules (Fig. 4), namely: e-module 1 (Introduction to circular economy and innovative business models), e-module 2 (Entrepreneurship and cooperatives in circular economy) and e-module 3 (Creation of cooperative start-ups using circular economy in food supply chains). In this sense, lesson 1 is an introduction to the course, lessons 2 to 6 would correspond to e-module 1, lessons 7 to 11 comprise e-module 2 and lessons 12 to 16 were combined into e-module 3. Every group of lessons/topics correspond to one ECTS (25 hours).



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Universities				hours
Intro	1	Subject introduction and overview	Classroom activity	STRATECO
e-module 1 Introduction to circular economy and innovative business models	2	Circular economy (CE) and business models. What is a circular business model?	Classroom activity	MIITR/STRATECO
	3	Circular economy business models in food supply chain	Classroom activity	IED
		- development of innovative business models of CE - benefits of innovative business models in CE		
	4	Creating healthy products by means of circular economy	Classroom activity	FAZOS
	5	Fighting food waste through the circular economy business models:	Classroom activity	FAZOS
		- food waste prevention - recycling and reuse		
6	Best practices examples in CE business models in the food supply chain	Individual	STRATECO	
e-module 2 Entrepreneurship and cooperatives in circular economy	7	Ethics and principles for the development of social entrepreneurship	Classroom activity	Permacultura
	8	Legal framework for establishing social enterprises/cooperatives	Classroom activity	Permacultura
	9	Bridging the Circular Economy and Social Enterprise	Classroom activity	MIITR
	10	Competences needed for establishing successful innovative business / cooperative	Classroom activity	MIITR
		- technical, business, leadership, people skills		
11	Social entrepreneurship and CE: good practice examples	Individual	STRATECO	
e-module 3 Creation of cooperative start-ups using circular economy in food supply chains	12	Establishing cooperative start-ups in real world environment - Methodologies for the development of ideas in innovative projects	Classroom activity	STRATECO/Permacultura
	13	Application of innovative business models	Classroom activity	IED
		- setting up a business (documents needed, legal issues, preparing a business plan)		
	14	Market research and added value of students idea	Exercise	IED
	15	Environmental Issues and their impact on business: Ecolabel/ environmental certificates / environmental management / environmental footprint in SME/ cooperatives	Classroom activity/ Individual	STRATECO/MIITR
- search and requirements of certificates needed				
16	Commercialization process of innovative idea and financial management of cooperative start up	Classroom activity	FAZOS	

Figure 3: Draft version of discussed topics for curriculums and e-modules development

Along with the topics preparation, the curriculum template was proposed and accepted during the online meeting with all the partners working on WP2. Discussion about possible improvements, partners working tasks and correspondence to project objectives was carried out. The draft version of curriculum was prepared and uploaded to google drive for partners to fill in their comments and changes after which the curriculum was finalized and sent to partners for additional comments and checks. Later on, the modified document was revised at the following online meeting of the project-working group.



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Curriculum Train ce food template - Word

COURSE CARD

1. Basics

Name of course	Exam (years):	
Field of study	Study profile	Year of study / semester
Specialisation	Language	
Field of study (first year study / part-time study)	Number of ECTS	
Learning - Outcomes - Qualification - Individual work -		
Year of study (first year study / part-time study)	Mode of study (part-time study / full-time study)	
Prerequisites for course achievement		
Workload		
Total		

2. Prerequisites:

3. Learning objectives:

LO1	
LO2	
LO3	
LO4	

4. Learning outcomes:

- knowledge

K1	
K2	
K3	
K4	

- skills

S1	
S2	
S3	
S4	

- competencies

C1	
C2	
C3	
C4	

5. Method of learning outcomes evaluation:

- partial mark:

Grade	
-------	--

- final note:

Final note	
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6. Course content:

- Lectures

No.	Topics	Learning objectives	Learning outcomes	Method of learning outcomes evaluation
L1				
L2				
L3				
L4				
L5				
L6				
L7				
L8				
L9				
L10				

