Subject name	**Functioning of ecosystems**	
Subject code	IS-FEC-10	
Department	Ecology, Climatology and Air Protection	
Faculty	Environmental Engineering and Land Surveying	
Subject supervisor/Lecturer	Jan Zarzycki, Ph.D.	
General information	Teaching period	summer semester
	ECTS credit	6
	Lectures total	15
	Lab and field practical	30
Objective and general description	All ecosystems are very complex structures with interdependence between biotic and abiotic part. The main objective of the course is to understand the composition and functioning of different types of ecosystems and to acquaint students with the basic methods of ecological research.	
Lectures **5 x 3 hours**	**1.** General principles of functioning of ecosystem (basic definition and conception of biocenosis and population; energy and matter flow in ecosystems; development and evolution of ecosystem) **2.** Still water ecosystems (abiotic factors, classification; space structure; trophic structure; productivity) **3.** Running water ecosystems (abiotic factors, classification; space structure; trophic structure; productivity) **4.** Forest ecosystems (abiotic factors, classification; space structure; trophic structure; productivity) **5.** Grassland (factors influencing creation and persistence; classification; space structure; trophic structure; productivity) **6.** Agro ecosystem (history of agriculture; systems of agriculture in the world; trophic structure; productivity and restrictive factors; influence of agriculture on environment)	
Field practicals **3 x 5 hours**	1. Forest ecosystems - selecting the sampling plots - estimating the tree stand volume - tree species identification - identification of herbaceous plat species with the key - estimating the ecological state of forest ecosystem using soil-litter macroinvertebrates fauna 2. Aquatic ecosystems - Hydromorphological assessment based on the British method RHS - Benthic macroinvertebrates as bioindicators of ecological state of rivers and reservoirs - Identification of water macrophytes 3. Grassland ecosystems - vegetation survey of different grasslands communities (plant species composition using Braun-Blanquettes scale) - Rapid Biodiversity Assessment (RBA) of terrestrial invertebrates in different type of grasslands	
Lab practicals **3 x 2 hours**	1. Methodology of ecological studies in: grassland, forest and aquatic ecosystems 2. Analysis of the collected field data (grassland, forest, aquatic	

3 x 3 hours	ecosystems)
References	Allan, J. D. 1995. Stream ecology : structure and function of running waters. London : Chapman & Hall. Krebs J. 1978. Ecology : the experimental analysis of distribution and abundance. New York : Harper & Row Publishers. Odum E.P. 1983. Basic Ecology. Saunders, Philadelphia. van der Maarel E. 2004. Vegetation Ecology. Blackwell Publishing.