

Syllabus

Course Title

Sustainable Development Goals and Goal 13 in the agricultural sector

General Information

The aim of studying the course “Problems of Adaptation and Sustainable Development of Agriculture under Conditions of Global Climate Change” is a multidisciplinary and systematic approach to examining the main issues of interaction between human activities in agriculture and the environment from the perspective of sustainable development principles and strategies. The course aims to develop fundamental knowledge on human–environment interactions necessary for decision-making in future professional activities in the agricultural sector in accordance with sustainable development principles under conditions of global climate change.

Audience

Target group: PhD students

Professional experience: preferably experience in climate-oriented agriculture

Educational requirements: Master’s degree

Learning objectives: formation of basic knowledge on human–environment interactions necessary for decision-making in future professional activities in the agricultural sector in accordance with sustainable development principles under conditions of global climate change

Audience needs and goals: this course is important for the personal and social development of students/PhD students

Competencies

Analyze complex interactions between the atmosphere, land, biological, and oceanic components, including feedback mechanisms in the Earth system, taking into account the impact of human activities on the environment.

Critically analyze the historical development and current mechanisms of sustainable development, assessing political and socio-economic factors influencing sustainable development policy.

Identify key global megatrends and their consequences for current and future changes in the environment, social, and economic spheres, with a particular focus on how these trends affect the sustainability of climate-dependent sectors.

Assess the role and impact of the Sustainable Development Goals, in particular Goal 13 – Climate Action, in promoting the transition to sustainable development across different economic sectors and levels of government.

Evaluate future scenarios for the Earth system under different development pathways using climate models and future climate projections, in order to understand potential consequences and promote sustainable development programs in line with the UN Sustainable Development Goals.

Propose innovative strategies for advancing the sustainable development agenda by integrating Sustainable Development Goals-aligned practices into different economic sectors and levels of governance.

Learning Outcomes and Performance Criteria

Module 3: Development of the Concept of Sustainable Development

Identify key global megatrends and their consequences for current and future changes in the environment, social, and economic spheres, with a particular focus on how these trends affect the sustainability of climate-dependent sectors.

Performance criteria:

Assess current sustainable development policies and develop a strategic plan for implementing sustainable practices in the agricultural sector.

Module 4: United Nations Sustainable Development Goals in the transition to sustainable development

Assess the role and impact of the Sustainable Development Goals, in particular Goal 13 – Climate Action, in promoting the transition to sustainable development across different economic sectors and levels of government.

Performance criteria:

Critically evaluate how specific Sustainable Development Goals contribute to the transition to sustainability at global, regional, and local levels.

Module 6: Innovative strategies

Propose innovative strategies for advancing the sustainable development agenda by integrating Sustainable Development Goals-aligned practices into different economic sectors and levels of governance.

Performance criteria:

Evaluate existing sustainable development policies and implementation plans for sustainable practices in a selected sector.

Course Content

1. Essence, object, subject, and methods of the sustainable development strategy
2. Indicators and indices of sustainable development, the system of global measurements of sustainable development in Ukraine
3. Problems and directions of ensuring rational use of natural resources
4. Sustainable development of Ukrainian agriculture
5. Global Sustainable Development Goals
6. Goal 13 – climate change mitigation. Taking urgent action to combat climate change and its impacts
7. Goals and tasks for sustainable development of Ukraine
8. Adaptation of agricultural production to climate change and mitigation of its impacts
9. Agriculture within the concept of sustainable development of the agricultural sector
10. Measures for balanced land use of Ukraine's natural resources

Learning solutions and implementation methods

Course delivery in classrooms and online

Independent access to information

Collaboration with experienced colleagues

Receiving recommendations from trainers or mentors

Participation in work processes aimed at implementing innovations

Improving performance through practice

Learning strategies

Key learning strategies include discussion, research, experiential learning, case-based learning, project-based learning, guided practice and feedback, as well as lectures and practical sessions.

Learning activities

Lectures:

reproductive method;

explanatory-illustrative method (lecture-presentation, lecture-discussion, polylogue);

Seminars:

research and inquiry-based method (workshop sessions, panel discussion, round table, conference) using critical thinking strategies;

brainstorming;

interactive group work;

case-based learning

Assessment of learning

Ongoing assessment of the discipline “Problems of adaptation and sustainable development of agriculture under conditions of global climate change” includes thematic assessment and module control.