7. Methods of teaching:

- Lecture:

Percentage	
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8. Marks

Mark	2,000	3,000	4,000	5,000
Grade				

9. Literature:

10. Hour structure

Type of activity	Number of hours	
	Full-time study	Part-time study
E-learning		
Activities		

End of document

Screens: 1-3 of 3

Fig 4: Curriculum template

After the final improvements of the curriculum course card, carried out by all the working partners, a quality check was performed by the WP leader and by Rebeka Kovačič Lukman, the project quality manager.

Curriculum for the university level consists of various up-to-date topics that will allow students to build up a successful business in the field of circular economy and food supply chain, as well as understand and appropriately respond to the needs of their local communities, create valuable partnerships and be much-needed change-makers.

b) Added value of curriculum content development

In addition, the COOPilot project⁷ MOOC results, Module 2 – “A guide to create a cooperative start-up”, was used for further guideline in creating topics along with skills and competences, and ECOOPE project⁸ as a guideline in creating skills and competences. Furthermore, the Programme guide - “A guide to planning and implementing a cooperative entrepreneurship education training in higher education institutions” will be used for the preparation of our e-modules.

⁷ <http://www.coopilot-project.eu/>

⁸ <https://youth.ecoope.eu/documents-2/>



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Along with the above-mentioned materials, Entrepreneurship Competence Framework (EntreComp) was a very useful guide in terms of developing the curriculum, especially in the section devoted to social entrepreneurship, as it is the most comprehensive source of required competencies for entrepreneurs and what is important for the needs of a cooperative start up to be successful.

The training module of the project “Boosting key mindset elements for successful social business development”, co-financed by Nordplus program “Nordplus Adult” (project identification number NPAD-2017/10203) has also been consulted⁹.

Research of other literature and web contents (such as curriculums of universities) has also been performed, and references are included in the resources list at the end of this deliverable.

In relation to the learning objectives and outcomes of the curriculum, two major curriculum standards have been applied:

- Learning objectives are statements that describe the endpoints or desired outcomes of the curriculum, a unit, a lesson plan, or learning activity. They specify and describe curriculum outcomes in more specific terms than goals or aims do. Objectives are also the instructions or directions about what educators want the students to be able to do as a result of instruction. Learning objectives have a common form, subject-verb-object. The subject is the learner or, more generally, the student. The object indicates the content to be learned The verb indicates how the student is expected to process the content (1).
- Learning outcomes are defined as what learners should know and be able to demonstrate at the end of a learning process; they refer to statements and expectations related to learners’ performances. Achieved learning outcomes (sets of knowledge, skills and/or competences) are demonstrated by an individual learner at the end of a learning process (2).

Bloom taxonomy

Bloom taxonomy has been applied to create learning objectives and outcomes. Bloom's Taxonomy was created in 1956 by the leadership of educational psychologist Dr Benjamin Bloom in order to promote higher forms of thinking in education, such as analyzing and

⁹ <http://socialinnovation.lv/en/boosting-key-mindset-elements-for-successful-social-business-development/>



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evaluating concepts, processes, procedures, and principles, rather than just remembering facts (rote learning). It is widely used as a template for creating curriculums learning objectives and outcomes as it is a convenient way for describing the extent to which we want for the students to understand and use concepts, to demonstrate particular skills, and to have their values, attitudes, and interests covered.

