



SZKOŁA GŁÓWNA  
GOSPODARSTWA  
WIEJSKIEGO

## Landscape Ecology & Environmental Protection

### Educational subject description sheet

#### Basic information

<b>Field of study</b> Course Offer for exchange students - second cycle studies, including uniform master studies (MA programmes)		<b>Didactic cycle</b> 2024/25	
<b>Speciality</b> -		<b>Subject code</b> PWMPWM2S_D.B100000P.06332.24	
<b>Organizational unit</b> Course Offer for exchange students		<b>Lecture languages</b> english	
<b>Study level</b> second cycle studies, including uniform master studies (MA programmes)		<b>Mandatory</b> Elective subjects	
<b>Study form</b> full-time studies		<b>Block</b> Basic subjects	
<b>Education profile</b> General academic		<b>Disciplines</b>	
<b>Coordinator</b>	Marek Sławski		
<b>Teacher</b>	Marek Sławski		
<b>Period</b> Winter semester	<b>Examination</b> Exam/pass with grade	<b>Number of ECTS points</b> 6	
	<b>Activities and hours</b> Lecture: 16 Laboratory exercises: 8 Field exercises: 6		

## Goals

Code	Goal
C1	Students understand principles of landscape functioning and factors influencing it.
C2	Students recognize ways and rates of matter flux within landscapes.
C3	Students understand relations between landscape pattern and ecological processes.

## Subject's learning outcomes

Code	Outcomes in terms of	Effects	Examination methods
<b>Knowledge - Student knows and understands:</b>			
W1	Student know and understand causes of landscape pattern. Abiotic, biotic and human impact on landscape pattern. Disturbance and stress. Landscape structure and compartments. Landscape , measures. Patches, corridors and matrix. Land-water interactions. Water in landscape. Lakes and wetlands in the landscape		Written exam 50%. Presentation and report 40% Task completed 10%
W2	Student know and understand problems fragmentation of ecosystems. Biogeographical island theory. Recolonisation of defaunated mangrove isles. Island theory in terrestrial ecosystems and plants.		Written exam 50%. Presentation and report 40% Task completed 10%
W3	Student know and understand influence of disturbance on landscape and spatial patterns of succession. Human impact on landscapes (agriculture, forestry, water management, road network);		Written exam 50%. Presentation and report 40% Task completed 10%
<b>Skills - Student can:</b>			
U1	Student is able to collect field data, inventory and valorise the landscape. Students can prepare a landscape planning project that includes field data collection, landscape analysis (using basic landscape metrics), and a plan for habitat restoration and enhancement of ecological processes at the landscape scale.		Written exam 50%. Presentation and report 40% Task completed 10%
<b>Social competences - Student is ready to:</b>			
K1	Student is ready to work in a team, to use knowledge in activities for sustainable development at the landscape scale		Written exam 50%. Presentation and report 40% Task completed 10%

## Study content

No.	Course content	Subject's learning outcomes	Activities
1.	Short history of "landscape" and landscape ecology.	W1	Lecture

2.	Scale and hierarchy of the landscape. Causes of landscape pattern. Abiotic, biotic and human impact on landscape pattern. Disturbance and stress. Landscape structure and compartments. Landscape ,measures. Patches, corridors and matrix. Land-water interactions. Water in landscape. Lakes and wetlands in the landscape. Role of riparian buffers.	W1	Lecture
3.	Matter flux through the landscape. Fragmentation of ecosystems. Biogeographical island theory. Recolonisation of defaunated mangrove isles. Island theory in terrestrial ecosystems and plants. Introduction to metapopulation ecology. History of metapopulation ecology. Local population dynamics. Extinction and migration. Source-sink model. Effects of spatial pattern of landscape on organisms. Disturbance regime. Influence of disturbance on landscape and landscape on disturbance. Disturbance and spatial patterns of succession in landscape. Human impact on landscapes (agriculture, forestry, water management, road network);	W2, W3	Lecture
4.	Modeling of nitrogen outflow from a field-forest-stream catchment area (computer modelling; Metapopulation in landscape; Measuring landscape structure; Ecological corridors and road building – projecting animal crossings	W3	Laboratory exercises
5.	Inventory and valorization of a landscape. Students prepare landscape planning project. It includes collecting data in the field, analysis of landscape (with use of basic landscape metrics) and plan of habitat restoration, and enhancing ecological processes in landscape scale	U1, K1	Field exercises

### Course advanced

Activities	Methods of conducting classes
Lecture	Lecture, Problem lecture, Conversation lecture
Laboratory exercises	Presentation, Problem solving, Teamwork
Field exercises	Presentation, Field measurements, Field observations

Activities	Examination method	Percentage
Lecture	Written exam 50%. Presentation and report 40% Task completed 10%	50%
Laboratory exercises	Written exam 50%. Presentation and report 40% Task completed 10%	10%
Field exercises	Written exam 50%. Presentation and report 40% Task completed 10%	40%

Activities	Credit conditions
Lecture	Written exam 50%
Laboratory exercises	Task completed 10%
Field exercises	Presentation and report 40%

## Literature

### Obligatory

1. Forman R.T.T, Gordon M. 1986. Landscape ecology. Wiley & Sons, New York.
2. Environment Canada. 2013. How much habitat is enough?
3. Turner M.G., Gardner R.H., O'Neill R.V. 200. Landscape Ecology in Theory and Practice – Pattern and Process, Springer

### Optional

1. Hanski I. 1999. Metapopulation Ecology. Oxford Series in Ecology and Evolution. Oxford University Press
2. MacArthur R.H., Wilson E.O. 1967. The theory of island biogeography. Princeton
3. Fahrig, L. (2001). How much habitat is enough? Biological Conservation 100:65-74.

## Calculation of ECTS points

Activity form	Activity hours*
Lecture	16
Laboratory exercises	8
Field exercises	6
Preparing the project	40
Preparation of a multimedia presentation	20
Preparation for the exam	30
Preparation of the report	30
<b>Student workload</b>	<b>Hours</b> 150
<b>Number of ECTS points</b>	<b>ECTS</b> 6

\* hour means 45 minutes