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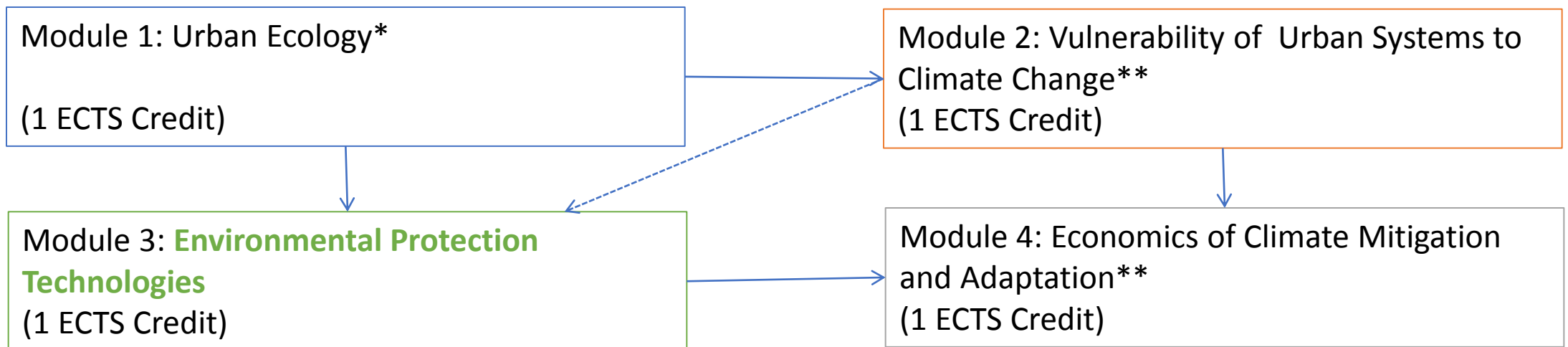
ClimEd Training 2 (Online) Adaptation of the Competency Framework for Climate Services to Conditions of Ukraine 29 June – 26 August 2021 Teamwork Presentation Group B12

Group B12 Members

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Proposed Course Structure

**Title: IMPACTS OF CLIMATE CHANGE ON URBAN AREAS AND NATURE-BASED SOLUTIONS FOR ADAPTATION
(4 ECTS Credits)**



* Developed by Group B11

** To be developed in the frameworks of ClimEd WP3

Training Development Plan for Blended Learning

Course Category:

TRAINING COURSES FOR EXPERTS FROM MUNICIPAL ORGANISATIONS

Module Title:

ENVIRONMENTAL PROTECTION TECHNOLOGIES

(ТЕХНОЛОГІЇ ЗАХИСТУ ДОВКІЛЛЯ)

(1 ECTS credit)

Training Development Plan: Functional Roles of Team Members

First and Last Names	Project Manager	Project Lead	Content Expert	Teachers	Developers	Reviewer
Olga KHANDOGINA		X	X	X	X	
Olena PAVLENKO			X	X	X	
Inna RYBALKA			X	X	X	
Olena VLADYMYROVA			X	X		
Yuriy VERGELES	X		X	X	X	
Yuri RASHKEVYCH						X

Training Development Plan: Milestones and Schedule

Milestone	31/07/ 2021	15/08/ 2021	16/08/ 2021	14/09/ 2022	15/10/ 2022	05/11/ 2022
Project Plan completed	■					
Learning needs assessed	■					
Learning outcomes reviewed and approved	■	■				
Content outline developed	■					
Learning activities designed	■					
Assessment plan complete		■				
Scheduling of all human, technical, and facility resources		■				
Learning resources developed or adapted			■	■		
Training delivered (begin date/end date)					■	■
Training evaluation complete						■

Course Overview: Rationale

- Cities represent the main habitat of modern man
- Urban population, economy and infrastructure, on the one hand, are powerful factors in the global transformation of natural and anthropogenic landscapes
- Urban systems are subject to natural environmental disturbances - as a consequence of destructive anthropogenic impacts on the natural environment
- The scope and magnitude of environmental problems in cities nowadays reach their historical maximum
- Solution requires systematic and comprehensive approaches

Course Overview: Key Goals

The module "**Environmental Protection Technologies**" aims at:

- **raising awareness** of specialists in the field of urban economy of Ukraine on the use of environmental technologies to adapt urban systems to climate change and to mitigate effects of dangerous natural processes and phenomena on urban population and infrastructure,
- as well as **reducing the level** of disposal or complete avoidance of the destructive effects of human activities on the urban environment.