There are three domains of educational activities or learning (Bloom, et al. 1956) which were revised by Anderson and Krathwohl (2001) and are used today:

- Cognitive: mental skills (knowledge)
- Affective: growth in feelings or emotional areas (attitude or self)
- Psychomotor: manual or physical skills (skills)

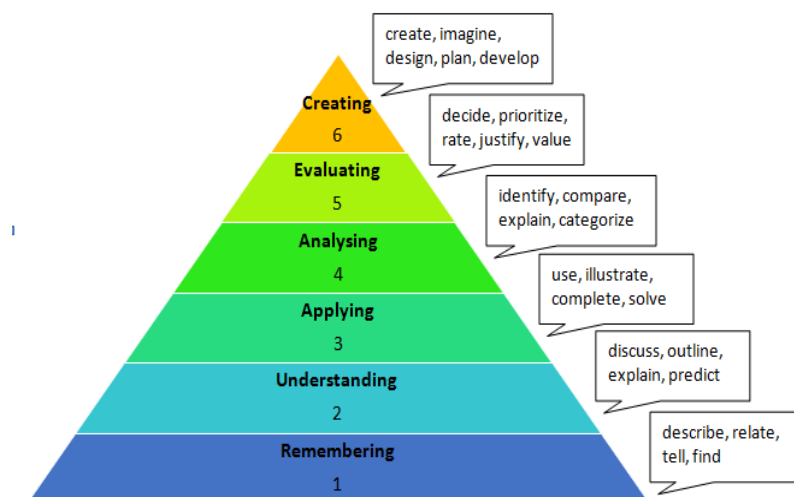


Figure 5: Bloom Taxonomy of Educational Objectives hierarchy (Ref.)¹⁰

The cognitive field involves the knowledge and development of an individual's intellectual abilities, which involves recalling or recognizing certain facts, procedural patterns, and concepts that serve to develop intellectual skills and abilities. Bloom (1956) formed six levels within this category, and assumed that the higher level cannot be obtained until the lower levels of learning and teaching are acquired, Fig. 1. We have used these levels of education to serve us as a support in curriculum design and evaluation, as suggested by Forehand (2008).

¹⁰ Ref: Bloom, B. S. (ed.). Taxonomy of Educational Objectives. Vol. 1: Cognitive Domain. New York: McKay, 1956.



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Updated terms and their definitions of cognitive levels in the Bloom taxonomy, according to Anderson and Krathwohl (2001):

- **Remembering:** renew, recognize, recall knowledge from memory;
- **Understanding:** design meaningful oral, written or graphic messages with explanation, case studies, classification, summaries, conclusions, comparison and explanations;
- **Applying:** carry out procedures;
- **Analyzing:** break down into individual parts and determine the connections of individual parts into a complete composition, by distinguishing organizing or defining a function;
- **Evaluating:** make judgments based on criteria and standards by examination and criticism;
- **Creating:** assemble elements in such a way that they form a comprehensive useful set, recognize elements into something new, a new structure, by designing or producing new knowledge.

Current research reveals the widespread use of the Bloom's taxonomy in various fields (e.g. from chemical engineering to medicine). Bloom's improved taxonomy has fostered those educational concepts that related to problem solving and to creative and critical thinking, through the integration and use of information and communication technology (Ferguson, 2002).

For the preparation of the curriculums for higher education as well as secondary level we followed the improved Bloom's taxonomy as creative approaches and critical thinking are of utmost importance in the circular economy and (social) entrepreneurship education as well as in establishing cooperatives and generating new business ideas.



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3. COURSE CARD

Course card for university level e-course, *Circular economy and entrepreneurship in food supply chain*, aims to create a baseline for innovative and up-to-date content structure with practical and learner-friendly topic development. It is divided into following information areas:

1. basics;
2. prerequisites;
3. learning objectives;
4. learning outcomes;
5. method of learning outcomes evaluation;
6. course content;
7. methods of teaching;
8. marks;
9. literature;
10. hour structure.

