

The Hands-On of Faculty of Earth Science and Technology Summer School 2018
30 July - 10 August 2018

Small Island Conservation: A Case from
Archipelagic Nation

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Background

As an archipelagic nation with more than 17.000 islands, Indonesia has massive natural resources. This potential biodiversity has not been utilized optimally, especially in small islands. To optimize the exploration and exploitation of natural resources in small islands, knowledge of science and technology of conservation need to be possessed. Therefore, knowledge transfer activities about small islands conservation are needed, for instance, this summer school.

Purpose

To give a comprehensive understanding of natural resources conservation in small islands.

Program Overview

The main topic of this summer school is 'Small Island Conservation: A Case of Archipelagic Nation' which will be delivered by combining class and field activities. Class activities are held to deliver new insights and knowledge of conservation in Indonesia, especially in small islands. Meanwhile, field activities are meant to strengthen the knowledge of conservation in small islands which have been delivered in the class. Other than that, there are also additional activities, for instance, cultural experience activity to introduce Indonesian heritage, especially the Sundanese, to fellow foreigner participants.

Activities

Class Activity

Lectures	Indonesian Archipelagic Vision (<i>Wawasan Nusantara</i>), Technology and Acquisition System of Natural Resources, Exploitation of Natural Resources, Marine Hazards, Conservation Techniques
Group Discussion	Students conduct discussions about given topics and compiling a report as an output.
Group Presentation	<ul style="list-style-type: none">• Students present the result of discussions• Students present the result of field excursion

Field Excursion

Marine Debris Survey	Measurement of waste density on the coast.
Marine Survey	Demonstration of tidal measurement and bathymetric data acquisition.
Geology survey	Geology of the back arc basin and identification of geological hazard in active continental margin
Biodiversity Observation	Observation of biodiversity on land and marine environments.
Sum Up	Sum up of all activities.

Cultural Activity

Bandung is the Capital of West Java and one of Indonesia's largest urban centres. Participants will be assisted to enjoy a full-day in Bandung while having the experience to embrace the Sundanese heritage and culture.

Personnel

Lecturers

R. Dwi Susanto, Ph.D.
Dr. Beverly Goh
Dr. Ejria Saleh
Martin Gutowski, Ph.D
Ivonne Milichristi Radjawane, Ph.D
Dr.Eng. Totok Suprijo
Dr. Susanna
Dr.rer.nat. Poerbandono
Alfend Rudyawan, Ph.D
Dr.Eng. Aditya Rakhmat Kartadikaria
Dr. Rima Rachmayani
Ayi Tarya, M.Si,

Assistants

Iwan P. Anwar, M.Si

Ardian Mahiru Rizal, M.Si

Participants

24 Foreign Students, 6 Local Students

Location

Class Activity

Class activities will be conducted at Prof. Gunarso Room which is located at Labtek XI Building, 2nd Floor, Institut Teknologi Bandung.



Source <http://www.es.itb.ac.id>

Field Excursion

Pulau Pramuka is one of the coral reef complexes in Kepulauan Seribu. Kepulauan Seribu is located in the north of Jakarta which is a metropolitan and capital city of Indonesia. As Seribu Islands is located near Jakarta, the condition of the islands becomes strongly affected by the activities in Jakarta.



Pramuka Island

Source *Google Earth*

Cultural Activity

Cultural activity will be held at Saung Angklung Udjo (SAU). Saung Angklung Udjo is one-stop cultural workshop, consists of the performance venue, bamboo handicraft centre, and bamboo instrument workshop. Apart from that, SAU has an honourable function as an educational laboratory and training centre to preserve the Sundanese culture – Angklung in particular.



Source <https://www.indonesia.biz.id/saung-angklung-udjo/>

Summer School Timeline

The FEST Summer School 2018 will be held in 2 weeks on 30 July 2018 - 10 August 2018. In the first week, which is 30 July 2018 - 3 August 2018, participants will have class activities covering the basic concept of Indonesia as an archipelagic nation and its natural resources. Within the first week, there will be a cultural trip on 4 August 2018.

In the second week, the materials will be delivered in the form of group discussions, field trip excursion, and group presentations. These activities are conducted to strengthen the basic concept which has been delivered in the class. Field trip excursion will be held on 7 - 9 August 2018. The detailed schedule of the summer school is provided in the table below.