Course Audience Description

- Early or middle-career specialists of municipal organisations and entities, local governments, specialised departments of regional and district state administrations, condominium managers
- Normally they do not have natural science education or education in the environmental technologies domain, but hold Master degree in other areas relevant to urban economy and management
- Before taking the proposed module, it is recommended for trainees to pass the module "**Urban Ecology**" (1 ECTS credit), which is a part of the same training course
- An **additional condition** for passing the module is *proficiency in English* at a level sufficient for understanding professional literature and referring texts

Expected Impacts (Training Goals)

- The study aims at better understanding of a variety of ways and measures to improve the urban environment, pathways of adaptation of urban systems to climate change, prevention or mitigation of negative impacts of natural and anthropogenic origin on environmental components and population health
- Trainees from different cities and municipalities of Ukraine, with different professional backgrounds, and different experience will have the opportunity to **form new knowledge in a new field**, exchange views and receive advice from experienced professionals in the field of environmental protection, as well as **applying cross- and multidisciplinary approaches** to solving urgent problems of sustainable urban development
- After the training, trainees can become **leaders in change** in their organisations and communities, enabling to motivate and inspire colleagues to positive changes in attitudes and activities towards a common habitat

Learning Needs

Survey of municipal economy experts in all regions of Ukraine (number of respondents - 23), which was conducted in May-June 2021 in the framework of the Erasmus + Project 619285-EPP-1-2020-1-FI-EPPKA2-CBHE- JP “Multilevel Local, Nation- and Regionwide Education and Training in Climate Services, Climate Change Adaptation and Mitigation (ClimEd)”:

- almost 2/3 of respondents expressed an interest in obtaining additional information on the modern environmental technologies, ways of mitigation of hazardous natural phenomena and processes and ensuring adaptation of the industry to climate change
- about 1/2 of respondents would take part as trainees in advanced training courses dedicated to the outlined issues

Currently in Ukraine there are no professional standards in the field of municipal economy. Therefore, to determine professional competencies, we used as a prototype Professional Standard № 66-1751 (2019) in the field of Public Administration, as the most relevant to the peculiar target group for this module

Professional Competences To Be Developed

- PC1. Ability to assess and understand the state of the urban economy in the context of climate change and identify current problems in the industry that are of public importance and require technological solutions
- PC 2. Ability to make decisions based on the assessment of alternatives and risks
- PC3. Ability to plan the process of monitoring and evaluating the effectiveness and efficiency of implemented environmental technologies at the levels of an enterprise, community, city / region as a whole
- PC4. Ability to present and use the obtained results of monitoring of the performance of implemented environmental technologies
- PC5. Ability to identify and involve stakeholders in the process of implementing advanced environmental technologies at the community / city / region level

Learning Outcomes (LOs)

After completing the training, participants will be able to:

- **Propose** environmental and ecological engineering measures to address existing problems in the field of urban economy and management, taking into account local conditions, international experience, possible consequences for the environment and public health (LO 1)
- **Assess** the effectiveness of environmental and ecological technologies in the urban economy in the context of ensuring the normative state of the environment, adaptation to climate change, taking into account economic, social, organisational and financial aspects (LO 2)
- **Analyse** opportunities and barriers to the implementation of advanced environmental technologies in the urban economy based on their own experience, critical analysis of information sources and critical understanding of the achievements of other organisations and communities (LO 3)

Relationship Between Learning Outcomes and Professional Competences

	PC1	PC2	PC3	PC4	PC5
LO 1. Propose environmental and ecological engineering measures to address existing problems in the field of urban economy and management ...	X			X	X
LO 2. Assess the effectiveness of environmental and ecological technologies in the urban economy ...		X	X	X	
LO 3. Analyse opportunities and barriers to the implementation of advanced environmental technologies in the urban economy ...		X	X		X

Content Scope

Module scope: 1 ECTS credit (30 hours):

Topic 1. Review of technologies for the environmental protection of urban areas in the context of adaptation to climate change.

Environmental and ecological technologies (10 hrs.)

Topic 2. Methodology for assessing the effectiveness and feasibility of environmental protection technologies (10 hrs.)

Topic 3. Analysis of opportunities and barriers to the implementation of environmental protection technologies in the urban economy (9 hrs.)

Modular Control (Testing) (1 hrs.)