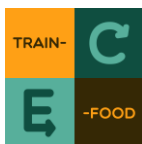
1. BASICS

Name of course CIRCULAR ECONOMY AND ENTREPRENEURSHIP IN FOOD SUPPLY CHAIN		Exam (Yes/No) NO
Field of study	Study profile	Year of study /semester
Specialization		Language ENGLISH
No of hours: (full time study / part time study) Lectures – 25 / 25 Exercises – 10 / 10 Consultations – 20 / 20 Guided E-learning – 10 / 00 Individual work – 20 / 20		Number of ECTS 3 1 ECTS = 25 study hours 3 ECTS = 75 study hours
Level of study BSc	Mode of study (full time study / part time study) FULL TIME STUDY / PART TIME STUDY	
Person responsible for card development		



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Main lecturer	
Date	

2. PREREQUISITES

The course is covering all the topics, starting with clear overview content background, however students should have some prerequisites in following areas for easier understanding and advancement:

- Basic knowledge about entrepreneurship;
- Basic knowledge in circular economy;
- Basic knowledge in food supply chain.

3. LEARNING OBJECTIVES

O1	To apply circular economy and CE business models in food supply chain
O2	To present case examples of circular economy business models in food waste and its recovery
O3	To apply ethics and principles for the development of social entrepreneurship
O4	To interpret legal framework of social enterprise/ cooperative
O5	To apply principles of cooperation and cooperative management
O6	To recognize competences needed for establishing successful innovative business
O7	To apply different methodologies for the development of an idea in innovative projects
O8	To describe and explain how to set up a (social) business or cooperative
O9	To provide market research in a relation to his/her business idea
O10	To apply environmental certificates/Ecolabel in food supply chain business models
O11	To explain how CE thinking is used for innovation challenges in (social) entrepreneurship and cooperatives
O12	To explain how to commercialize products and services of their innovative business ideas



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O13	To teach financial management of innovative CE business models
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4. LEARNING OUTCOMES

Learning outcomes describe specific and applicable outcomes that students should understand, acquire and be able to use at the end of the learning process. We prepared actionable outcomes, divided into the fields of knowledge, skills and competencies.

– KNOWLEDGE

K1	Able to describe business models in circular economy
K2	Able to identify business models in food supply chain
K3	Able to identify and recognize new circular economy food supply chain business models
K4	Able to distinguish waste management processes and business models in CE
K5	Able to identify the characteristics of co-operative organizations, their role in the country and the potential role of cooperatives in economic and social development
K6	Able to recognize entrepreneurship as a part of the successful, commercial application of innovations
K7	Able to describe foundation of social entrepreneurship and its role in cooperatives
K8	Able to interpret legal framework in starting up a cooperative or social (entrepreneurship) activity
K9	Able to understand how to set-up a cooperative or social (entrepreneurship) business
K10	Able to illustrate leadership participation in the decision-making, management and entrepreneurial processes of co-operative and social enterprises
K11	Able to benefit from a greater insight into the personal leadership strengths and weaknesses and understand how they relate to their cooperative aims and goals



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K12	Able to use sharing economy principles to boost students' startup business
K13	Able to demonstrate successful teamwork within their own businesses
K14	Able to use SWOT analysis for planning and building up the business strategy when starting up a business
K15	Able to comprehend an overview on ecolabels /environmental certificates/ environmental footprint for SMEs/cooperatives
K16	Able to ensure solid financial management, effective organizational oversight and an integrated approach to Governance, Risk Management and Compliance (GRC)

– SKILLS

S1	Able to identify and understand the co-operative values and the co-operative rationale, why cooperatives are needed and the role they are filling in the socio-economic system
S2	Able to respond creatively to the needs and problems within cooperation and community with setting up innovative business ideas
S3	Able to analyze business situation of startup cooperative/social entrepreneurship
S4	Able to demonstrate analytical and cooperative problem-solving skills in CE business model associated with effective entrepreneurial practice
S5	Able to produce original and useful proposals for new solutions in CE food supply chain for products or services for clients and partners in coops and social entrepreneurship
S6	Able to identify relevant business opportunities in CE and food related issues
S7	Able to synthesize different knowledge and procedures and be aware of importance of use of professional literature about business processes, business opportunities and business plans
S8	Able to identify key aspects of problem of their innovative business idea from different viewpoints and propose improvements and solutions for realization of the same idea into practice
S9	Able to apply co-operative and mutual enterprise business model dynamics in solving problems of management