Week I

	Monday 30 July 2018	Tuesday 31 July 2018	Wednesday 01 August 2018	Thursday 02 August 2018	Friday 03 August 2018	Saturday 04 August 2018
09.00 - 11.00	Opening Ceremony	marine conservation present status (2)	sustainability conservation on small islands (1)	Natural Marine hazard in Indonesia	Paleo Climate	Citi Tour: Cultural Experience
11.00 - 13.00	Wave Dynamics in Indonesia	Coastal Erosion and protection	sustainability conservation on small islands (2)	Marine Resource Mapping: Marine Resource Data acquisition	Resource potential in the Back Arc Basin	
	Ocean Dynamics in Indonesia and South China Sea					
14.00 -16.00	marine conservation present status (1)	Physical process on Coastal Ecosystem	Marine Pollution in Indonesia	Marine Resource Mapping: Marine Survey Technology Development	Geology and hazard of the Back Arc Basin	

Week 2

	Monday 06 August 2018	Tuesday 07 August 2018	Wednesday 08 August 2018	Thursday 09 August 2018	Friday 10 August 2018
09.00 - 11.00	Group Discussion	Field trip Excursion			Group Presentation
11.00 - 13.00					
14.00 -16.00	Field Excursion Preparation				Closing Ceremony and Photo Session

Excursion Schedule

Tuesday, 07 August 2018

- 02.00-03.00 Meeting Point ITB/Hotel Kaliya
- 03.00-06.30 Transfer Bandung-Jakarta (Ancol)
- 06.30-09.30 Loading, Boarding, and Sailing
- 09.30-10.30 Arrival, Field Briefing
- 10.30-11.30 Sailing to P. Semak Daun
- 11.30-12.30 Lunch and Praying Time
- 12.30-13.30 Session I : Geology Module
- 13.30-14.30 Session II : Marine Debris survey
- 15.30-16.30 Session III : Coastal Protection Survey
- 16.30-17.30 Sailing to P. Pramuka

Wednesday, 08 August 2018

- 07.30-08.00 Field Briefing
- 08.00-09.00 Snorkelling Preparation
- 09.00-12.00 Snorkelling
- 12.00-13.00 Lunch at Pulau Semak Daun
- 13.00-14.00 Visiting Shark Captive Breeding
- 14.00-15.00 Sailing to P. Pramuka
- 15.00-17.30 Session IV : Marine Survey
- 18.30-20.30 Dinner and BBQ

Thursday, 09 August 2018

- 07.30-08.00 Field Briefing
- 08.00-10.00 Packing, Loading
- 10.00-11.00 Sailing
- 11.00-19.00 Transfer from Jakarta To Bandung

Health, Safety, and Environment

We are all obliged to zero damage, loss, injury, and death. Hazards are made known. Preventions are encouraged.

Class Activity

- **Class Activities:** Wear the predefined dress code. Pay attention to the emergency exit and welfare on-site signs. It is prohibited to bring foods to the classroom.
- **Smoking:** It is prohibited to smoke in the area of ITB, except in the smoking area. Pay attention to the smoking area locations.

Field Excursion

- **Sun, Rain:** Prepare jacket or long-sleeves shirt, sunglasses, hat or sun-block-lotion to prevent heat stroke and raincoat against possibly heavy rain.
- **Personal Matters:** Bring your own medicine. Let your surroundings know your weakness. Bring jacket or warm cloth if you cannot resist cold. Do not depend on others.
- **Weather:** Manage the visit well during bad weather. Pay attention to weather warning.
- **Sailing:** Understand your way along boat. Follow safety instruction and make emergency exit and safety equipment known to you. Relax and positive. Stay away from panic people. Keep praying faithfully.
- **Snorkelling:** Understand the basic technique. Do it at least in pair or in group and you have competent local guide with you. Add safety equipment when necessary.
- **Belonging:** Be very efficient with your luggage. Limit your hand carry up to only three things.
- **Diving:** Do not dive unless you have license. Never dive alone. You are accompanied by local dive master.
- **Bite, Sting:** The poison of ocean animals can kill you twice! Marine snake, stone fish, red sea fan, sea urchin, and sting ray are common at site. Never get close to them. Do not ever try to touch them. Wear proper protection (i.e. sandals, bootie, wetsuit) along with your activities on the beach and at the ocean. Never try to get around without carefulness.
- **Polite Guests:** Smile and be friendly to local people in not hazardous. Do not feed fish or any animals. Do not throw garbage to ocean, even it is degradable. Never

make fun out of the ocean. Do not tell something bad, cruel, or arrogant. Use fresh water efficiently. Use electricity wisely. Never do any vandalism. Never take anything, move anything, or break anything from the ocean. Use your camera wisely.

- **Corals:** Corals need 1 year to grow up to only 1 cm (thousands of life live in it!) and you only need less than 1” to break it even more than 1 cm. Never step on corals. Do not touch them.
- **Hydration:** Keep on drinking water.

