

Title:	Monitoring and bioindication of freshwater biosystem
Lecture hours:	15/15
Study period: (summer/winter)	summer
Number of credits:	3
Assessment methods:	exam
Language of instruction:	English
Prerequisites:	basic knowledge of ecology and biology
Course content:	Introductory information, organising concepts, and introduction to the subject (definitions). The role of monitoring and bioindication. The purpose and scope of the State Environmental Monitoring System – specialised monitoring subsystems. Integrated monitoring of the natural environment. Monitoring of surface waters: rivers, lakes, and dam reservoirs. Lake quality assessment and classification system. Assessment of the ecological status and potential of waters in light of the WFD. Abiotic and biological typology of surface waters. Reference water status. Bioindication, or the practical application of ecological tolerance. The diversity of bioindication methods; basic properties of bioindicators and their classification; the importance and functions of bioindication methods. Characteristics of an excellent bioindicator. Biological tests.
Learning outcomes:	After completing the course, the participant: Possesses extensive knowledge of methods for assessing the state of the environment based on monitoring recommended by the Water Framework Directive; Is able to describe the greatest threats to the natural environment at various spatial scales (global, regional, local), knows the methods for their assessment, and is familiar with the scientific and legal aspects of environmental and nature conservation. Can plan and perform simple analyses for environmental valuation and environmental quality assessment, both under supervision and independently. Interprets the results of monitoring measurements and, based on them, draws accurate conclusions about the state of the environment, threats, and recovery opportunities.
Name of lecturer	dr hab. Paweł Napiórkowski prof.
Contact (email address):	pnapiork@ukw.edu.pl
Literature:	The Ecological Status of European Rivers: Evaluation and Intercalibration of assessment methods. Mike T. Furse, Daniel Hering, Karel Brabec, Andrea Buffagni, Leonard Sandin, Piet F.M. Verdonschot Springer Science & Business Media, 20 mar 2009 – 555; A hitchhiker's guide to European lake ecological assessment and intercalibration, Sandra Poikane, Sebastian Birk, Jürgen Böhmer et al.; Ecological Indicators Volume 52, May 2015, Pages 533-544; Poikane S, Van Den Berg M, Hellsten S, De Hoyos C, Ortiz-Casas J, Pall K, Portielje R, Phillips G, Lyche Solheim A, Tierney D, Wolfram G, Van De Bund W. Lake Ecological Assessment Systems and Intercalibration for the European Water Framework Directive: Aims, Achievements and Further Challenges. In: EECA - "Ecological

	engineering - from concepts to application"; 02 December 2009; Paris (France). Procedia of Environmental Sciences 9; 2011.p. 153-168. JRC58309 The Ecological Status of Lakes in National and Landscape Parks: Does the Location of a Lake and Its Catchment within a Protected Area Matter? Agnieszka Pasztaleniec, Sebastian Kutyla; Pol. J. Environ. Stud. 2015;24(1):227-240 Limnology and limnetic ecology [ed.Reynolds and O'Sullivan] The lakes, Handbook Volume 1, Blackwell Science Ltd 2004 Lake Ecology Overview. (Chapter 1, Horne, A.J. and C.R. Goldman. 1994. Limnology. 2nd edition. McGraw-Hill Co., New York, New York, USA.)
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