

Course name: Natural disturbances in forest communities

ECTS	1
Course status	optional, facultativ
Course final assessment /evaluation of outcomes	graded credit
Prerequisite	Course in basic ecology

Main field of study: Forestry

Educational profile	General academic
Code of studies and education level	MSc
Semester of studies	summer
Language of instruction	English

Course offered by:

Name of faculty offering the course	Faculty of Forestry
Name of department offering the course	Department of Forest Biodiversity
Course coordinator	Prof. dr. hab. inż. Jerzy Szwagrzyk

Learning outcomes:

Symbol of outcome	Description of the learning outcome	Reference to main field of study outcomes	Area symbol*
KNOWLEDGE – student knows and understands			
LES_NDFC_W01	the basic terminology used in disturbance ecology.	LES2_W01	RL
LES_NDFC_W02	the role of natural disturbances in the dynamics of forest communities	LES2_W02 LES2_W07	RL
LES_NDFC_W03	dynamics of natural regeneration processes following forest disturbances	LES2_W03 LES2_W04	RL
SKILLS – student is able to			
LES_NDFC_U01	identify and formulate problems of natural disturbance ecology	LES2_U06 LES2_U10	RL
LES_NDFC_U02	see alternative management options for forests affected by natural disturbances	LES2_U01 LES2_U02 LES2_U05 LES2_U07	RL
LES_NDFC_U03	observe the effects of natural disturbances on forests	LES2_U06	
SOCIAL COMPETENCIES – student is ready to:			
LES_NDFC_K01	critically evaluate and discuss the cognitive and practical value of contemporary knowledge	LES2_K01	RL
LES_NDFC_K02	critically appraise oneself, the teams in which one works, and lead and take responsibility for the group and act in an entrepreneurial manner	LES2_K02	RL
LES_NDFC_K03	to resolve complex ethical issues relating to the profession; to develop the achievements, cultivate the ethos and uphold the ethics of the forestry profession	LES2_K03	RL

Teaching contents

Lectures	15 hours		
Topics	<p>Types of natural disturbance in communities and ecosystems. Intensity, extent and frequency of natural disturbance.</p> <p>The role of wind in forest ecosystems. Tree architecture and their resistance to wind. Regeneration capacities after damage in different tree species.</p> <p>The role of fire in forest communities. Mechanisms of fire occurrence without human involvement. Effects of fire on forest communities. Species dependent on the occurrence of fire.</p> <p>The role of river flooding. Flooding and mechanical damage to trees by floodwaters and ice floes. Functioning of riparian forest communities.</p> <p>Avalanches and landslides in the dynamics of forest communities in the mountains. Rarer and less well understood types of natural disturbance; 'ice storms', snowfall during the growing season.</p> <p>Insect gradations and mass occurrence of fungal pathogens as forms of natural disturbance in forest communities</p> <p>Natural disturbance versus species diversity in forest communities; does the occurrence of natural disturbance increase biodiversity in forests?</p> <p>Natural disturbance versus climax stage in forest communities; is the classical theory of succession defensible?</p>		
Accomplished learning outcomes	LES_NDFC_W01, LES_NDFC_W02, LES_NDFC_W03, LES_NDFC_U01, LES_NDFC_U02, LES_NDFC_U03, LES_NDFC_K01, LES_NDFC_K02, LES_NDFC_K03		
Means of verification, rules and criteria of assessment	Class activity grade. The contribution of the lecture activity grade to the final grade is 100%.		

References:

Basic	<p>1. Pickett S. T. A., White P. A. (Red.) 1985. The Ecology of Natural Disturbance and Patch Dynamics. Academic Press, San Diego - New York - Berkeley.</p> <p>2. Frelich L. E. 2002. Forest Dynamics and Disturbance Regimes. Cambridge University Press, Cambridge.</p> <p>3. Johnson E. A., Miyanishi K. (Red.) 2007. Plant Disturbance Ecology. Academic Press, San Diego.</p>		
Supplementary	<p>1. Turner M. G., Dale V. H., Everham E. H. III 1997. Fires, hurricanes and volcanoes: Comparing large disturbances. BioScience, 47, 11: 758-768.</p> <p>2. Franklin J. F., Spies T. A., Van Pelt R., Carey A. B., Thornburgh D. A., Berg D. R., Lindenmayer D.B., Harmon M. E., Keeton W. S., Shaw D. C., Bible K., Chen J. 2002. Disturbances and structural development of natural forest ecosystems with silvicultural implications, using Douglas fir as an example. Forest Ecology and Management 155: 399-423.</p>		

Structure of learning outcomes

Area of academic study: R – Agricultural sciences, L -Forestry	1	ECTS **
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Structure of student activity

Contact hours	17	hrs.	0.7	ECTS**
Including:	lectures	15	hrs.	
	classes and seminars	0	hrs.	
	consultations	1	hrs.	
	participation in research	0	hrs.	
	obligatory traineeships	0	hrs.	

participation in examination	1	hrs.		
e-learning	0	hrs.		ECTS**
student own work	8	hrs.	0.3	ECTS**

*Areas of academic study in the fields of: H- humanities; S - social studies; P – biological sciences; T – technological sciences; M- medical, sport and health sciences; R – Agricultural, forestry and veterinary sciences; A – the arts

** stated with an accuracy to 0.1ECTS, where 1 ECTS = 25 - 30 hours of classes