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UNIVERSITETI I
PRISHTINËS
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NDËRTIMTARISË



Republika e Kosovës
Republika Kosova-Republic of Kosovo
Qeveria
Vlada-Government

MASTER PROGRAM ON INTEGRATED WATER RESOURCES MANAGEMENT

FACULTY OF CIVIL ENGINEERING, UNIVERSITY OF PRISHTINA "HASAN
PRISHTINA AND OTHER FACULTIES

Introduction

Current global trends such as population and economic growth as well as climate change exert increasing pressure on water resources worldwide.

Experts are needed who understand that multiple problems of water resources management can only be addressed through a holistic approach considering both technical and socioeconomic problems of resources use.

The development of interdisciplinary Master program on IWRM is identified as the priority on the IWRM-K. The program aims at bringing trans disciplinary knowledge amongst the diverse target audience in terms of previous educational background and professional experience. It will build the capacity of future leaders in water resources management.

Future water professionals will be much better equipped with knowledge, practical tools and skills, to manage water resource challenges and uncertainties.

Mission and objectives

The main mission of the Master Program on Integrated Water Resources Management in Kosovo, is to build long-lasting water resources management capacities at national level, in line with Kosovo's socio-economic and political priorities, as well as the needs of future sustainable development.

It aims to help replace the current fragmented approach with a more comprehensive and highly participatory approach of managing water resources, aligned with the principles of Integrated Water Resources Management (IWRM) and the EU Water Framework Directive (EU WFD).

It is funded by the Consortium of Skat Consulting Ltd., Switzerland and the Environment Agency Austria (EAA), thanks to the generous funding provided by the Swiss Agency for Development and Cooperation (SDC). In implementing the educational activities, the IWRM-K benefits from the specialized knowledge and long-term experience of the World University Services (WUS) Austria.

During this Master Programs students will be offered the unique opportunity to study the various hydrotechnical, biophysical, environmental, legal, institutional, and socio-economic aspects of water use and management in an integrated context.

The overall objective of the Master Program, is to educate experts in the field of Integrated Water Resource Management who are high on demand for the leading positions in the water sector and are able to manage complex projects for our institutions and companies.

This Master Program on IWRM is hosted by the Department of Hydrotechnics, the Faculty of Civil Engineering of the University of Prishtina, in cooperation with the Faculty of Mathematics and Natural Sciences/Department of Biology, Faculty of Management in Tourism, Hospitality and Environment, University of Peja and other International Academic Institutions.

Target group

The candidates should hold at minimum a bachelor degree and may come from a variety of academic backgrounds related to the water sector, such as engineering, natural sciences, economics, social sciences.

They should have preferably some working experience at an institution or company in the water sector, have good communicative skills and be fluent in English.

The candidates should be highly motivated to contribute to solving the water crisis and should aspire to make a career in the international water sector.

Teaching concept

The didactic concept consists of two main components: a technical and an economic-social.

The technical component provides the participants with the relevant and up to date knowledge necessary to take decisions towards a sustainable management of water resources. The economic-social component (equally important) aims at equipping the participants with the financial, managerial, communicative and intercultural skills necessary to take up leadership positions in the water sector.

In class, modern methods of teaching are to be applied such as problem based learning, interactive teaching, concept mapping and computer based learning.

In order to train our students' practical skills we offer project seminars, that are carried out in cooperation with International and local industry partners, giving students the chance to work on real life problems. The benefits for our industry partners include the possibility to get a cost-saving but nevertheless detailed analysis of a specific problem. Industry cooperation is also possible for master theses.

Degree

According to the National Qualifications Framework, the Master Program -IWRM belongs to level seven (7), which includes academic and professional programs, the completion of which leads to a Master's degree qualification. Students obtain the Master's degree through the demonstration of knowledge, skills and competencies for each subject in particular and the entire program in general, within the period of study.

The participants receive a degree Master of Science on Integrated Water Resources Management, issued by University of Pristina “Hasan Prishtina”.

Language of instruction

English

Program learning outcomes

MP-IWRM program aims to achieve learning outcomes in line with the National Qualifications Framework and the European Higher Education Area Qualifications Framework.

Upon successful completion of this program, the students will be able to:

1. *Gain comprehensive knowledge on Water Resources Assessment, Development and Management;*
2. *Identify the regulatory aspects of water management and the water framework directive;*
3. *Recognize and appreciate social, political, economic and environmental impacts on water resources management;*
4. *Investigate and apply knowledge to obtain responses to the worldwide problems of increasing water scarcity and water resource management;*
5. *Combine a broad range of science and management methods for the water resources management issues;*
6. *Implement and operate appropriate and sustainable solutions to Integrated water resources management, with due regard to the technical, social and institutional constraints.*

The program structure and duration

The Master on Integrated Water Resources Management degree can be obtained by completing 4 semesters, throughout two years of study. Course work, comprising of theory courses, exercises and laboratory and/or fieldwork, shall be conducted over a period of three semesters, of 15 weeks each.