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S10	Able to award member loyalty and engagement within a co-operative and mutual enterprise and strengthen and retain member commitment
S11	Able to apply market research tools when starting their innovative business in CE food supply chain
S12	Able to solve a complex problem through design thinking for new business models within CE and food related topics
S14	Able to introduce innovative programs and processes that enhance organizational cooperative social responsibility and CE objectives
S15	Able to carry out all relevant/established set of cross-checks and reconciliations to ensure consistency and plausibility of financial figures
S16	Able to determine optimal sourcing based on comprehensive operational and cost analysis of the value chain
S17	Able to evaluate and/or implement specific financing strategies (e.g., funding sources, usage of additional or surplus cash)
S18	Able to analyze alternative means of raising capital

– COMPETENCIES

C1	Able to respond to complex food supply chain challenges, considering circular economy principles
C2	Able to implement business model through food recycling and reuse
C3	Able to propose innovative method approach to minimize the use of resources and materials in the food supply chains
C4	Able to recognize many forms of value that could be created through entrepreneurship, such as social, cultural or economic value
C5	Able to demonstrate interest and ability to create unique social impact within the local community via new social(entrepreneurship)or cooperative ideas
C6	Able to describe different analytical approaches to identify (social) entrepreneurial opportunities.
C7	Able to make strategic decisions in relation to government policies and legal environments



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C8	Able to select appropriate techniques for problem solving in their cooperation/ social entrepreneurship and is able to evaluate the importance and significance of data relevant for development of their business idea/ proposal
C9	Able to evaluate and incorporate CE and social factors when making strategic decisions
C10	Able to develop a plan for dealing with limited resources when setting up value-creating activity
C11	Able to assess the value of social media platforms for marketing opportunities of their own businesses
C12	Able to change the organization in response to the market demands and assess new options for a business
C13	Able to introduce and develop a business plan for their own business ideas
C14	Able to actively search for new solutions that improve the value-creating process within their entrepreneurship and cooperative activities
C15	Able to analyze and make recommendations regarding optimal capacity utilization to support the business plan of their own projects
C16	Able to development and commercialization of innovative CE related projects
C17	Able to analyze, measure and considering circular economy challenges in the food supply chain (e.g. chaining production or consumption patterns, identifying environmental, economic, social impacts)
C18	Able to conduct mobilization of resources
C19	Able to create a team of people who can work together in a value-creating activity
C20	Able to incorporate life-cycle costs in product and service profitability projections
C21	Able to evaluate capital investment projects using common quantitative techniques (e.g., net present value, internal rate of return)



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5. METHOD OF LEARNING OUTCOMES EVALUATION

- for a partial mark:

Online e-learning

- for a final note:

E-test / E-presentation

6. COURSE CONTENT

Course content is divided into 16 topics with stating learning objectives and outcomes added accordingly. Methods of learning outcomes are designed as various e-learning innovative practices that allow students to scale up their knowledge, skills and competencies in order to use them as a part of a lifelong learning asset.

No.	Topics	Learning objectives	Learning outcomes	Method of learning outcomes evaluation
1.	Subject introduction and overview	*	*	e-lecture
2.	Circular economy (CE) and business models. <i>What is a circular business model?</i>	O1, O3, O8, O13	K1, C4, C6	e-lecture
3.	Circular economy business models in food supply chain -development of innovative business models of CE - benefits of innovative business models in CE	O1, O2	K2, K3, C2, C3	e-lecture (gamification)
4.	Creating healthy products by means of circular economy	O10, O12	K4, C3	e-lecture



