



Malaysia  
Hands On Trust

**Regional Workshop: Pathway Towards Improved  
Water Education Curricula  
27-28 November 2017  
Penang, Malaysia**



**VOLUME 2 – TOPIC 5  
WATER MANAGEMENT CURRICULA USING  
ECOHYDROLOGY AND INTEGRATED WATER  
RESOURCES MANAGEMENT**

**Phytoremediation Technique  
in Water Quality Improvement**

by

**DR. NORLIDA MOHD DOM**



# PRESENTATION OUTLINE

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GENERAL BACKGROUND

2

MODULE OBJECTIVE

3

LEARNING OUTCOME

4

COURSE DURATION

5

MODULE ACTIVITIES AND PROCEDURES

# THE BACKGROUND

## Project Title

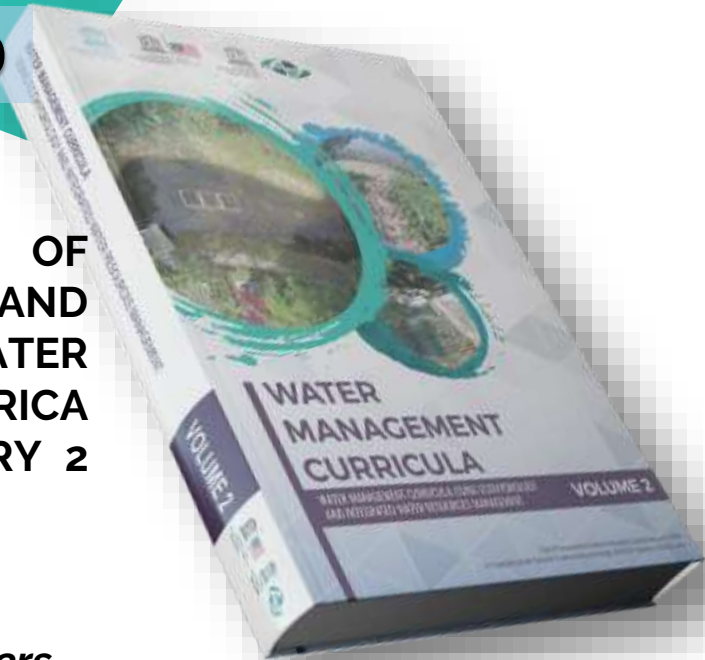
COMPARATIVE STUDIES OF  
APPLYING ECOHYDROLOGY AND  
IWRM FOR UPSCALING WATER  
SECURITY IN ASIA AND AFRICA  
THROUGH UNESCO CATEGORY 2  
WATER CENTRE

## *Target Audience:*

*Engineers, Architect, Stakeholders  
such as authority, developers*

## Supported by:

Malaysia Fund-in Trust (MFIT)  
Gov. of Malaysia



In Collaboration with :  
UNESCO Jakarta Office

# THE GOAL

## TOPIC 5

PHYTOREMEDIATION TECHNIQUE IN RIVER  
WATER QUALITY IMPROVEMENT

To implement **phytoremediation** as proven by a **scientific technique** for **improving the water quality** and providing a **cheaper** solution where there is limited source of funds to construct a water treatment plant.

# MODULE OBJECTIVES

## TOPIC 5

PHYTOREMEDIATION TECHNIQUE IN RIVER  
WATER QUALITY IMPROVEMENT

1. To **understand** on what is **phytoremediation**.
2. To learn how to develop a **method** on the pollutant response to the plant.
3. To be able to **apply** the method of phytoremediation **technique** in polluted water.
4. To be able to calculate the **requirement** of **floating system** to be installed in the polluted river based on the pollutant reduction requirement.

# LEARNING OUTCOME

## TOPIC 5

PHYTOREMEDIATION TECHNIQUE IN RIVER  
WATER QUALITY IMPROVEMENT

1. Ability to **understand** the highest efficiency of pollutant uptake in the plant to act as a primary purifier of waste water; providing answer to low cost sanitation and fresh water
2. Ability in **analyzing** pollutant uptake and reduction efficiencies by the plant, concepts, practices, interpretations and issues in implementing eco-hydrology in IWRM concept for the catchment management

# LEARNING OUTCOME

## TOPIC 5

PHYTOREMEDIATION TECHNIQUE IN RIVER  
WATER QUALITY IMPROVEMENT

3. Ability in evaluating various suitable applications (including plant quantity, floating system and knowledge) to make changes that will create value that will satisfy customer needs and wants.
4. Appreciate the importance of environmental friendly and cheaper solution for various treatments by the suitable plant for domestic treatment.

# THE CONTENT

TOPIC 5

PHYTOREMEDIATION TECHNIQUE IN RIVER  
WATER QUALITY IMPROVEMENT

## CHAPTER 1

The Curricula

Outline, Objectives, Scope

Learning Outcome

Method of Instruction/Delivery

Proposed Framework Content

Triggering Question

Participants

## CHAPTER 2

What We Learn from this Course

## CHAPTER 3

Phytoremediation

## CHAPTER 4

Methodology

## CHAPTER 5

Laboratory Experiment

## CHAPTER 6

Calculation Example

## CHAPTER 7

Installation Guide- Example

## CHAPTER 8

Summary





# MODULE ACTIVITIES AND PROCEDURES

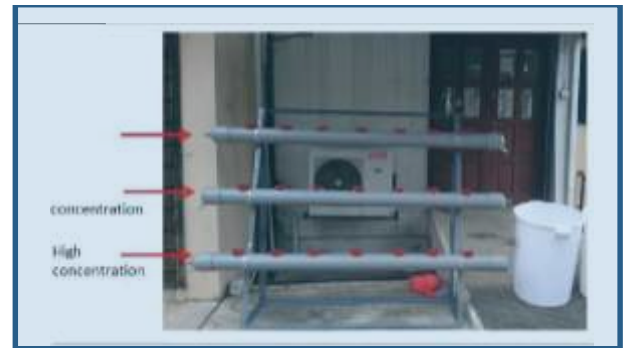
## CHAPTER 4 Methodology

## CHAPTER 5 Laboratory Experiment

## CHAPTER 6 Calculation Example

## CHAPTER 7 Installation Guide- Example

## CHAPTER 8 Summary



# THE COURSE DURATION

## TOPIC 5

PHYTOREMEDIATION TECHNIQUE IN RIVER  
WATER QUALITY IMPROVEMENT

## APPLIED COURSE

Short course

- 3-month
- Part-Time

or

- 1-month
- Full-Time



# ACKNOWLEDGEMENT



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River Engineering and Urban Drainage Research Centre (REDAC) Universiti Sains Malaysia- logistic

# Thank You



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