

WATER INTENSIVE COURSE 2017

Water Intensive Course (WIC) is an annual program held by Universitas Katolik Parahyangan. The program was firstly held in 2015, focusing on smart water management. While in year of 2016, the content was emphasized more on water conflict issues. In 2017, as regard to the sustainable development goals, the WIC theme is set to discuss deeply about water security and environmental protection.

*WATER SECURITY
AND
ENVIRONMENTAL
PROTECTION*



3rd WATER INTENSIVE COURSE

Water Security and Coastal Protection

Bali, 11 - 17 January 2017

INTRODUCTION

Water is one of key elements in sustainable development. Through its essential role in the production of most goods and basic services, water resources underpin the very fabric of human life. Not only characterizes the societies and environment we live-in, water also has even broader influence in many aspects of life. In some countries, for example, water also often plays an important role in the cultural identity or the religious beliefs of local people. However, in many parts of the world, water availability is severely limited as demand for water is already much greater than the available supply. In fact, this is not an issue that affects only developing countries, where water infrastructure is poor and where many people do not have access to safe drinking water, but also the developed world, where burgeoning demand simply cannot continue to be met. In addition, the rapid growth of population and economic has given huge pressure on the land use change, water pollution, climate change, et cetera so that the water security and environmental protection is now really a global concern.

Based on the above reason, the 3rd Water Intensive Course which will be hosted by Universitas Katolik Parahyangan starting from 11 – 17 January 2017 in Bali, is not only aimed to expose the issue of how water has benefit and been exploited so far, but also provide some engineering perspectives of how both water and environment should be managed under such complex situations. To enrich the content, this program will also introduce how local excellence has been a strong point in valuing the water and environment. Besides lectures, the program will also allow participants to learn deeper from site visits or movie discussion and experience the nature of Bali as its development has been a very challenging issue but still contains rich of valuable cultures.

OBJECTIVES

The 3rd Water Intensive Course program is aimed:

1. to increase the awareness of water insecurity and environmental degradation;
2. to introduce new perspectives as regard to water resources management and environmental protection;
3. to provide opportunity to the participants to explore deeper about valuable local excellence;
4. and to promote Indonesian cultures.

WHO CAN PARTICIPATE AND HOW

The 3rd Water Intensive Course program is offered to any international undergraduate student from who has strong motivation to improve his/her knowledge in water resources management and environmental protection. Thus, filling in the application form is necessary to collect some basic data of the student, understand the level of student knowledge, and measure his/her capacity to enroll the program. The application can be then submitted to the committee via **WIC2017@gmail.com**. The total cost required to enroll the program is **USD 1,200 per person**. Payment can be done by transfer as soon as the student is considered pass the selection process.



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WHAT WE PROVIDE

When the student is selected to participate in the program, the student deserves to get pick-up and drop off service from / to Ngurah Rai Airport in Bali, shared-based accommodation, inland transportation related to the program, daily breakfast, lunch for most activities, welcoming dinner, closing dinner, and entry ticket to the related cultural activities. During the program, student will also be given some time to explore on the local culinary especially in the evening. Students coming from our partner universities will also be able to join the 6th International Student Conference that will be held from 18 – 25 January 2015 in Bali. At end of the program, only student who is fully attend the program and able to deliver all the assignments will be awarded a certificate. This program is designed equals to 3 credits which may be transferred according to the policy of home university.

LECTURES

Lecture 1: Water Security and IWRM: Putting Concept into Practice

Delivered by Prof. Robertus W. Triweko, Ph.D.

Water is vital for human survival, health and dignity and a fundamental resource for human development. It has been decades that the world's freshwater resources have been managed under increasing pressure. Sectoral approach to water resources management has dominated in the past and is still prevailing. This leads to fragmented and uncoordinated development and management of the resource. The imbalance between supply and demand has put a huge pressure on water insecurity. Thus, it becomes fundamental to understand the issue and be able to apply the concept of integrated water resources management into practice in order to improve the quality of life. According to the Global Water Partnership, water security and integrated water resources management (IWRM) are symbiotic and that adaptive management helps to bring water security at all levels. This lecture is aimed to describe the water insecurity situation in global world especially in the developing countries and small islands i.e. Bali and Nusa Tenggara Timur, challenges faced in achieving water security, and necessary policy or strategy to ensure water security according to the IWRM concept.

Lecture 2: Water and Food Security

Delivered by Samuel Jonson Sutanto, Ph.D.

Water is important to ensure food security. To do so, people must be given the access to water to produce enough and high-quality food. This is especially true in developing countries. People who have better access to water tend to have lower levels of undernourishment. If water is a key ingredient to food security, lack of it can be a major cause of famine and undernourishment, especially in areas where people depend on local agriculture for food and income. If water is a key to food security and poverty reduction, then managing it wisely is essential. Improving the management of water resources is a question of getting more "crop for the drop". This lecture is aimed to provide basic



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knowledge of how water availability is strongly linked to food security, how access to water and climate change may influence the food production, and how water efficiency can be improved for sustainable food security.