Learning Solutions and Delivery Modes

- Teaching and learning on the module takes place **both in a blended (face-to-face and distant) and entirely in distant (online) modes**
- **Lectures and practical classes** take place in classrooms in compliance with sanitary and hygienic requirements, and preparation for classes, **individual and group independent work of students, recommended reading activities, consultations with teachers, modular test control** – by using distance-learning platforms
- When studying in an exclusively distance format, all types of teaching and learning activities will take place in the "online" mode, while lectures and practical classes are held as **video conferences**

Learning Strategies

- **teacher/mentor-controlled** (lectures, practical classes, analysis of case studies, consultations)
- **student-controlled** activities in the form of independent studies and working in small groups on complex projects that require a creative approach

The ratio of **teachers-controlled to student/self-controlled activities** is **33% to 67%**, in particular:

Classroom lessons - 10 hours, including:

- **lectures** - 4 hours,
- **practical classes** - 6 hours;

Independent work - 19 hours;

Modular control - **testing** (1 hour)

Learning Strategies Justification

The proposed combination of learning strategies will allow trainees to:

LO 1	LO 2	LO 3
quickly and better navigate the variety of problems in the field of urban management and technology to address them under uncertain conditions of climate change	master the methodology of multi-criteria selection of optimal technological solutions	assess opportunities and barriers for implementation of new or improvement of existing technologies



exchange of experiences, individual and joint search for and discussion of processed literature and multimedia sources, group discussions

Learning Activities

Classroom Activities:

- 2 Lectures
- Practical Classes:
 - 1 seminar
 - 1 case study analysis
 - 1 presentation of group projects

Independent Studies:

- Analytical review of contemporary scholarly articles on the selection, evaluation and implementation of environmental technologies in the urban economy (including the processing of lecture material, preparation for practical classes, consultations by teachers, as well)

Final Test

Learning Assessment

The learning assessment will be done both by teachers and by students using a ***5-grade scale***:

- 5 – excellent;
- 4 – very good;
- 3 – good;
- 2 – satisfactory;
- 1 – unsatisfactory.

Learning Assessment Criteria

Learning Activity Assessed	Criteria
<u>Oral presentation at the seminar</u>	the logic and consistency of presentation, the relevance of illustrative material to the topic of the speech, mastery of professional terminology, answers to questions
<u>Case study exercises</u>	correctness of application of algorithms, formulas, reference materials, relevance of additional sources, quality of the tabular and graphic material prepared by trainees
<u>Written report</u>	structure, logic and coherence of presentation, relevance and use of sources, correct citation of sources, anti-plagiarism, quality of tabular and graphic material, compliance with guidelines for authors, grammar, personal contribution of each group member
<u>Presentation of the group project results</u>	logic and consistency of presentation, compliance of illustrative material with the topic of the speech, mastery of professional terminology, compliance with guidelines for graphic design, interaction between group members, answers to questions
<u>Final testing (modular control)</u>	the proportion of correct answers to questions

Learning Assessment: Grading & Scoring

Graded Activities	Weight in the final score	Mode of Assessment			LOs assessed		
		By teachers	Peer-assessed	Self-assessed	LO1	LO2	LO3
Work in practical classes (case study)	0.2	X				X	
The problem presentation at seminar [the score for this element is calculated as the average of teachers' assessments (weighting factor: 0.5) and students' assessments (weighting factor: 0.5)]	0.2	X	X		X		
Written report on a group project	0.2	X				X	X
Presentation of the group project [the score for this element is calculated as the average of teachers' assessments (weighting factor: 0.5) and students' assessments (weighting factor: 0.5)]	0.2	X	X			X	X
Final testing	0.2			X	X	X	

Learning Assessment: Final Score

- The final score on the module is calculated as a weighted average of the scores for each element. The final score is then transformed to the verbal score according to the scale:

Numeric score:	Verbal score:
4,01 – 5,00	<i>Credited with distinction</i>
3,01 – 4,00	<i>Credited</i>
2,01 – 3,00	
1,01 – 2,00	
0,01 – 1,00	<i>Non-credited</i>

- In the certificate issued to trainees at the end of training course, the grade for the module will be presented in verbal form

Learning Resources

An interactive module

(<https://re.climed.network/course/view.php?id=15§ion=3>):

- Lecture presentations in PDF/PPTX formats (2 items)
- Practical classes outlines in PDF/DOCX/PPTX formats (7 items)
- References (15 titles)

Required equipment:

- portable or stationary projector, laptop with OS Windows 7 or OS Windows 10, wall screen (for classes in a *face-to-face mode*);
- equipped PC-workstations (21), the Internet access, the distant learning and information platform MOODLE, audio / video headsets (for classes in a *distant mode*)

Training Evaluation

- Assessment of the effectiveness of training on the module is done by students at the end of training.
- To do this, they fill out [the questionnaire](#), which is based on the D. Kirkpatrick model (1st level):

