



COURSE SYLLABUS «Vegetation Fires: Science & Management»

Degree of higher education - Master
Specialization 205 – Forestry
Educational program «Forestry»
Academic year 1, semester 2
Form of study full-time, part-time
Number of ECTS credits 6
Language of instruction English

Lecturer of the course
Contact information of the
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Course page on eLearn

<https://elearn.nubip.edu.ua/course/view.php?id=859>

COURSE DESCRIPTION

The course address basics of vegetation fire science and management that recently become challenging problem for natural resource managers. Within the fire course students get skills in wildland fire management, fuels management, and restoration based on advancing knowledge of fire science, ecology, fire-related policy and social issues, and the latest tools and technology. The course covers fire conditions, tactics, and strategies to mitigate fire and fire behaviors, emphasizing wildland and urban interface fires. Includes an interdisciplinary review and study of wildfires as ecological process. Special attention will be paid to the role of vegetation fires in the context of global environmental change. Addresses current issues in fire ecology in Ukraine, Eastern Europe and globally, including readings and discussions of recent scientific literature.

Course “Vegetation Fires: Science & Management” aimed in providing of a postgraduate student with holistic and systematic view on landscape fires as nature phenomena in human driven environment, including nature of fire and basic fire management activities with ascent on research component.

Competencies of the educational program:

Integrative competency (IC): The ability to solve complex tasks and problems in the field of forestry and hunting or in the process of learning, which involves conducting research or implementing innovations and is characterized by the uncertainty of conditions and requirements.

General competencies (GC): GC 5. Ability to develop and manage projects; GC 7. Ability to work in an international context.

Professional (special) competencies (PC): PC 2. Ability to ensure sustainable development of forestry; PC 4. The ability to develop and implement current and strategic plans for the development of forestry enterprises, considering resources, risks, as well as economic, legal, and environmental aspects.

Program learning outcomes (PLO) of the educational program:

PLO 2. Fluently communicate orally and in writing in Ukrainian and foreign languages when discussing professional issues, research and innovation in the field of forestry; PLO 3. Make effective decisions on forestry issues, including in difficult and unpredictable conditions; predict its development; determine the factors affecting the achievement of the set goals; analyze and compare alternatives; assess risks and likely consequences of decisions; PLO 5. Manage complex activities in the field of forestry and in wider contexts, ensure quality, evaluate the effectiveness and efficiency of activity; PLO 6. Assess the state of forest phytocenoses, forest resources in specific forest vegetation conditions, their potential and forecast opportunities for use; PLO 7.

Develop and implement scientific and applied projects in the field of forestry, considering available resources and risks, as well as economic, legal and environmental aspects; PLO 8. Develop and improve technological and production processes, implement modern digital technologies; PLO 9. Determine efficiency criteria and choose the optimal forestry management strategy depending on external and internal conditions; PLO 11. Apply modern experimental and mathematical methods, digital technologies, and specialized software to solve complex problems of forestry and game management.

COURSE STRUCTURE

Topic	Hours (lecture/ practical)	Learning outcomes	Tasks	Assessm ent
Semester 1				
Module 1				
Topic 1. Theoretical foundations of combustion and behavior of forest fires. Fire environment	6/6	Know the basic concepts (Combustion process. Heat transfer. Stages of combustion. Combustion of fuels. Combustion products. Fire behavior and factors that determine it).	Submitting laboratory or practical work Taking tests, writing essays. Completing independent work (including in eLearn) Solving problems, and so on.	15
Topic 2. Fuels of landscape fires. Fire weather	6/6	Knowledge of basic indicators and regularities (Long-term, seasonal dynamics of fuels. Moisture content of fuels. Fire weather. Basic weather processes. Fire weather and fire-hazardous period)	Submitting laboratory or practical work Taking tests, writing essays. Completing independent work (including in eLearn) Solving problems, and so on.	20
Topic 3. Fire regimes	6/6	Knowledge by main directions (Fire ecology. History of fires and fire regimes. Fires, history, culture and society. Management of fire regimes)	Submitting laboratory or practical work Taking tests, writing essays. Completing independent work (including in eLearn) Solving problems, and so on.	20
Credit test 1				45
Total				100
Module 2				
Topic 4. Fire management	6/6	Knowledge in the main directions (Forest fire policy. Fire prevention. Fire detection. Management of fuels. Fire suppression. Controlled burning)	Submitting laboratory or practical work Taking tests, writing essays. Completing independent work (including in eLearn) Solving problems, and so on.	30
Topic 5. Methods of landscape fire research	6/6	Know research methods. (Study of fuels. Study of topography. Study of fire weather. Study of fire regimes. Study of the anthropogenic component of fires. Study of post-pyrogenic successions)	Submitting laboratory or practical work Taking tests, writing essays. Completing independent work (including in eLearn) Solving problems, and so on.	25

