



30 HOURS
DESIGN THINKING
BIOECONOMY
SEMINAR

1 semester with Design Thinking



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Erasmus+


Course programme, 30 hours
Group of maximum 30 students





WEEK 1: 90 minutes


INTRO session		
Time (in minutes)	Instructions	Materials
10'	<p>Session 1. Teacher presents herself/himself:</p> <ul style="list-style-type: none"> • Educational background, scientific and research interests, achievements and plans. • Some information on passions, private life (optional). 	 <i>Online</i> PP Presentation – max 2 slides
15'	<p>Session 2. Course introduction:</p> <ul style="list-style-type: none"> • Overview of the course programme. • General presentation of the course subject: what will happen in the class (Design Thinking method), what content will be included (course topic), what competences students will develop. • Teacher-students cooperation and communication rules: <ul style="list-style-type: none"> ○ The teacher has the role of tutor and process moderator: assesses the students' work, provides instructions, and gives regular feedback. ○ Students are proactive with their projects, gain equal freedom and responsibility for the results. They are to perform each task and independently going through each Design Thinking stage. ○ Course evaluation criteria. 	 <i>Online</i> PP Presentation - 4 slides.

30 - 40'	<p>Session 3. Students present themselves.</p> <p>Each person has one minute to answer the following questions:</p> <ol style="list-style-type: none"> 1. What is my name? 2. Why did I choose this course? 3. What are my hobbies, passions, interests? <p><i>Modification:</i> if the group is smaller, the teacher can invite them to more interactive activities – MYSTERY BAG. Before classes, the teacher prepares a bag with different objects (it could be anything: pen, alarm o'clock, matches, some toys etc). Students pick up from the bag (with closed eyes!) one object and answer the questions:</p> <ol style="list-style-type: none"> 1. What is my name? 2. Why did I choose this course? 3. What does the object say about me? How does it reflect my hobbies, experiences etc? <p>If the class is online - students can pick any object from their homes which reflects their personality.</p>	 Online Slide with questions
5'	Break	
15'	<p>Session 4. Design Thinking – process introduction</p> <p>Case studies:</p> <p>https://www.youtube.com/watch?v=FkJD9bYS-As</p> <p>https://www.youtube.com/watch?v=-PyY94ssSww</p> <p>https://www.youtube.com/watch?v=rWyClv8bico</p>	 Online PP presentation (content from the book chapter: What is Design Thinking?) Recommended video: https://www.youtube.com/watch?v=_r0VX-aU_T8
10'	<p>Session 5. Design Thinking as a learning process during the course – introduction to cooperation rules, evaluation criteria (once again)</p>	 Online PP presentation
10'	Q&A session	

WEEK 2 & 3: 90 minutes



Introduction to Bioeconomy course		
Time/method	Instructions	Materials
20'/lecture	<p>Session 1.</p> <p>Bioeconomy challenges – introduction to the course subject. – Teacher makes a presentation</p>	PP presentation, newspapers, videos – various resources to get students interested in the subject
60'/individual and team work	<p>Session 2: Design Thinking Team formation</p> <p>Teacher introduces the session:</p> <p><i>There are two main objectives of the following activity:</i></p> <ol style="list-style-type: none"> <i>1. The first one is to find a specific problem (connected with eco/global issues I empathise with) that you find really important or that might be of special interest, or about which you know many facts, details or people who struggle with the problem.</i> <i>2. The second goal for you is to form 6 groups (4-8 people each). This is a very important stage, because you are going to work together till the end of the semester.</i> <p><i>I will facilitate the process and hope you will be satisfied with the results. There are 3 steps.</i></p>	
	<p>Step 1 – for this step you have 10 minutes. It is individual work.</p> <p><i>Think of the bioeconomy challenges I mentioned at the beginning of our meeting. Which one seems to you of the most significant importance, and resonates with your values, experience, and knowledge. Try to link them with your life or with your city or the place you come from? We are looking for problems that may affect you, your family, or city directly. Challenges that are human-centred. Some examples:</i></p> <ul style="list-style-type: none"> • How to live a more eco-friendly life? • How to make waste management in your city/or maybe family more effective? Or how to produce less waste? • How to prevent water shortage in your country? 	 <p>Students may use their mobile phones to explore the topics, to do some research. The teacher should also recommend some relevant webpages to make the work effective.</p>

