

# LEARNING OUTCOMES

- UPON SUCCESSFUL COMPLETION OF THE TRAINING PROGRAM, THE PARTICIPANTS SHOULD BE ABLE TO:
- RECOGNIZE ESSENTIAL FACTS, CONCEPTS, PRINCIPLES AND THEORIES RELATING TO TRANSBOUNDARY WATER MANAGEMENT
- ADDRESS A SIGNIFICANT PROBLEM AND DEPLOY AN APPROPRIATE SELECTION OF TOOLS AND TECHNIQUES, AS WELL AS A DISCIPLINED APPROACH, IN ARRIVING AT A SOLUTION OF THE PROBLEM.
- APPRECIATE THE IMPORTANCE OF PRACTICING AS PROFESSIONALS AND HAVING THE DEPTH OF KNOWLEDGE EXPECTED OF A PRACTICING ENGINEER / OFFICER / COMPETENT AUTHORITY
- APPRECIATE THE IMPORTANCE OF TEAM ACTIVITY AND COOPERATION AND THE STRENGTHS THAT CAN BE DERIVED FROM THIS
- DEMONSTRATE ABILITY TO CONDUCT IN-DEPTH RESEARCH, BOTH INDIVIDUALLY AS WELL AS IN TEAMS, IN A SPECIFIC ENVIRONMENTAL ENGINEERING AREA.

# PROJECT DELIVERABLES

- THE TRAINING COURSES / MODULES WILL PROVIDE THE FOUNDATIONS FOR THE ESTABLISHMENT OF RELATED POSTGRADUATE DEGREES (MSC AND PHD) IN THE AREAS OF WATER ENGINEERING AND ENVIRONMENTAL STUDIES, ALLOWING THE IMPLEMENTATION OF CORE RESEARCH ACTIVITIES AND SUBSEQUENTLY THE ATTRACTION OF RELEVANT RESEARCH FUNDS.

<b>Course Unit Title:</b>	Water Resources Management
<b>Course Unit Code:</b>	CEE.....
<b>Type of Course Unit: (Compulsory/Optional)</b>	Compulsory
<b>Level of Course Unit: (first, second or third cycle)</b>	(1st cycle)
<b>Number of ECTS credits allocated:</b>	6
<b>Name of lecturer(s):</b>	Prof. Elpida Kolokytha

**Learning Outcomes of the course unit:**

Upon successful completion of this course students/participants should be able to:

- Describe the global water problem
- Recognize the impact of climate change into water resources planning and management.
- Recognize when a river basin is managed in a sustainable way
- Identify the differences in the management of a transboundary water basin
- Describe and apply the basic principles of IWRM
- Recognize the competitive relations between the different water uses and their impact on the environment
- Describe the concept of Sustainability and Green Development and their applicator to water management.

## Module Contents:

### **Objective:**

The primary goal of the module is to help students/ participants understand the water problem and learn how to analyze and comprehend the basic principles of water resources planning and management

### **Description:**

Introduction to the water problem: Distribution of water on Earth. Global water use. The global water deposits. Global population growth and human activities.

Demand vs supply of water. Physical availability of water (precipitation, evapotranspiration, groundwater, surface water). Water in the various uses (urban, agricultural, industrial etc.) Water balance, indicator of sustainable water management. Water quality and water availability issues.

Water resources management under climate change conditions. Impacts of climate change on water resources management.

Principles of Integrated Water Resources Management: Integrated water policy, Demand management and applied tools to achieve water conservation. Water as an economic good. Decentralized management and public participation

Transboundary river basin management. Conflict management. Problems & perspectives of cooperation

International legislation for water resources management. The EU Water Framework Directive. International legal framework for the management of transboundary water resources

Preparation and a water management plan. Data collection, use of databases, content of a water management plan.

Green development and water. Basic notion of Green Development. Examples of GD applied in water resources management in industry.

<b>Recommended or required reading:</b>	<p>Thomas V. Cech, Karrie Lynn Pennington, Introductor to Water Resources and Environmental Issues, 2010</p> <p>Water resources management-Vol.1 (e-book)</p> <p>GWP: Integrated Water Resources Management. Global Water Partnership Technical Advisory Committee (TAC), Background papers no4, Stockholm</p>							
<b>Planned learning activities and teaching methods:</b>	Class Instruction Consultation	<table border="1"> <tr> <td data-bbox="1526 611 1745 668">42 Hours</td> </tr> <tr> <td data-bbox="1526 668 1745 725">15 Hours</td> </tr> </table>	42 Hours	15 Hours				
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<b>Language of Instruction:</b>	English / Russian / other							
<b>Place of Teaching:</b>	Regular Classroom / teleconference etc.							

<b>Module Unit Title:</b>	Sustainable Development for the Environment
<b>Module Unit Code:</b>	CEE....
<b>Type of Module Unit: (Compulsory/Optional)</b>	Compulsory
<b>Level of Course Unit: (first, second or third cycle)</b>	(1st cycle)
<b>Number of ECTS credits allocated:</b>	6
<b>Name of lecturer(s):</b>	Prof. Elpida Kolokytha

**Learning Outcomes of the course unit:**

Upon successful completion of this course students should be able to:

- Recognize and report the competitive relations between the Environment and the Economic Development activities.
- Link environmental degradation and low level of development.
- Recognize, report and describe the global environmental problems.
- Classify the environmental problems according to their origins.
- Recognize and analyze the deadlock of the traditional environmental protection and rehabilitation engineering approach.
- Describe Sustainable Development for the environment as a critical concept for the confrontation and improvement of the global equilibrium.
- Describe and document the comparative advantages of Green Economy
- Explore and identify economic activities compatible to the concepts of Sustainability and the notion of Green Development

## Module Contents:

### Objective:

This course introduces the environmental problems as the result of the economic and the development activities. The competitive relations between the environment and the development are introduced as the origin of the unbalanced global equilibrium.

The global environmental problems, among which climate change and the greenhouse phenomenon, water scarcity and natural resources overexploitation, air, water and soil pollution etc, are presented and their consequences are described.

The course covers the basic principles of the Sustainability concept as well as the principles of the Green Development notion, introducing them as the only way to confront and improve the global equilibrium.

### Description:

1. **The competitive relations between the Environment and the Development.** The environmental problems are introduced as the main consequences of the economic development model. The environment supports the economy and the economy uses the environment. The need of equilibrium between the environment and the economic development.
2. **The global environmental problems.** Climate change and the greenhouse phenomenon, water scarcity and natural resources overexploitation, air, water and soil pollution, as well as other problems are presented and their consequences are described.
3. **Global environmental problems and their origin to the globalization of the economy.**
4. **The concept of Sustainability for the Environment and the Development**
5. **The notion of the Green Economy**

**Future perspectives** - There is no planet B. New challenges and threats with regard to the rehabilitation of the global equilibrium between the economy and the environment. Tide over recession with environmentally friendly economic activities. The new development model. Sustainability vs Green Economy.

<p><b>Recommended or required reading:</b></p>	<p>Environment, Development and Sustainability, Springer, Open Access</p> <p>Rio Declaration on Environment and Development. UNEP U.N. Publications</p> <p>Environment and Development Economics. Cambridge University Press</p> <p>Environment and Development Economics. Oxford University Press, 2014.</p>								
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