Thematic assessment of classroom and independent work of PhD students is based on current grades for oral and written responses, independent assignments, practical work, and control tasks. Ongoing assessment of the individual independent research task (IIRT) is carried out according to the task completion schedule.

Module control is conducted in the form of computer-based testing.

The number of points obtained for each type of learning activity under different forms of ongoing assessment is recorded in the academic group register and electronic journal after each control activity.

Final assessment of students’ learning activity is conducted in the form of an exam based on test results. Exam results are published in the academic group register and in the Moodle distance learning system.

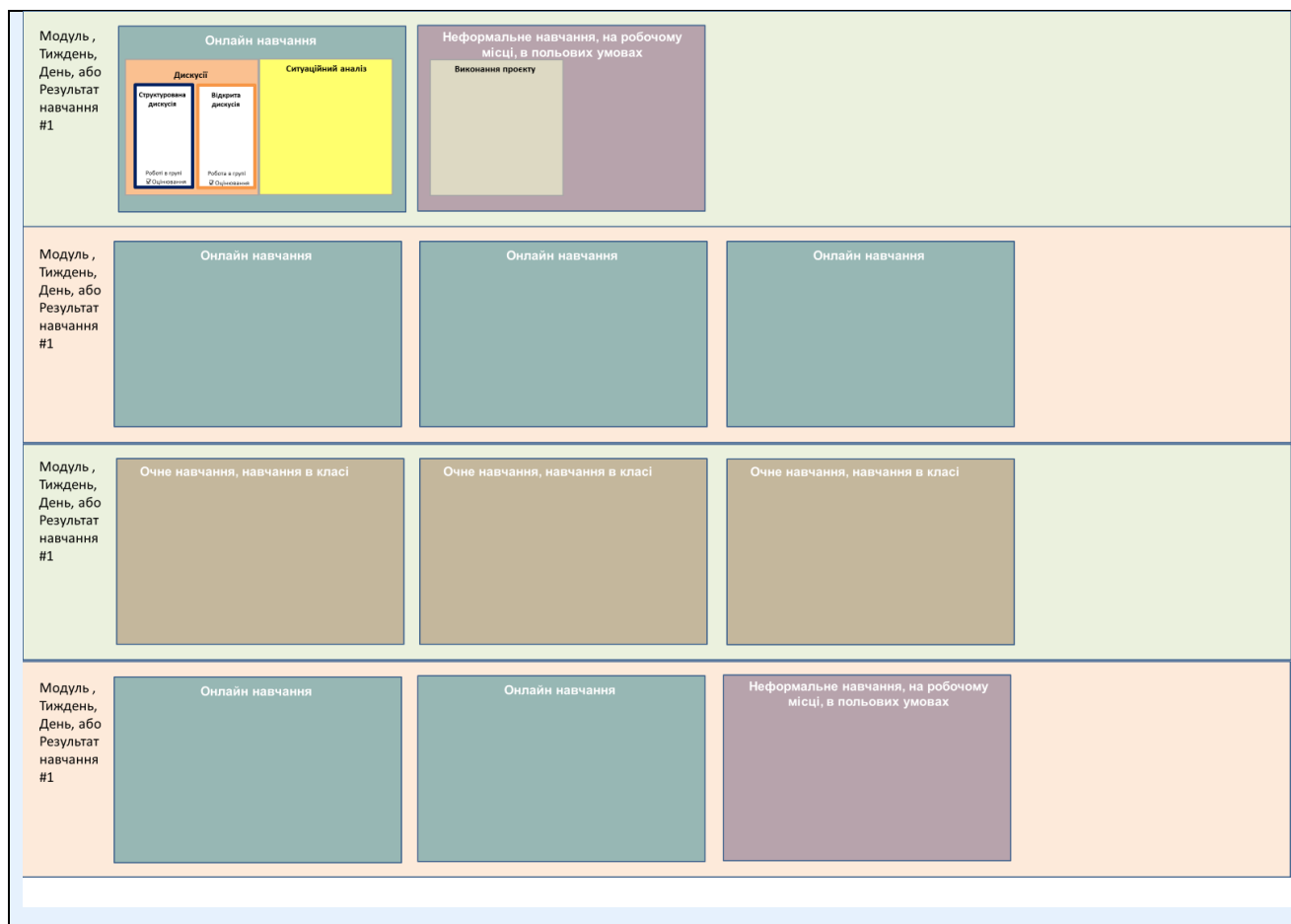
Assessment tools for learning outcomes

The lecture activity score is awarded based on student participation in discussion and the quality of notes.