During these three semesters, 90 ECTS are obtained, while the fourth semester has additional 30 ECTS. From these credits, 10 ECTS are obtained through Internship and 20 ECTS through research project and Master thesis. In total, by the end of this program students will gain 120 ECTS and receive a Master of Science degree.

Program content

The program consists of basic modules such as “Introduction: IWRM and Water Security”, “Hydrology and Hydrometry”, “Water Conservation and Water Efficiency”, “Water and Agriculture”, “Hydraulic Structures”, “Biophysical Characterization of Water”, “Environmental Monitoring and Data Analyses” . In order to provide an overview on water economics, legislation and water management the following modules are designed, such as: ”Economics of Water and Financial Instruments for Implementation of IWRM”, “Water Legislation and Governance”, “Ecosystem based Management”, “Flood and Drought Management”.

In addition, the participants can select between 9 elective courses related to integrated water resources management such as: “Research Methods and Study Design”, “Project Management”, “Public Health”, “Entrepreneurship” etc.

Internship and research work will focus on the master thesis preparation, if possible with the local or regional institution or company. This will guarantee the practical orientation of the master research.

Interdisciplinarity of Master Program on IWRM



Hydrotechnics

- Introduction: IWRM and Water Security
- Hydrology and Hydrometry
- Water Conservation and Water Efficiency
- Flood and Drought Management
- Water and Agriculture
- Hydraulic Structures

Sciences

- Biophysical Characterization of Water
- Meteorology
- Ecosystem based Management

Environment

- Environmental Monitoring and Data Assessment
- Public Health

Management

- Project Management
- Sustainable Development Goals
- Knowledge Management Tools for IWRM Implementation
- Transboundary Water Management
- Watershed Management

Economy

- Economics of Water and Financial Instruments for Implementation of IWRM
- Entrepreneurship

Legal

- Water Legislation and Governance

Social

- Risk, Vulnerability and Community Resilience
- Water and Conflicts-Power and Politics in Water Sector

Other

- Research Methods and Study Design

Master of Science in Integrated Water Resources Management Program (Level 7)

PROGRAMME SUMMARY

First Semester (I)			Hours/ Week		
Nr.	M/E	Subject	L	E*	ECTS
1	M	Introduction: IWRM and Water Security	2	1	6
2	M	Hydrology and Hydrometry	2	2	6
3	M	Economics of Water and Financial Instruments for Implementation of IWRM*	2	2	6
4	M	Biophysical Characterization of Water	2	2	6
					24
5	E	Research Methods and Study Design	2	0	3
6	E	Project Management	2	0	3
7	E	Meteorology	2	0	3
					9
Second Semester (II)			Hours/ Week		
Nr.	M/E	Subject	L	E*	ECTS
1	M	Water Conservation and Water Efficiency	2	2	6
2	M	Environmental Monitoring and Data Analysis	2	2	6
3	M	Water Legislation & Governance	2	0	3
4	M	Flood and Drought Management	2	0	3
5	M	Risk, Vulnerability and Community Resilience*	2	1	6
					24
6	E	Water and Agriculture	2	0	3
7	E	Public Health	2	0	3
8	E	Sustainable Development Goals	2	0	3
					9

Master of Science in Integrated Water Resources Management Program (Level 7)

PROGRAMME SUMMARY

Third Semester (III)			Hours/ Week		
Nr.	M/E	Subject	L	E*	ECTS
1	M	Knowledge Management Tools for IWRM Implementation	2	2	6
2	M	Water and Conflicts-power and politics in the Water Sector	2	0	3
3	M	Ecosystem Based Management	2	2	6
4	M	Hydraulic Structures	2	2	6
5	M	Transboundary Water Management*	2	0	3
					24
6	E	Hydro-Informatics/Hydraulic Modeling	1	2	3
7	E	Enterpreunership	2	0	3
8	E	Watershed Management	2	0	3
					9
Fourth Semester (IV)					
Nr.	M/E	Subject	L	E*	ECTS
1	M	Internship			10
2	M	Diploma Thesis			20

The perspectives of the MSc-IWRM graduates

- ✓ Developed effective leadership capacity as well as the strategic, managerial and technical skills;
- ✓ Excellent career opportunities in regional and international cooperation and development;
- ✓ Leadership positions in the public and private water sector, in the region and wider;
- ✓ Become part of a network of excellence on IWRM.