	<p>Step 2. <i>In pairs, share your problem and discuss the findings. Write down the problem you both find to be more interesting or important. Again, you have 10 minutes.</i></p>	 A4 paper <i>Online</i> In an online version, this step may be skipped
	<p>Step 3. <i>Pairs read the problems aloud (5 minutes).</i> Important! At this step the teacher should verify whether the challenge is applicable to the Design Thinking challenge – the challenge should be concrete enough to search for a solution; the challenge should give an idea for Design Thinking personas.</p>	 <i>Online</i> In an online version, this step may be skipped
	<p>Step 4. <i>This way we have defined 15 important issues. Now we need to narrow them down, choose 5, and form 5 teams (each of 6 people). You are free to move, discuss, and create 5 teams. You don't need to keep the subject you already formulated (individually or in pairs). You have 20 minutes.</i></p>	 The teacher observes the process carefully. Supports students by answering questions, encouraging to complete the activity <i>Online</i> In an online version, this step may be skipped
5'	Break (only after successful team formation)	
15'/teamwork	<p>Session 3: Team integration The objective of this session is to improve teamwork and help students to feel comfortable in their teams. Exercise: Team names The first team task is to create the team's exceptional name. Students can do it by sharing their hobbies or some life experience and choosing something they have in common. They can also be inspired by the subject they chose. The team's name is written down on a piece of paper and presented to others.</p>	 A4 paper, colourful markers <i>Online</i> Poster created in Canva or other online app.




70'/teamwork	<p>Session 4:</p> <ol style="list-style-type: none"> Problem research (30') - teams now have time to explore the challenge they have chosen. They will prepare the presentation on a piece of flipchart paper or a PP presentation. They need to answer the following questions: <ol style="list-style-type: none"> How does the problem affect/may affect people? What are the consequences of not solving the problem? Teams present their problems (40') – teacher comments on the presentations. 	 <p>Flipchart paper, newspapers, scissors, glue.</p> <p><i>Online</i></p> <p>Teams work in virtual rooms and prepare the presentation on Slide google apps.</p>
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WEEK 4: 90 minutes

Empathy phase - introduction		
Time (in minutes)	Instructions	Materials
15'/lecture	<p>Session 1:</p> <p>Introduction to the Empathy phase – the teacher explains:</p> <ul style="list-style-type: none"> the objectives of the first Design Thinking stage the tasks for student teams 	PP presentation based on the chapter “Empathy”, p. 14
15'/teamwork	<p>Session 2: Who is your persona?</p> <p>Teams identify the personas they can interview in the next stage. They should find at least 2 people:</p> <ol style="list-style-type: none"> One person should be somebody they can reach immediately. It can be someone in the classroom or someone they can call and conduct an interview with during classes. The second person should be someone they can talk to in the following days, before the next class. <p>Personas must be connected with the problem the teams are working with. The problem should be important for this person, or the person's attitude is important for the problem solving.</p> <p>Personas for the examples mentioned above:</p>	

	<ul style="list-style-type: none"> • How to live a more eco life? - A first year student starting to live independently, eco issues are becoming more and more important, but she/he claims it is too expensive to buy eco products. • How to make waste management in your city/or maybe family more effective? Or how to produce less waste? - Parents with small children, an average family. <p>Teams end this session with the names of personas they will interview.</p> <p>Book chapters: “Decide who is your persona”, p. 16 & “Define extreme users”, p. 16</p>	
15'/teamwork	<p>Session 3: Interviews scenario development</p> <p>The session is conducted according to the exercise described in the book: “Empathy interview step 1”, p. 20</p>	 Online A slide with some interview questions and interview rules
10'	<p>Q&A session</p> <p>The teacher consults on the Session 3' outcomes and checks some of the interview questions</p>	
30'/teamwork	<p>Session 4: First Interviews</p> <p>Students conduct their first interview with the persona they identified among the whole class group. It is important that personas are from other teams. In Design Thinking processes, personas do not work on their own solutions.</p> <p>Interviews are usually conducted by two interviewers. They ask questions, other team members listen carefully and take notes: “Empathy interview, step 2 and 3”, p. 20</p>	 Students conduct interviews in classroom (face to face) Online Personas are invited to the team's room, where the interviews are conducted.
5'	<p>Homework introduction: the task for each member of the team is to conduct at least one more interview with a persona from outside the class. They need to take notes while interviewing. The interviews must be conducted before the next class.</p>	