Lecture 3: Coastal Protection

Delivered by Leo Sembiring, Ph.D.

Understanding and being able to manage the coastal environment is of critical importance. About two-thirds of the world's population lives on or near the coast, and many others visit the coast periodically. This creates strong pressure of shore development for housing and recreation and shore protection from storm induced damage. To solve some coastal zone problems such as beach erosion, protection from surge storm or tsunami, et cetera, it requires a strong analytical foundation or even a very complex mathematical modeling process. This lecture is aimed to describe the coastal problems, necessity of coastal protection, how the coastal protection is done, and what challenges or recent important trends in coastal engineering practice should be noted for sustainable development.

Lecture 4: Water Supply and Reservoir Design

Delivered by Ir. Bambang Adi Riyanto, Ph.D.

Water availability and water demand are not evenly distributed in time and space. While fresh water availability has remained relatively constant, despite the natural temporal fluctuations and a possible increase in human induced climatic variability, the demand for water continues to increase. In certain areas, this demand has reached the limits of what the natural system can provide, and the number of places where demand outstrips availability is fast increasing. Reservoir at one hand seems to be a solution to solve the issue but on the other hand it tends to trigger many questions about its reliability and impacts to social, economic, and environmental aspects. This lecture is aimed to explain the imbalance of water supply and demand, concept of water allocation, design of reservoir, and reservoir simulation.

Lecture 5: Hydrological Modeling and Flow Forecasting

Delivered by Doddi Yudianto, Ph.D.

Changes in basin characteristics such i.e. land use or land cover may have a significant impact on the basin flow both surface and groundwater. The increase of impermeable land cover will basically lead to the increase of surface runoff and reduce the groundwater recharge. If such situation is not then well controlled, as consequence the basin will suffer from more frequent flood and drought. In order to understand how significant the change of hydrologic characteristics has influenced basin flow, it is necessary to explore it further via hydrological modeling process. While in addition to be able to predict and manage the forthcoming water allocation for various purposes, flow forecasting may be a great help. This lecture will basically explain the concept of



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hydrological modeling, introduce some water balance models including their implementation, and show how some available models are able to forecast the stream flow.

Lecture 6: Water Distribution System

Delivered by Kang Doosun, Ph.D.

Water utilities in general are responsible to construct, operate, and maintain water supply systems. The basic function of these water utilities is to obtain water from a source, treat the water to an acceptable quality, and deliver the desired quantity of water to the appropriate place at the appropriate time. In many cases in the developing country, water utilities failed to meet the demand due to not only limited sources but also insufficient infrastructures. Leakage and aging are other issues that also influence the reliability of water delivery to customers. This lecture is aimed to explain the theory of water distribution system, component of water distribution system, how it is designed in order to supply the required water for various purposes, and challenges identified in water distribution works.

Assignments

During the program, participants must complete two assignments: (1) hydrological modeling by using NRECA Model; and (2) reservoir simulation and water allocation. Assistance will be provided to help the participants to conduct both modeling and simulation.

Final Project

Delivered by Dr. Ida Susanti

This session is aimed to allow the participants to explore deeper about the problems of water insecurity and environmental degradation in Bali, how people respond to the situation, what considerations have been taken into account, and how people should deal with the problems. At end of the program, all group works must provide a presentation that involves problem discussion and how community can be empowered to support water security and environmental protection in Bali. Awards will be given to a group work with the most excellent discussion and applicable proposal.

IMPORTANT DATES

Application submission	: 11 November 2016
Announcement of selected participants	: 18 November 2016
Travelling and course guide distribution	: 16 December 2016
WIC program	: 11 – 17 January 2017
ISC program	: 18 - 25 January 2017



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TIME TABLE

11 January 2017 (Wednesday)

- – 18.00 : Arrival in Bali, trip to the Aromas Hotel
- 18.00 – 19.00 : Registration
- 19.00 – 22.00 : Welcoming dinner

12 January 2017 (Thursday)

- 07.00 – 08.00 : Breakfast at Aromas Hotel
- 08.00 – 08.30 : Introduction to the program and among participants
- 08.30 – 10.30 : Lecture 1 – Water Security and IWRM by Prof. R.W. Triweko, Ph.D.
(coffee break in between)
- 10.30 – 12.00 : Learning bahasa Indonesia
- 12.00 – 13.00 : Lunch at Aromas Hotel
- 13.00 – 15.00 : Lecture 2 – Water and Food Security by Samuel Jonson Sutanto, Ph.D.
- 15.00 – 15.30 : Coffee break
- 15.30 – 16.30 : Explanation of final project delivery – working group and distribution of questionnaire
- 16.30 – 22.00 : Field observation and data collection – problems identification in Legian and Kuta Area

13 January 2017 (Friday)

- 07.00 – 08.00 : Breakfast at Aromas Hotel
- 08.00 – 10.00 : Lecture 3 – Coastal protection by Leo Sembiring, Ph.D. (coffee break in between)
- 10.00 – 12.00 : Lecture 4 – Water Supply and Reservoir Design by Ir. Bambang A.R., M.Eng.
- 12.00 – 13.00 : Lunch at Aromas Hotel
- 13.00 – 15.30 : Site visit to Estuary Dam in Kuta
- 15.30 – 21.00 : Field observation and data collection – problems identification in Seminyak Area
- 21.00 – 22.00 : Back to the hotel