Topic	Hours (lecture/, practical)	Learning outcomes	Tasks	Assessment
Credit test 2				45
Total				100
Total for 2nd semester				70
Exam				30
Total per course				100

ASSESSMENT POLICY

<i>Policy regarding deadlines and resits:</i>	Assignments submitted after the deadline without valid reasons will be graded lower. Resitting of modules will be allowed with the permission from the lecturer and in the presence of valid reasons (e.g. medical reasons).
<i>Academic honesty policy:</i>	Cheating during tests and exams is strictly prohibited (including the use of mobile devices). Coursework and research papers must contain correct citations for all sources used.
<i>Attendance policy:</i>	Class attendance is mandatory. In case of objective reasons (such as illness or international internships), individual learning may be allowed (in online format by the approval of the dean of the faculty).

SCALE OF ASSESSMENT OF STUDENT KNOWLEDGE

Student rating, points	National grade based on exam results	
	exams	credits
90-100	excellent	passed
74-89	good	
60-73	satisfactory	
0-59	unsatisfactory	not passed

RECOMMENDED SOURCES OF INFORMATION

1. Earth Observing System - Data and Information System (EOS-DIS)
<http://spsosun.gsfc.nasa.gov/eosinfo/EOSDIS Site/index.html>
2. Economic Commission for Europe (ECE) www.unecce.org/trade/timber/ff-stats.html
3. Environmental Emergencies Partnership (EEP)
www.humanitarianinfo.org/eep/proiectupdates.htm
4. Eurasian Fire in Nature Conservation Network (EFNCN) www.fire.uni-freiburg.de/programmes/natcon/natcon.htm
5. European and Mediterranean Major Hazards Open Partial Agreement (EUR-OPA)
[www.coe.int/t/dg4/majorhazards/default EN.asp](http://www.coe.int/t/dg4/majorhazards/default_EN.asp)
6. European Forest Fire Information System (EFFIS) <http://effis.jrc.it/Home/>
7. Food and Agriculture Organization of the United Nations (FAO)
www.fao.org/forestry/site/infonote/en
8. FAO Committee on Forestry (COFO) www.fao.org/forestry/site/2962/en
9. FAO Technical Cooperation Programme (TCP) www.fao.org/tc/tcp/
10. Fire Management Working Papers: Thematic Paper series Available at the Fire Management Web site: www.fao.org/forestry/site/35853/en

11. Working Paper FPF/1E Guidelines on Fire Management in Temperate and Boreal Forests. November 2002.
12. Working Paper FM/2E International Wild land Fire Management Agreements Template.
13. Tom Frey, Ricardo Velez Munoz. January 2004.
14. Working Paper FM/3E Legal Frameworks for Forest Fire Management: International Agreements and National Legislation. Fernando Fernandez Arriaga, Frederic St-Martin, Tom Frey, Ricardo Velez Munoz. March 2004.
15. Working Paper FM/4E Community-Based Fire Management in Spain. Ricardo Velez Muhoz. April 2005'.
16. Working Paper FM/5E Report on Fires in the South American Region. Maria Isabel Manta Noiasco. March 2006.
17. Working Paper FM/6E Report on Fires in the North East Asian Region. Leonid Kondrashov. March 2006.
18. Working Paper FM/7E Report on Fires in the Baltic Region and adjacent countries. Ilkka Vanha-Majamaa. March 2006.
19. Working Paper FM/8E Report on Fires in the Mediterranean Region. A.P. Dimitrakopoulos and I.D. Mitsopoulos. March 2006.
20. Working Paper FM/9E Report on Fires in the Sub-Saharan Africa (SSA) Region. Alexander Held. March 2006.
21. Working Paper FM/10E Report on Fires in the South East Asian Region. B.J. Shields, R.W. Smith and D. Canz. March 2006.
22. Working Paper FM/11E Report on Fires in the Balkan Region. N. Nikolov. March 2006.