WEEK 5: 90 minutes

Empathy maps		
Time (in minutes)	Instructions	Materials
10'/lecture	<p>Session 1: Introduction to the next Empathy phase</p> <p>Teacher:</p> <ul style="list-style-type: none"> explains the empathy tools: persona profile, empathy map gives instructions for the teamwork 	 <i>Online</i> PP presentation based on the handbook chapters: Map the empathy results, p. 19 Empathy tools 2,3,4 p. 20-28
45'/teamwork	<p>Session 2: Persona profile</p> <ol style="list-style-type: none"> Students in their teams discuss the results from all conducted interviews. They uncover insights and important information about a persona's experience: "Empathy interview – step 3" p. 21 Teams create the Persona profile: "Empathy tool 2", p. 22 Persona profile presentation – very brief presentation (max 2 minutes/team) 	 Flipchart papers, colourful markers. PP slide with persona profile template <i>Online</i> Google Slide app, teams work in separate virtual rooms
35'/teamwork	<p>Session 3: Empathy maps</p> <p>Students prepare empathy maps of their personas: "Empathy tool 3", p. 24</p>	 Flipchart paper, markers, glue, magazines, Scissors. PP slide with empathy map template. Prompts as handouts for each of the team. <i>Online</i> Virtual handouts, Google Slide app or other tool to develop a visual empathy map

WEEK 6: 90 minutes

Empathy results		
Time (in minutes)	Instructions	Materials
15'	Session 1. Time for teams to finish the empathy maps and prepare for presentations.	
75'	Session. 2 Presentations <ol style="list-style-type: none"> 1. Teams present both results of the Empathy phase: persona profiles and empathy maps. During the presentation, the team refers to the main global challenge they chose to work on. 2. After each presentation, the teacher facilitates a reflection session: <ul style="list-style-type: none"> ● <i>What was the most difficult in the empathy phase? Why?</i> ● <i>What do you think is the most essential need of the personas?</i> ● <i>How was it to interview your personas?</i> 	Flipchart Online presentations

WEEK 7: 90 minutes

Define phase		
Time (in minutes)	Instructions	Materials
20'/lecture	Session 1: Introduction to the Define phase The teacher: <ul style="list-style-type: none"> ● explains the Define objectives: to break down research results and to formulate POV and HMW ● gives brief instruction about Define steps: <ul style="list-style-type: none"> ○ Create a list of needs, p. 30 ○ Choose the most meaningful insights, p. 32 ○ Choose the need you want to answer, p. 32 ○ Formulate your Point of View, p. 34 ○ Create How Might We question, p. 35 	PP presentation based on the handbook chapter: "Phase 2. Define", p. 30 Recommended Video: https://www.youtube.com/watch?v=TNAdanuvwtc

40'/teamwork	Session 2: Needs and insights <ol style="list-style-type: none"> Students unpack what they found out during the empathy phase and make a list of the persona's needs. The instructions are in the chapters: <ul style="list-style-type: none"> Create a list of needs, p. 30 Choose the most meaningful insights, p. 32 Choose the need you want to answer, p. 32 Teams presents the needs they would like to explore and work on the solutions 	Handouts with the relevant handbook content Online access to the handbook
30'/teamwork	Session 3: POV and HMW question <ol style="list-style-type: none"> Students follow the steps according to the handbook chapters: Formulate your Point of View, p. 34 and Create How Might We question, p. 35 Teams presents their POV and HMW Teacher asks each team the verifying questions: <ul style="list-style-type: none"> How do your POV and HMW questions respond to the Design Thinking challenge you decided to solve? How may your POV contribute to the global ecological problems we face? 	Handouts with the relevant handbook content Online access to the handbook