Course specification

Course: Introduction: IWRM and Water Security

Course stat: Mandatory

ECTS: 6

Main Topics:

Basic concepts on IWRM and its importance in Kosovo and Globally,
Water security approaches, balance and water quality elements,
Water uses and challenges on water resources systems,
Monitoring and information systems as tools for IWRM,
Modeling and decision support system on IWRM.
Challenges and opportunities for IWRM implementation

Course: Hydrology and Hydrometry

Course stat: Mandatory

ECTS: 6

Main Topics:

Basics on hydrological principles,

Frequency analyses,

Hydrological time series,

Hydrometry,

Hydrografs,

Ground water monitoring,

Darcy law and groundwater balance equation,

Water productivity indicator's measurement.

Course: Economics of Water and Financial Instruments for Implementation of IWRM

Course stat: Mandatory

ECTS: 6

Main Topics:

State interventions and water as an economic good and a human right,

Public and private sector's role in water supply,

Water infrastructure development,

Unit cost of water,

Economic efficiency and social impacts of water pricing,

Tools for water allocation optimization,

Supply cost for cost recovery,

Public and Private partnership models,

Public and Private sector funding tools and technologies for Sustainable Water Management

Course: Biophysical Characterization of Water

Course stat: Mandatory

ECTS: 6

Main Topics:

Analyses of biophysical techniques and tools for the biophysical characterisation of water,
Various approaches to IWRM implementation- watershed management,
Basin management,
Biophysical characterisation's analyses of case studies.

Course: Water Conservation and Water Efficiency

Course stat: Mandatory

ECTS: 6

Main Topics:

Basic concepts in Water conservation,

Problem analyses caused by poor management,

Develop methods to solve water conservation management,

Basic principles of water metering and measurements

Course: Environmental Monitoring and Data Analysis

Course stat: Mandatory

ECTS: 6

Main Topics:

Principles of Environmental monitoring,
Data required to meet monitoring objectives,
Equipment and measurements needed,
Real time systems for environmental system's monitoring,
Data acquisition systems and telemetry,
Data sharing and preservation,
Data analyses

Course: Water Legislation & Governance

Course stat: Mandatory

ECTS: 6

Main Topics:

Basics of water policy and legislations,

Historical overview and key terms,

State interventions and water as an economic and human right,

Institutions, Stakeholders, roles and responsibilities,

Development and analyses of National Water policies,

European Water Directive.

Course: Flood and Drought Management

Course stat: Mandatory

ECTS: 6

Main Topics:

Definition of types, causes and impacts of floods,

Flood management policies, programs and projects,

Flood mitigation and adoption strategies,

Flood mitigation and adaption strategies,

Drought risk concepts,

Variables and indices to assess and monitor drought variability,

Vulnerability and exposure proxies to assess spatially distributed vulnerability.

Course: Risk, Vulnerability and Community Resilience*

Course stat: Mandatory

ECTS: 6

Main Topics:

De- risking the water sector,

Threats to resiliency,

Building and maintaining resilient communities and nation,

Water security planning

Course: Knowledge Management Tools for IWRM Implementation

Course stat: Mandatory

ECTS: 6

Main Topics:

Definition , history and spatial information,

Spatial Analyses,

Geoprocessing,

Application of remote sensing data and GIS, GIS Software, GIS Data,

GIS tools to design Decision support systems,

Course: Water and Conflicts-power and politics in the Water Sector

Course stat: Mandatory

ECTS: 6

Main Topics:

Water interfaces with peace and political stability,

Water as a direct and indirect driver of conflict at local, national and regional scale,

Politics of water including aspects of water justice, rights, ownership and privatisation.

Course: Ecosystem Based Management

Course stat: Mandatory

ECTS: 6

Main Topics:

Water and Ecosystems- Introduction to National Based Solutions,

Freshwater biodiversity, habitat and ecosystem services,

Restoration of riparian ecosystems,

Climate change adaption and disaster risk reduction using EBM Urban watre security

Course: Hydraulic Structures

Course stat: Mandatory

ECTS: 6

Main Topics:

Hydrostatics fundamentals,

Flow in pipelines,

Flow in open channels,

River morphology,

Diversion works, Cross drainage structures,

Embankment dams,

Concrete dams,

Dam outlet works

Course: Transboundary Water Management*

Course stat: Mandatory

ECTS: 6

Main Topics:

Introduction to transboundary water systems,
History of transboundary water management in the region,
Regional and international treaties,
Agreements for transboundary water management,
Case studies on International experiences