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ClimEd Training 1 (Online)
Competence-Based Approach to Curriculum Development for Climate Education

Presentation of Group Exercise #2. Homework Assignments

Training Development Plan. Course/Module #1. The Climate Change Impact on the Urban Economy

Group A10: Kateryna Husieva, Oleg Prokofiev, Olga Khandogina, Varvara Sytnikova

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Learning Outcomes

Upon completion of the training, students are to be able to:

1. **comprehend the essence of climate change processes and characterize them.**
2. **explain the peculiarities of functioning of the main urban economy components.**
3. **classify and describe the factors of climate change influence on the urban economy.**
4. **assess and forecast the possible consequences of climate change for industry, municipal services and the population, with regard to geographical, economic, demographic and social aspects.**
5. **analyze and select the best ways to mitigate the climate change impact on the urban economy, using teamwork skills.**
6. **take measures to adapt particular components of the urban economy to climate change, using organizational and decision-making skills.**

Content Scope

The advanced training course in 'The Climate Change Impact on the Urban Economy' is intended to be studied by specialists in urban economy as a climate-dependent economic sector, and consists of the following sections:

1. **General ideas on climate change.**
2. **The main components of urban economy.**
3. **Factors of climate change influence on the urban economy.**
4. **Negative consequences of climate change for industry, municipal services and the population.**
5. **Ways to adapt the urban economy to climate change.**

This course is aimed at mastering the theoretical material and development of practical skills to apply the acquired background to address topical climate-related challenges of sectoral enterprises.

Teaching and learning methods

- **The method of blended learning was chosen for this course.**
- **Such learning strategies as student-centered and problem-oriented learning will be used. This is necessary so that the learner can study the course in accordance with their pace and priorities in the task topics. The individual approach will allow learners to achieve the intended learning outcomes faster, because they will have the motivation to show initiative and make constructive suggestions in the learning process.**
- **The main learning activities include lectures, workshops, video lectures, group and individual practical tasks etc.**
- **The teacher provides a general explanation of the theoretical content during the lectures, acts as a moderator during the workshops and advises on the performance of practical tasks.**
- **Learners acquire relevant competencies and skills through active participation in the discussion during classes, group and individual tasks, consultations with the teacher and independent work with literature sources.**

Learning Assessment

- A variety of methods will be used to assess the course learners. An oral quiz will be conducted to test the initial background. Current indicators of mastering the course will be obtained through self-control tests, control papers, which will include essay tasks, and fulfilment of practical tasks.
- The final level of course performance will also be determined with regard to defence of group and individual tasks and the results of an online integrated test with open-ended questions.
- These activities will make it possible to adequately assess the achieved learning outcomes, since they are aimed at identification of both theoretical knowledge and practical skills acquired by learners according to the full range of issues addressed in the course, and require a creative and analytical approach to their implementation.
- Thus, LO1, LO2 and LO3 will be evaluated during fulfilment of control papers, LO4 and LO5 – group practical tasks, and LO6 – an individual assignment (drafting of a strategy on adaptation to climate change).

Learning Assessment

- **Criteria for assessment of control papers: 10 questions in one paper, the correct and clear answer to 6-7 questions means a sufficient level of mastering the content, 8-9 questions – a good level, and 10 questions – a very good level.**
- **Criteria for assessment of practical tasks are as follows: a threshold level (includes finding a minimally justified successful solution to the problem), a normal / good level (contains finding a well-substantiated and competently outlined successful solution to the problem) and a very good level (provides finding a successful solution to the problem with comprehensive substantiation and innovative suggestions).**
- **Criteria for assessment of an integrated test: the test consists of 50 questions, the correct answer to 30-37 questions corresponds to a sufficient (threshold) level, 38-45 questions – a good (typical) level, and 46-50 - a very good (excellent) level.**

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https://meetingoftheminds.org/targeted-urban-economic-growth-will-improve-economy-25261

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Competence-Based Approach to Curriculum Development for Climate Education

Presentation of Group Exercise #2. Homework Assignments

Training Development Plan. Course/Module #2. Digital Tools for Understanding Spatial Climate data in urban systems

Group A10: Oleg Prokofiev, Varvara Sytnikova, Kateryna Husieva, Olga Khandogina

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Learning Outcomes

After completing the training, participants will be able to:

LO 01. identify sources of data (including spatial) in urban economy sectors to study the impact of climate change and ways of climate mitigation;.
LO 02. illustrate the possibilities of digital tools application for the needs of the urban economy in terms of climate change.
LO 03. design a simple spatial database schema for application in urban economy sectors .
LO 04. explain the difference between the types of spatial data and their storage formats.
LO 05. use specialized applications and software to collect spatial data .
LO 06. plan and organize spatial data collection using modern information technologies individually or in groups.
LO 07. develop a digital map (including online) based on the collected spatial data, be able to configure the elements of the map.
LO 08. explain the consequences of climate change for the urban economy, ways to mitigate them to different groups of stakeholders using developed maps and visual materials

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Content Scope

- The course is intended for specialists in the field of urban management, researchers studying the impact of climate change on the functioning of urban economy sectors, decision-makers responsible for the creation and development of facilities and urban infrastructure in the context of climate change.
- The course provides a general understanding of the potential data application for the analysis of climate change, the existence and possibility of using modern information technology to create, collect, store, share, edit spatial data.
- The main topics covered by the course include the following:
  1. Sources of spatial and non-spatial data on urban systems in the context of climate change
  2. GIS scheme and functions, data types
  3. Application of GIS in urban economy
  4. Information technology application for collection of spatial data representing state of the urban economy and climatic indicators.
  5. Visualization and dissemination of spatial data

Teaching and learning methods

A blended learning is offered for the courses with field research, online-tools application.