WEEK 8: 90 minutes

Ideation phase		
Time (in minutes)	Instructions	Materials
20'/lecture	Session 1: Introduction to the Ideation phase The teacher: <ul style="list-style-type: none"> explains the ideation objectives gives brief instruction about Ideation steps: <ul style="list-style-type: none"> Brainstorming rules, p. 40 Energiser, p. 44 Brainstorming session, p. 48 	PP presentation based on the handbook chapter: "Phase 2. Ideate", p. 38 Recommended Video: https://www.youtube.com/watch?v=z bLxs6te5to
30'/teamwork	Session 2: Brainstorming energiser Instruction for activity, p. 44	List of materials: p. 44

40/teamwork	<p>Session 3: Brainstorming</p> <ol style="list-style-type: none"> 1. The teacher once again gives a reminder about the most important brainstorming rules and invites teams to the brainstorming session, during which they should come up with as many ideas as they can to answer the HMW question and help their personas 2. Teams follow the steps described in the handbook, p. 48. The teacher can choose the brainstorming structure or give the teams freedom with deciding how they would like to work. 	List of materials: p. 48
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WEEK 9: 90 minutes

Ideation phase - brainstorming results		
Time (in minutes)	Instructions	Materials
50'/ presentations	<p>Session 1: Ideas presentations</p> <ol style="list-style-type: none"> 1. Teams present the ideas they came up with during the brainstorming 2. Teacher comments on the ideas, referring them to the main class subject 3. The flipchart papers with ideas (boards of ideas) are hung on the classroom walls. 	Tape to hang the ideas on the wall.
20'/teamwork	<p>Session 2: Teams brainstorming contribution</p> <p>Students walk around the classroom and add ideas to other groups' challenges. It is important that each idea is written clearly so that the owners of a board can easily read the idea.</p>	Sticky notes and markers and pens
20'/lecture	<p>Session 3: How to choose the best idea?</p> <p>The teacher introduces different ways of choosing the idea to be prototyped in the next design thinking stage:</p> <ol style="list-style-type: none"> 1. Democratic dots, p. 51 2. Idea Evaluation Matrix, p. 52 	PP presentation. Content based on p. 51

WEEK 10: 90 minutes

Prototyping phase - introduction		
Time (in minutes)	Instructions	Materials
60'/teamwork	<p>Session 1: Ideas evaluation</p> <ol style="list-style-type: none"> 1. The purpose of this session is to choose the 3 best ideas, which are going to be prototyped and tested. 2. Teams evaluate each idea using the Idea Evaluation Matrix. The best way is to do it on a laptop's excel sheet, p. 53 3. If some of the ideas get the same score, students use the Democratic Dots to choose the best ideas, p. 51 4. Teams present the results of their work. 	<p>Students can work on their laptops, which speeds up the process. They can also work in a traditional way and draw a large-scale Evaluation Matrix on flipchart paper.</p>
30'/lecture	<p>Session 1: Introduction to the Prototype phase Teacher</p> <ul style="list-style-type: none"> • explains the prototyping objectives • describes different types of prototypes and presents examples (photos, videos) • ask students to bring to the next session materials for prototyping: <ul style="list-style-type: none"> ○ tape, glue ○ scissors ○ pastels, or colourful pens ○ things they do not need and can use for building prototypes e.g.: colourful newspapers, cartons, plastic bottles 	<p>PP presentation based on the handbook chapter: "Phase 2. Prototype", p. 56</p> <p>Recommended Video: https://www.youtube.com/watch?v=Q4MzT2MEDHA&t=36s</p>

WEEK 11: 90 minutes

Prototyping the first idea		
Time (in minutes)	Instructions	Materials
15'/videos	<p>Session 1: Get inspired</p> <p>The teacher launches several videos to inspire students for effective prototyping:</p> <p>https://www.youtube.com/watch?v=85muhAaySps https://www.youtube.com/watch?v=y20E3qBmHpg https://www.youtube.com/watch?v=k_9Q-KDSb9o&t=7s https://www.youtube.com/watch?v=3M8MItY6L8Y https://www.youtube.com/watch?v=-SOeMA3DUEs</p>	

