

Course name:**Population ecology of trees**

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	Pofessor Jerzy Szwarzgryk

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_EPD_W01	the basics of population processes in plant populations	LES1_W03	RL
LES_EPD_W02	the role of population processes in shaping the dynamics of forest communities	LES1_W03	RL
LES_EPD_W02	the mechanisms maintaining species the richness in forest stands	LES1_W03	RL
SKILLS – student is able to			
LES_EPD_U01	interpret the demographic processes in populations of trees	LES1_U01	RL
LES_EPD_U01	find the relationships between morphology and ecological characteristics of tree species	LES1_U12	RL
SOCIAL COMPETENCIES – student is ready to:			
LES_EPD_K01	continue the learning process over time and to implement the new knowledge in practice	LES2_K01	RL

Teaching contents**Lectures****15 hours**

Topics	Adaptive geometry of trees; crown morphology and light requirements in trees. Growing space of individual tree; self-thinning in tree stands. Growth rates and resource pre-emption. Symmetric and asymmetric competition in trees. Trade-offs: From the decline in tree vitality to tree death. Plant defences and their costs. Vegetative reproduction in forest trees. Seed production and seed dispersal. Patterns of masting in forest trees. Seed dispersal syndromes. Role of zoochory. The Janzen-Connell model Seedling demography. Emergence of a new generation of trees in relation to the substrate diversity. Seedling bank. Canopy gaps; various reactions of suppressed trees to release. Gap formation and gap closure rates. Natural disturbances and their role in tree species coexistence. Types of life-history strategies in forest trees.
Accomplished learning outcomes	LES_EPD_W01; LES_EPD_W02; LES_EPD_W03
Means of verification, rules and criteria of assessment	Evaluation of the written report based upon the literature studies

Classes**15 hours**

Topics	Choosing the sample plots for investigation of demographic processes in tree populations invading the abandoned agricultural fields. Development of research methods for the field studies. Conducting the measurements in chosen study sites. analysis of data. Interpretation of the results and preparation of the final presentation. Presentation of the results and answering the questions.
Accomplished learning outcomes	LES_EPD_U01, LES_EPD_U02, LES_EPD_K01

Means of verification, rules and criteria of assessment	Evaluation of the presentation and the answers to the questions asked
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References:

Basic	1. Harper J. L. 1990. Population biology of plants. Eighth impression. Academic Press, London 2. Crawley M. J. (Ed.) 1997. Plant Ecology. Second Edition. Blackwell Science, Oxford. 3. Oliver C. D., Larson B. C. 1992. Forest Stand Dynamics. McGraw & Hill, New York
Supplementary	1. Van der Maarel E. (Ed.). 2005. Vegetation Ecology. Blackwell Publishing, Oxford 2. Horn H. H. The Adaptive Geometry of Trees

Structure of learning outcomes

Area of academic study: R – Agricultural sciences, L - Forestry	2	ECTS **
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Structure of student activity

Contact hours	35	hrs.	1.4	ECTS**
Including:	lectures	15	hrs.	
	classes and seminars	15	hrs.	
	consultations	5	hrs.	
	participation in research	0	hrs.	
	obligatory traineeships	0	hrs.	
	participation in examination	0	hrs.	
e-learning	0	hrs.	0	ECTS**
student own work	15	hrs.	0.6	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