The practical class score is awarded for completed calculations, laboratory work, team projects, presentations, reports, essays, and active participation in discussions.

During module and final assessment, standardized computer-based tests are used as the main evaluation tool.

Learning Storyboard (Instructional Storyboard)



Learning Resources and Tools

Main:

1. Biermann F., Kanie N., Kim R. E. (2017). Global governance by goal-setting: the novel approach of the un sustainable development goals. *Curr. Opin. Environ. Sustain.* 26, 26–31.
2. Blanco-Canqui, H., et al., (2015) Cover crops and ecosystem services: Insights from studies in temperate soils', *Agronomy Journal* 107(6), p. 2449.
3. Commission on Climate Change and Development (2009) Closing the Gaps: Disaster risk reduction and adaptation to climate change in developing countries, Ministry for Foreign Affairs, Stockholm, Sweden.
4. Ensor J., R. Berger (2019) Understanding Climate Change Adaptation: Lessons from communitybased approaches, Practical Action Publishing, Rugby, UK.
5. Meinke H., Stone R. C. Seasonal And Inter-Annual Climate Forecasting: The New Tool For Increasing Preparedness To Climate Variability And Change In Agricultural Planning And Operations. *Climatic Change* (2005) 70: 221–253.
6. Mejía D.A. Analytical Summary of the Revision of Case Studies on the Analysis of International Experiences in Education for Sustainable Development (ESD) Policies. Paris. 2017. 187 p.
7. Schreiber J., Siege H. Curriculum Framework: Education for Sustainable Development. Bonn: Engagement Global. 2017. 125 p.
8. Sivakumar M., Ndiang'ui N. (2007). Climate and land degradation. United Nations Convention to Combat Desertification (UNCCD), Springer, Berlin.
9. Streimikis J., Baležentis T., Agricultural sustainability assessment framework integrating sustainable development goals and interlinked priorities of environmental, climate and agriculture policies, *Sustainable Development*, 2020, 28, №6, 1702-1712.

10. UNESCO. 2016. Global Education Monitoring Report – Education for People and Planet: Creating Sustainable Futures for All. Paris: UNESCO. 231 p.
11. WESSA. Stepping up to the Sustainability Goals: A Practical Guide to Integrating the SDGs in our Daily Lives. Johannesburg: WESSA. 2016. 123 p.

Internet resources:

12. UNESCO. 2017. Education for Sustainable Development Goals. Learning Objectives. Paris: UNESCO. <http://unesdoc.unesco.org/images/0024/002474/247444e.pdf>
13. United Nations. 2017. 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals. www.un.org/sustainabledevelopment.
14. OECD. 2016. Global Competency for an Inclusive World. www.oecd.org/pisa/aboutpisa/Global-competency-for-an-inclusive-world.pdf
15. Wals, A.E.J. 2015. Beyond Unreasonable Doubt. Education and Learning for Socio-ecological Sustainability in the Anthropocene. Wageningen, Netherlands: Wageningen University. https://arjenwals.files.wordpress.com/2016/02/8412100972_rvb_inauguratie-wals_oratieboekje_v02.pdf
16. FAO (Food and Agriculture Organization of the United Nations). 2016. The State of Food and Agriculture 2016. Climate Change, Agriculture and Food Security. Rome.
17. IEA (International Energy Agency). 2016. World Energy Outlook 2016. Executive Summary. Paris: IEA. www.iea.org/Textbase/npsum/WEO2016SUM.pdf
18. Kemmis, S. and Mutton, R. 2012. Education for sustainability (EfS): practice and practice architectures. Environmental Education Research, 18(2): 187-207. <http://dx.doi.org/10.1080/13504622.2011.596929>
19. NASA, NOAA Analyses Reveal Record-Shattering Global Warm Temperatures in 2015. Access mode: <http://www.nasa.gov/press-release/nasa-noaa-analyses-reveal-record-shattering-global-warm-temperatures-in-2015/>
20. Paris Agreement under the United Nations Framework Convention on Climate Change at 21st Conference of the Parties of the UNFCCC. Access mode: https://treaties.un.org/pages/ViewDetails.aspx?src=TREATY&mtdsg_no=XXVII-7-d&chapter=27&lang=en