60'/teamwork	<p>Session 2: Prototyping the first idea.</p> <ol style="list-style-type: none"> 1. Teams build/create their first prototype. They are free to choose the prototype type. It should be the most adequate to the ideal final version. 2. After finishing the building phase teams start to prepare the presentation of the prototype. They share roles, write a scenario, and plan a powerful idea's presentation. 	<p>All materials students brought to the class.</p> <p>Flipchart papers, markers.</p> <p><u>Optional:</u> Lego blocks, different stickers, various art supplies etc.</p>
15'/lecture	<p>Session 3: Introduction to the Testing phase</p> <p>Before starting the presentation session, teacher</p> <ul style="list-style-type: none"> • explains the testing objectives • describes different testing rules and present testing tools, p. 69 	<p>PP presentation based on the handbook chapter: "Phase 5. Test", p. 69</p> <p>Recommended Video: https://www.youtube.com/watch?v=UVEQCNM6X-A</p>


WEEK 12: 90 minutes

Prototyping the second idea		
Time (in minutes)	Instructions	Materials
80'/presentations and discussion	<p>Session 1: Prototype presentation and testing</p> <ol style="list-style-type: none"> 1. Teams present their prototypes. 2. While one team is presenting, the rest play the role of testers. They listen carefully. 3. Q&A time after each presentation. Testers ask questions and comment. The authors of the prototype do not defend their idea but provide specific and direct answers. 4. Testers complete the testing tool. The feedback is given to the prototype authors 	<p>Handouts: testing tool sheets, p. 72-76</p>
10'/discussion	<p>Session 2. Reflection after first presentation</p> <p>The teacher leads the discussion on the prototyping experience and provides feedback.</p>	

WEEK 13: 90 minutes

Prototyping the second idea		
Time (in minutes)	Instructions	Materials
30'/teamwork	<p>Session 1: Prototyping the second idea.</p> <p>Teams build/create their first prototype. They are free to choose the prototype type. It should be the most adequate to the ideal final version.</p>	<p>All materials students have brought to the class.</p> <p>Flipchart papers set, markers.</p> <p><u>Optional</u>: Lego blocks, different stickers, various art supplies etc.</p>
50'/presentations and discussion	<p>Session 2: Prototypes presentation and testing</p> <ol style="list-style-type: none"> 1. Teams present their prototypes. 2. While one team is presenting, the rest take the role of testers. They listen carefully. 3. Q&A time after each presentation. Testers ask questions and comment. The authors of the prototype do not defend their idea, but do provide specific and direct answers. 4. Testers complete the testing tool. The feedback is given to the prototype authors . 	<p>Handouts: testing tool sheets, p. 72-76</p>
10'/lecture	<p>Session 3. Feedback Capture Matrix - homework</p> <p>The teacher explains the homework task - using the tool Feedback Capture Matrix (p. 76) teams sum up the feedback they have after 2 testing sessions. They plan how to improve both ideas and prepare presentations for the next meeting.</p>	<p>Handouts: Feedback Capture Matrix, p. 76</p>

WEEK 14: 90 minutes

Prototypes implementation		
Time (in minutes)	Instructions	Materials
75'	<p>Session 1. Feedback Capture Matrix presentation</p> <p>Teams present Matrices developed for both prototypes. They emphasise how an improved idea will serve their personas and may contribute to global social or economic challenge solutions.</p>	Students present Matrix using PP presentation or physical poster (depends on teacher recommendations and whether it is online or face to face class)
15'	<p>Session 2. Summing up</p> <p>Questions to reflect:</p> <ol style="list-style-type: none"> 1. How do you find the whole Design Thinking process? 2. Your best experience during the course? 3. Your worst experience? 4. What would you change? 5. What are the most important lessons for you? <p>Students discuss these questions in their teams and then share their opinions.</p>	<p> Slide with questions</p> <p><i>Online</i> Slide with questions or Poll (zoom) Kahoot for individual evaluation.</p>

WEEK 15: 90 minutes

Evaluation		
Time (in minutes)	Instructions	Materials
90'	<p>Session 1. Evaluation</p> <p>The teacher adjusts the last class to the curricula evaluation system.</p> <p>The last meeting could also provide necessary time to finish uncompleted tasks.</p>	