14 January 2017 (Saturday)

- 07.00 – 08.00 : Breakfast at Aromas Hotel
- 08.00 – 10.00 : Lecture 5 – Hydrological Modeling and Flow Forecasting System by Doddi Yudianto, Ph.D.
- 10.00 – 10.30 : Coffee break
- 10.30 – 12.00 : Presentation preparation
- 12.00 – 13.00 : Lunch at Aromas Hotel
- 13.00 – 14.30 : Discussion on problem identification
- 14.30 – 15.00 : Coffee break
- 15.00 – 17.00 : Preparation of project proposal by Dr. Ida Susanti
- 17.00 – 22.00 : Assignment distribution and free time



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15 January 2017 (Sunday)

- 07.00 – 08.00 : Breakfast at Aromas Hotel
- 08.00 – 08.30 : Greeting and self-introduction in bahasa Indonesia
- 08.30 – 10.00 : Working on NRECA model facilitated by Steven, Obaja, and Finna (coffee break in between)
- 10.00 – 12.00 : Lecture 6 – Water Distribution System by Kang Doosun, Ph.D.
- 12.00 – 13.00 : Lunch at Aromas Hotel
- 13.00 – 14.30 : Working on reservoir simulation facilitated by Steven, Obaja, and Finna
- 14.30 – 16.30 : Assignment presentation
- 16.30 – 17.00 : Coffee break
- 17.00 – 22.00 : Field observation and data collection – problems identification in other areas

16 January 2017 (Monday)

- 07.00 – 08.00 : Breakfast at Aromas Hotel
- 08.00 – 09.30 : Trip to Penglipuran Village and Tirta Empul Temple
- 09.30 – 16.00 : Deep observation on local excellence
- 16.00 – 17.00 : Trip to Ubud
- 17.00 – 20.00 : Free time at Ubud
- 20.00 – 22.00 : Trip back to Aromas Hotel

17 January 2017 (Tuesday)

- 07.00 – 08.00 : Breakfast at Aromas Hotel
- 08.00 – 12.00 : Project proposal completion
- 12.00 – 13.00 : Lunch at Aromas Hotel
- 13.00 – 16.00 : Project presentation
- 16.00 – 17.00 : Best proposal awarding and certificate distribution
- 19.00 – 21.00 : Closing dinner

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Time	Wednesday 11 Jan 2017	Thursday 12 Jan 2017	Friday 13 Jan 2017	Saturday 14 Jan 2017	Sunday 15 Jan 2017	Monday 16 Jan 2017	Tuesday 17 Jan 2017		
07.00 – 08.00		Breakfast	Breakfast	Breakfast	Breakfast	Breakfast	Breakfast		
08.00 – 08.30		Introduction	Lecture 3 – Coastal protection by Leo Sembiring, Ph.D.	Lecture 5 – Hydrological Modeling and Flow Forecasting System by Doddi Yudianto, Ph.D.	Self-introduction	Trip to Penglipuran Village and Tirta Empul Temple Deep observation on local excellence	Project proposal completion		
08.30 – 09.00		Lecture 1: Water security and IWRM by Prof. R.W. Triweko			Lecture 4 – Water Supply and Reservoir by Ir. Bambang A.R., M.Eng.			Coffee break	Lecture 6 – Water Distribution System by Kang Doosun, Ph.D.
09.00 – 09.30			Learning bahasa Indonesia	Presentation preparation					
09.30 – 10.00									
10.00 – 10.30		Lunch	Lunch	Lunch	Lunch				
10.30 – 11.00									
11.00 – 11.30									
11.30 – 12.00		Arrival of participants in Bali, pick up service to hotel	Lecture 2 – Water and Food Security by Samuel J. Sutanto, Ph.D.	Site visit to estuary dam in Kuta	Discussion on problem identification	Working on reservoir simulation facilitated by Steven, Obaja, and Finna	Lunch	Project presentation	
12.00 – 13.00									Coffee break
13.00 – 13.30									
13.30 – 14.00									
14.00 – 14.30			Explanation of final project delivery	Field observation and data collection: Seminyak	Assignment distribution and free time	Field observation and data collection: other areas	Trip to Ubud	Best proposal awarding - certificate	
14.30 – 15.00	Field observation and data collection: Legian and Kuta								Dinner at participant cost
15.00 – 15.30			Registration	Dinner at participant cost	Dinner at participant cost				
15.30 – 16.00									
16.00 – 16.30									
16.30 – 17.00									
17.00 – 17.30	Registration		Dinner at participant cost	Dinner at participant cost					
17.30 – 18.00									
18.00 – 18.30									
18.30 – 19.00	Welcoming dinner	Dinner at participant cost	Dinner at participant cost						
19.00 – 21.00									
21.00 – 22.00				Trip back to hotel		Trip back to hotel			