Course

Course	Description
Indonesia as a Archipelagic Nation	<p>The realization of Indonesia’s vision as an archipelagic nation requires a good understanding about its area. This course will be delivered to give the understanding and concept of Indonesia as an archipelagic nation to the participants, especially to the foreigners. Therefore, this course will cover the sovereign territory, and state borders and its definition of Indonesia to the main concept of Indonesia as an archipelagic nation.</p> <p>Indonesia with its vast land and ocean contains various kind of natural resources. To conduct a wise exploration and exploitation, a good understanding of Indonesia’s resources, specifically the archipelagic resource is needed. In this course, various insights about Indonesia’s natural resources, especially in land and marine will be covered.</p>

**marine conservation
present status**

Endowed by its vast ocean, Indonesia has a rich marine biodiversity which has an excellent biodiversity covering from marine fishes, crustaceans to coral reefs. This course will deliver the required knowledge about the current status of marine bio diversity, starting from its present status, especially the marine fishes and coral reefs, to the urgency of marine biodiversity awareness as a mean of conservation.

**sustainability
conservation on small
islands**

Indonesia is formed by about 17,000 small islands which makes its characteristic quite unique as an archipelagic nation which becomes a challenge as the environment needs to be conserved. Therefore, the knowledge of sustainability conservation needs to be possessed while addressing the challenge and environmental issues on small islands and developing tools and methods of conservation e.g. protected area management.

**Physical process on
Coastal Ecosystem**

The development of Indonesian coastal ecosystem is happening rapidly as it happens in many kinds of environment, e.g. estuarial beach and mangroves environment, which makes the current circulation and sediment transport on coastal area quite complex. In addition, as a country with massive population, human activity issues also need to be considered carefully.

**Coastal erosion and
protection**

As an archipelagic nation, Indonesia has wide coastal areas which offer rich natural resources. However, the coastal area also has the possibility of facing coastal hazard. So, in order to overcome the problem, the knowledge of coastal vulnerability and

	<p>risk, particularly in small islands environment, needs to be possessed.</p>
<p>Marine Resource Mapping: Marine Survey Technology Development</p>	<p>Understanding Indonesia's marine environment thoroughly is essential for natural resource utilization purpose. Marine resources mapping is essential to understand the characteristic of an environment. Furthermore, a mapping can be an aid to the development of the technology and the environment as well. Therefore, this course will cover the required knowledge about it, starting from state of the art of marine survey technology to various types of the technology and instrument for marine survey.</p>
<p>Marine Resource Mapping: Marine Resource Data acquisition</p>	<p>In accordance with the previous course, by utilizing the technology of marine surveying instruments, data acquisition can be conducted. Various techniques and methods on the survey of marine resource and hydro-oceanography based on local case will be explained. Other than that, data quality control material will also be delivered as an effort to make an ideal survey.</p>
<p>Natural Marine hazard in Indonesia</p>	<p>Having vast oceans and long shoreline make Indonesia threatened by natural marine hazards from storm surges to a tsunami. The understanding of these phenomenon will be covered in this course by also using the numerical modelling materials, such as the generation and modelling of tsunami and storm surge in Indonesia.</p>
<p>Recent Condition of Marine Pollution in Indoneisa</p>	<p>Marine pollution is a real threat to the environment. To resolve this issue, Indonesia implements concrete plans especially on coastal areas and sea.</p>

	<p>This course will cover the recent condition of marine pollution and the plans to overcome the issue. In addition, the materials also contain latest researches result on marine pollution modelling in Indonesia.</p>
<p>Resource potential in the Back Arc Basin</p>	<p>Back arc basin has been recognised to hold a large potential of natural resources. This aims to deliver the modern knowledge of back arc basin potential in Indonesia in order to identify its potential.</p>
<p>Geology and hazard of the active continental margin</p>	<p>Living in the neighbourhood of an active continental margin has its own perks. This course will deliver the geology of the active continental margin in Indonesia as a basis of hazard identification and mitigation.</p>

Field Excursion Module

Marine Debris Survey

Waste is a common problem in small islands because it is not well managed. In this module activity, the participants are expected to understand the problem of waste management in small islands by taking waste density sample in a location. The participants also have to conduct the survey of waste management facilities.

Marine Survey

Observation of physical marine parameter. The activity will include a tidal and bathymetry.

Geology survey

Observation of the carbonate complex in the Pramuka Island. The activity will include a limestones rock observation and modern day sedimentation to determine the uplift rate and sedimentation products of nearby areas.

Biodiversity Observation

Two activities of biodiversity observation will be held in Thousand Islands, which are coastal vegetation observation and marine biodiversity observation. Coastal vegetation observation will be conducted by taking samples at predefined locations. Meanwhile, marine biodiversity observation will be conducted while having snorkelling at the location of coral reefs.

Group

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