

Subject name	Anthropogenic Effect on Forest Stand and Waters	
Subject code	E.2.AEFW.SC.ECTIE.L	
Department	Forest Ecology and Reclamation	
Faculty	Forestry	
Subject supervisor/Lecturer	Professor Stanislaw Malek	
General information	semester	Winter or summer
	ECTS credits	4.00
	Lectures total	15
	Laboratories/field classes	9 /6
Objective and general description	<p>The course covers the anthropogenic effect on forest stand and waters in mountain region on the example of the Jaworzyna Krynicka Ski Resort. The focus of the course is upon the treatment of stand in changed forest ecosystems with special attention to the forest edge and waters treatment in relation to various silviculture and technical prescriptions for forest: close to the ski trails and ski resorts facilities.</p> <p><u>Lectures:</u> Nutrient cycling in spruce stands - same implications from Beskid Śląski Mts - Ecochemical indexes, Ski trial preparation and function. Effect of ski trial on chosen stand parameters. Forest edge – composition and role. Silviculture treatment in the areas affected by the ski station. The effect of environmental parameters and silviculture on water quality. Reconstruction methods of spruce stand disintegration in the Beskid Śląski and Żywiecki Mts and Integrated Forest Monitoring. Bioindication. Types of surface water. Classifications of springs. Role of spring water.</p> <p><u>Classes:</u> Determination of water parameters (pH, anions, cations and heavy metals). Chosen water parameters – water quality in relation to different acts. Changes of different forest stands’ parameters due to the ski trial - student presentation. Different kind of anthropogenic effect on plant, soil and surface water in the area of your home land - student presentation</p> <p><u>Field training:</u> Changes in forest stands close to the ski trial on the Jaworzyna Krynicka Mts and the effect of environmental conditions on surface water quality in this regions.</p>	
References	<p>Małek S., Kroczek M., Wieczorek T., Astel A., 2008. Changes in forest stands close to the ski trial no I on the Jaworzyna Krynicka Mts. Polish Journal of Environmental Studies, 17, 3A, 399-405.;</p> <p>Astel A., Małek S., Makowska S., 2008. Linear discriminant function analysis in assessment of chemical profiles for Black and White Vistula rivers in “Barania Góra” sanctuary forest area (Poland, Silesian Beskid). Water, Air, and Soil Pollution, 195, 137-149;</p> <p>Astel A., Małek S., Krakowian K., 2008. Sustainable afforestation as a tool of spring water sources protection in the mountain ecosystem. Polish Journal of Environmental Studies, 17, 3A, 22-27.</p> <p>Astel A., Małek S., Krakowian K., 2009. Multivariate exploration and classification applied to the chemical composition of spring waters in sanctuary forest areas. International Journal of Environmental Analytical Chemistry. Vol. 89, 597–620;</p> <p>Małek S., Krakowian K., 2009. The effect of environmental conditions on surface water quality in the Zimnik and Czyrna catchments of the Beskid Śląski, JOURNAL OF WATER AND LAND DEVELOPMENT, J. Water Land Dev. No. 13a, 205-223;</p>	

Springer A.E., Stevens L.E., 2009. Spheres of discharge of springs. *J. of Hydrogeology*. 17: 83-93; ICP-Forest Manual., 1998. Manual on methods and criteria for harmonized sampling, assessment, monitoring and analysis of the effects of air pollution on forests. (6th ed.). UN-ECE, Fed. Res. Centre for Forestry and Forest Products (BFH).

Małek S., Barszcz J., Majsterkiewicz K., 2014. Sylvicultural procedures in catchment areas of the mountain streams as exemplified by the Skrzyczne massif in Poland. *Folia Forestalia Polonica*, series A, vol 56 (1), 9-22.