

MODULE INFORMATION SHEET

Name of Module Unit	Planning and Management of Water Resources Systems
Name in Polish	Planowanie i zarządzanie w systemach wodnogospodarczych
Module type	compulsory / elective
Form of studying	full-time day courses
Level of study	graduate course (M.Sc. level)
Type of study (for extra-mural courses)	-
Programme	Environmental Engineering
Speciality	Environment Protection Engineering
Responsible department	Chair of Environmental Protection and Management
Responsible person	dr inż. Dorota Pusłowska-Tyszewska

Semester	Lectures(E)	Tutorials	Laboratory	Computer Exercises	Projects	ECTS
4	15				30	3

Learning outcomes (knowledge, skills, competences)

Knowledge: Student knows area of application and capabilities of the models applied in water management (WM) planning; understands non-technical aspects of WM, especially social, ecological and economic issues; is aware of environmental impacts of WM decisions and knows solutions that fulfill sustainable use of the environmental resources.

Skills: Student can apply computer models to analyze proposed water management options and solutions as well as present the results of analysis; can develop or verify proposals for water management strategy, water related programs and projects.

Competences: Student is aware of the responsibility for jointly performed tasks; understands the need to constantly deepen knowledge and improve professional qualifications

Prerequisites

Computational Methods in Environmental Engineering, Environmental Protection Management, Surface Water Protection, Groundwater Protection

Rules for integrated grade setting

$0.4*L + 0.6*P$

Recommended readings

Daniel P. Loucks and Eelco van Beek, Water Resources Systems Planning and Management - An Introduction to Methods, Models and Applications, Deltares and UNESCO-IHE, 2017.

Costanza R. et al. 1997: The value of the world's ecosystem services and natural capital. NATURE, VOL 387.

Costanza R. et al. 2017: Twenty years of ecosystem services: How far have we come and how far do we still need to go? Ecosystem Services 28 (2017) 1–16

DIRECTIVE 2000/60/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2000 establishing a framework for Community action in the field of water policy, Official Journal of the European Communities,

22.12.2000 DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 23 October 2007 on the assessment and management of flood risks, Official Journal of the European Communities
 TEC Background Papers No.: 4, 9, 15, 18, 22, 24. Global Water Partnership Technical Committee (TEC)

Contents of lectures (syllabus)

	Topics	Time (hrs.)	Scope (S / Ex)
1	Review of contemporary water management problems, systemic approach to water management.	2	S
2	Basic technical and natural measures in water management.	1	S
3	Instruments in managing water resources.	1	S
4	Planning process – principles and methods of integrated water management	2	S
5	Hydrologic, hydraulic and balance models to support planning analysis.	2	S/Ex
6	Environmental flows as a tool for aquatic and water dependent ecosystems' protection.	2	S
7	Wetlands – hydrology, management and protection	2	Ex
8	Economic issues including environmental costs, ecosystem services and cost allocation.	2	Ex
9	Integrating ecological, social and economic issues for sustainable solutions in water management	1	S
Total		15	hours

S – topics listed in the legal study programme standards from 12.07.2007

Ex – extended topics

Lecturers

dr inż. Dorota Pusłowska-Tyszewska

Assessment method

Test

Contents of guided projects

	Topics	Time (hrs.)	Scope (S / Ex)
1	Stakeholders' participation in the planning of water management projects (part 1).	2	Ex
2	Defining environmental flows with selected methods.	4	S
3	Developing water management strategy for a catchment – use of hydrologic and/or water balance models.	18	S/Ex
4	Allocation of costs between users exploiting the same resources (or installation).	2	S
5	Defining Ecosystem Services	2	Ex
6	Stakeholders' participation in the planning of water management projects (part 2).	2	Ex
Total		30	hours

S – topics listed in the legal study programme standards from 12.07.2007

Ex – extended topics

Persons responsible for guided projects

dr inż. Dorota Pusłowska-Tyszewska

Assessment method for guided projects

active participation in classes, carrying out project tasks; assessment of reports