Student-centered learning, problem-oriented learning are suggested.

Teaching methods includes lectures, practical classes, case-studies solving, independent work, implementation of group projects, consultations, tutorial method.

The teacher provides a general understanding of the topics, demonstrates the general capabilities of digital tools, provides consultations on the implementation of practical exercises and projects.

Students of the course acquire competencies and skills by performing tasks (learning-by-doing), independent work information, work in groups, consultations with the teacher, performing exercises under the supervision of the teacher.

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Learning Assessment

- **The following methods are suggested to be used for learning assessment:**
- **Case-studies (LO 5, LO 6, LO 7)**
- **Practical tasks in groups and individually (LO 3, LO 5, LO 6, LO 4)**
- **Writing an essay (LO 2)**
- **Current control in the form of tests (LO 1, LO 4).**
- **The final assessment includes group project presentation - implementation and presentation of the group project (LO 3, LO 6, LO 7, LO 8)**

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Learning Assessment

Evaluation criteria:

- **sufficient level: knowledge of the main material - LO 1, LO 4, ability to perform tasks in a simplified form, with errors that do not significantly affect the result - LO 2, LO 3, LO 15, LO 6, LO 7, LO 8.**
- **good level: understanding the material at a sufficient level - LO 1, LO 4, ability to perform tasks at a high level with minor errors - LO 2, LO 3, LO 15, LO 6, LO 7, LO 8.**
- **excellent level: understanding the material at a high level - LO 1, LO 4, the ability to apply it to solve practical problems at a high level, without errors - LO 2, LO 3, LO 15, LO 6, LO 7, LO 8.**

Elements of peer review are used during group tasks and the project development.

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ClimEd Training 1 (Online)
Competence-Based Approach to Curriculum Development for Climate Education

Presentation of Group Exercise #2. Homework Assignments

Training Development Plan. Course/Module #3. Towards Climate-Smart Policy in the Economic Sector

Group A10: Oleg Prokofiev, Varvara Sytnikova, Kateryna Husieva, Olga Khandogina

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Learning Outcomes

Upon completion of the training, participants will be able to:

Integral learning outcome: Develop a plan for adaptation of a particular sector of the urban economy to the climate change effects.

LO 01. Identify the main international regulations governing countries' climate service policies.
LO 02. Describe the general climate change trends in the region.
LO 03. Identify climate-dependent urban economic sectors.
LO 04. Interpret diverse types of climate information for a specific urban economic sector.
LO 05. Assess the economic damage to the sector arising from the climate change.
LO 06. Develop an algorithm for adaptation of the sector to the negative consequences of climate change.

Content Scope

- The advanced training course ‘Towards climate-smart policy in the economic sector’ is intended for specialists in various sectors of the urban economy: healthcare, transport, energy, water supply and sanitation, construction, manufacturing, etc.
- The course is designed for 4 ECTS credits (120 academic hours) and includes 2 phases: on-line phase for 3 credits (90 hours) and off-line phase for 1 credit (30 hours).
- The training course contains the following sections:

1. A global framework for climate services.
2. General ideas on the climate system and its parameters.
3. Dynamics of the regional climate.
4. Climate services for particular sectors of the urban economy.
5. Climate change adaptation and mitigation measures for particular sectors of the urban economy.

Teaching and learning methods

- A blended learning is offered for the courses.
- The first stage is online training, which will last three weeks. During on-line training, viewing video lectures, study of specialized literature, web resources, as well as holding synchronous events: problem-oriented lectures, and explanatory and illustrative methods for practical exercises, are planned.
- During the off-line phase, the duration of which will be one week, it is planned to conduct consultation lectures, lectures with an analysis of specific situations, discussion lectures, workshops, business games, and solving case studies.
- This combination of teaching methods is the most acceptable, since the learners, being specialists in their field, have already formed the independent work skills, and the training has a target orientation to meet the specific educational needs of a particular learner during the on-line phase. Participation in business games and solving case studies will help them develop teamwork and other social skills during the offline phase.

Learning Assessment

In the process of training, the following methods are suggested to be used:

1. **Initial on-line control. This method will make it possible to determine the initial level of each learner and, if necessary, to develop an individual syllabus or select the necessary literature.**
2. **Self-control tests. They will help learners master the theoretical part of the course more deeply and make analysis of mistakes.**
3. **Online tests. They will help teachers determine the degree of mastering the taught material. The use of on-line testing is intended to verify the learning outcomes 01-03. The assumed tests will consist of 20 questions. Correct answers to 10-14 questions correspond to a sufficient (minimum) level of mastering the content; 15-17 – a good level and 18-20 – an excellent level.**
4. **Practical tasks. This implies peer-review of practical tasks by learners, under the guidance of a teacher.**

Learning Assessment

The following are suggested as evaluation criteria:

- **LO 04, LO 05** – an excellent level – when analyzing the climate change impacts on the industry, all meteorological factors were considered, and all types of climate information were used;
  - a good level – when analyzing the climate change impacts on the industry, some meteorological factors were considered, and some types of climate information were used;
  - a sufficient level – when analyzing the climate change impacts on the industry, meteorological factors were not considered, and a small amount of climate information was used.
- **LO 06** – an excellent level – the suggested options for mitigation of the climate change effects and adaptation of the industry to them can be fully applied in practice;
  - a good level – the suggested options for mitigation of the climate change effects and adaptation of the industry to them may be partially applicable in practice;
  - a sufficient level – the suggested options for mitigation of the climate change effects and adaptation of the industry to them may be effective, but their implementation in practice is not possible.

5. The final score is a weighted average value for all types of activities.

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