The screenshot shows a Moodle quiz page titled "Оцінка ефективності навчання (за Кіркпатріком)". The breadcrumb trail is: Dashboard > My courses > B12 > An Interactive module > Оцінка ефективності навчання (за Кіркпатріком) > Preview. The main content area displays "Question 1" with the text: "Оцінка за 5-бальною шкалою модулю «Технології захисту довкілля» для Вас особисто:". The question is marked out of 5.00 and has not yet been answered. The options are: Дуже корисно, Зовсім некорисно, В цілому корисно, В цілому некорисно, and Здебільшого корисно. The interface includes a top navigation bar with "Dashboard", "Site home", "Calendar", "Badges", "All courses", and "Turn editing on". On the right, there is a "Quiz navigation" panel with four question indicators (1, 2, 3, 4) and a "Start a new preview" button. Below it is a "Navigation" panel with links to "Dashboard", "Site home", and "Site pages".

Constraints and Risks of the Training Project

Constraints:

- Time frame: 6 weeks for the development of the interactive module, 2 weeks for the full completion of the module by students + 1 additional week (for those students who do not have time to complete the task during the main time)
- Budget: Total: 445 euros (teaching at classroom; preparation of materials for classes; consultations and checking student assignments; technical support of classes)
- Number of trainees is limited to 20 participants for better interaction during classroom and independent work, providing opportunities for all participants to come up with reports at seminars, better allocation of human resources of teachers to work with small project groups

Risks:

- Limited experience of trainees: this risk can be taken into account at the stage of filling in the questionnaire forms by students before enrolling in the course, and reduced – by introducing additional classes for consultations before the teaching of the main material
- Large scope and complexity of the material: this risk can be reduced by means of better structuring of the training material and the use of interdisciplinary links, taking into account the previous professional experience of the trainees

Constraints and Risks of the Training Project (*cont'd*)

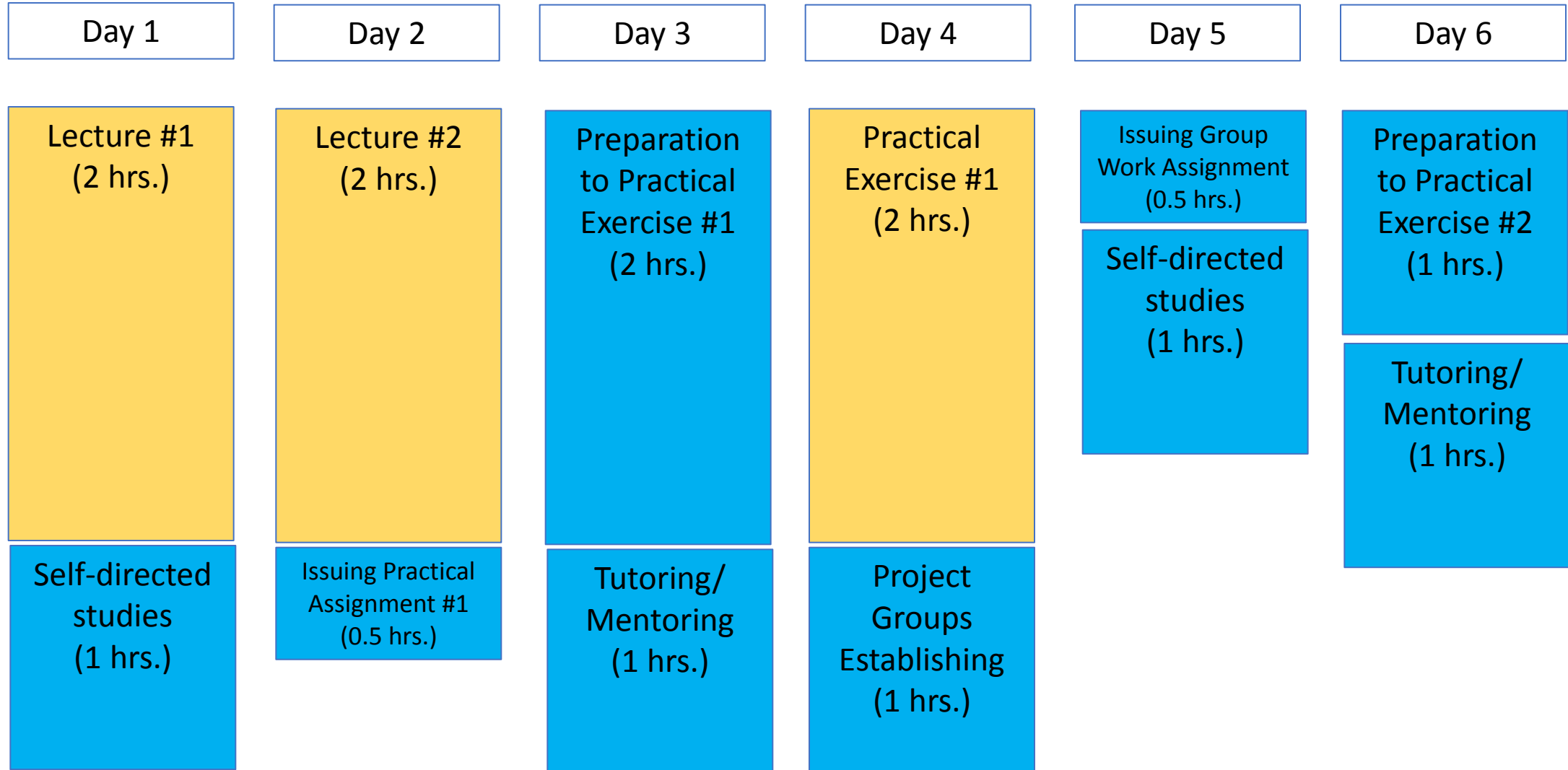
Constraints:

- Necessary equipment: portable or stationary projector, laptop with OS Windows 7 or OS Windows 10, wall screen (for classes in a face-to-face mode); equipped computer workstations (21), the Internet access, the training and information platform MOODLE, audio / video headsets (for classes in a distant mode)
- Availability of classrooms (when working in a blended mode): classroom for 20-25 seats for at least 2 hours X 5 days

Risks:

- Low level of interest of participants in the training: this risk can be reduced by conducting a proactive information campaign on the Erasmus + ClimEd project among organisations / institutions of potential trainees

Training Storyboard: Week 1



Training Storyboard: Week 2

Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
Practical Exercise #2 (2 hrs.)	Independent Group Work (2 hrs.)	Independent Group Work (2 hrs.)	Final Test (1 hrs.)	Practical Exercise #3: Group Project Presentation (2 hrs.)	Concluding Remarks. Evaluation of the effectiveness of training by students. Issuing certificates.
Independent Group Work (2 hrs.)	Tutoring/ Mentoring (1 hrs.)	Tutoring/ Mentoring (1 hrs.)	Submission of Group Project Reports (2 hrs.)	Final Grading	

An Interactive Module: Structure

ENVIRONMENTAL PROTECTION TECHNOLOGIES

Topic 1. Review of technologies for the environmental protection of urban areas in the context of adaptation to climate change. Environmental and ecological technologies

Lecture #1. Diversity and classification of environmental protection technologies

Practical Exercise #1. Seminar "Problems of the municipal economy that require technological solutions" (short individual reports, discussion)

Topic 2. Methodology for assessing the effectiveness and feasibility of environmental technologies

Lecture #2. Methodology for assessment and selection of the most efficient environmental technologies

Practical Exercise #2. "Optimal choice of environmental protection technologies to solve problems in the industry, analysis of obstacles and opportunities for implementation" (case study analysis): [Case Study #1](#); [Case Study #2](#).

An Interactive Module: Structure

ENVIRONMENTAL PROTECTION TECHNOLOGIES

Topic 3. **Analysis of opportunities and barriers to the implementation of environmental protection technologies in the urban economy**

Practical Exercise #3. Presentation (defence) of group projects (reports from groups of trainees, discussion)

Group Project. Analytical review of contemporary scholarly articles on the selection, evaluation and implementation of environmental technologies in the urban economy (processing of lecture material, preparation for practical classes, recommended reading, consultations by teachers)

Recommended Reading List

Final Test. 10 questions

Модульний контроль

ClimEd Training 2
Group B12

Dashboard > My courses > B12 > An interactive module > Модульний контроль > Preview

Dashboard Site home Calendar Badges All courses Turn editing on

Question 1
Not yet answered
Marked out of 1.00
Flag question
Edit question

Техніко-економічне обґрунтування вибору природоохоронних технологій здійснюється для забезпечення:

- Зниження витрат на встановлення обладнання
- Доцільності вибору устаткування, технологій, процесу з урахуванням показників ефективності та фінансових аспектів
- Всі запропоновані варіанти
- Мінімізації впливу на довкілля при здійсненні антропогенної діяльності

Quiz navigation

1 2 3 4 5 6
7 8 9 10

Finish attempt...

Start a new preview

Navigation

Dashboard

Survey on Training Effectiveness Assessment



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Thank you!