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5.	Fighting food waste through the circular economy business models: - food waste prevention - recycling and reuse	O2	K4, C4, C12	e-lecture
6.	Good practices examples in CE business models in the food supply chain	O2, O5, O6	K7, C15, C17	individual work
7.	Ethics and principles for the development of social entrepreneurship	O5, O6	K7, K15, S3, C4	e-lecture
8.	Bridging the Circular Economy and Social Entrepreneurship	O9, O11, O12, O13	K7, K12, K14, S2, C5, C6	e-lecture
9.	Legal framework for establishing social enterprises/cooperatives	O4, O5, O9	K5, K8, C7	e-lecture
10.	Competences needed for establishing successful innovative business / cooperative - technical, business, leadership, people skills	O8, O9, O12, O13	K9, K10, K11, S3, S4, C8, C9	e-lecture
11.	Social entrepreneurship and CE: good practice examples	O2, O5	K6, K7, K9, C7	e-exercise
12.	Cooperatives start-up in real world environment - Methodologies for the development of ideas in innovative projects	O7, O11, O12, O13	K12, K13, K14, S1, S2, S8, S9, C9, C10	e-lecture



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13.	Application of innovative business models - setting up a business: (documents needed, legal issues, preparing a business plan)	O3, O4, O5, O8	K9, K13, S10, S11, C10, C12, C13, C14, C15	e-learning (gamification)
14.	Market research and added value of students idea	O11, O12	K14, S12, S13, C9	e-exercise (gamification)
15.	Commercialization process of innovative idea and financial management of cooperative startup	O12, O13	K16, S14, S15, S16, S17, S18, C18, C19, C20, C22, C23	e-lecture,
16.	Environmental Issues and their impact on business: Ecolabel/ environmental certificates/ environmental footprint – <i>Search and requirements of certificates needed</i>	O3, O10	K15, C12, C20	e-lecture e-exercise

7. METHODS OF TEACHING

– E-learning:

e-lectures, case studies (individual or in team), individual work, consultations

8. MARKS

Mark	0-49%	50-74%	74-90%	91-100%
Criteria	No response or very limited knowledge of the content of the training. Student does not know the basic issues discussed.	Knowledge of training content limited to the minimum necessary. Student knows the basic issues discussed and their solutions.	Satisfactory or good knowledge of the content of the training. Student knows and understands the solution to the problems.	Very good knowledge of the content of the training or beyond the program standards. Student has deep knowledge of the problems and their solutions.



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10. HOUR STRUCTURE

Type of activity	Number of hours	
	Full time study	Part time study
E-learning	46	46
– e-lectures	22	22
– e-exercise	6	6
– consultations	8	8
– guided e-learning	10	10
– exams	0	0



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Students group/ individual work	29	29
– preparing for the e-lectures and e-exercises (literature study, homework)	15	15
– preparing a presentation of case study, essays, etc.	14	14
– preparing for the exam/test	0	0
Total hours	75	75
Number of ECTS	3	3



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4. CONCLUSION

Based on the work carried out in WP1, the gaps in higher education for entrepreneurship and the circular economy in the food supply chain have been identified in each country. Therefore, this curriculum has tried to fill those gaps in university education, including the topics of interest. The topics have been chosen following the structure provided in the three online training modules, namely: e-module 1 (Introduction to circular economy and innovative business models), e-module 2 (Entrepreneurship and cooperatives in circular economy) and e-module 3 (Creation of cooperative start-ups using circular economy in food supply chains), corresponding to 3 ECTS in total. Following Bloom's Taxonomy, learning objectives have first been developed so that students can follow individualized learning paths, focusing on the skills and knowledge they need to learn. The learning outcomes have also been identified, regarding knowledge, skills and competences, and a relation of every lesson with their corresponding learning objectives and outcomes has been established.

Several teaching methods have been selected in order to develop e-learning teaching (e-lectures, individual or group exercises, individual work and consultations). The curriculum also includes some literature to delve into the topics studied, the methods of evaluation and the hour's structure of the types of activities. The project partners have developed all the works and all the decisions on the topics to be included have been agreed upon by all, assigning the subsequent development of the topics in the e-learning modules to the partners with more experience in each one of them.



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