



# BANDUNG INSTITUTE OF TECHNOLOGY

## FACULTY OF EARTH SCIENCES AND TECHNOLOGY

Jalan Ganesha 10 Bandung 40132, Telp & Fax +6222 2514837, email: fitb@itb.ac.id

### TERM OF REFERENCE (TOR) INTERNATIONAL VIRTUAL COURSE (IVC)

**Topic: Climate Change in the Past, Present, and Future (IVC22-121)**

**Study Program of Oceanography  
Faculty of Earth Sciences and Technology  
Institut Teknologi Bandung  
August 22<sup>nd</sup> – September 16<sup>th</sup>, 2022**

#### Background

Climate change has been one of the most interesting issues for the past few decades because it is very related to human life sustainability. To Understand the change itself requires thorough information about climate in the past, locally and globally. By doing this, the current climate condition can be compared, and the future can be predicted.

#### Objectives

1. To overview climate conditions in the past including detailed physical properties in the atmosphere, ocean, and ice.
2. To introduce various proxies used to get information about the paleoclimate.
3. To introduce modeling that can be used to predict future climate conditions.

#### Program Overview

The main topic of this International Virtual Course is ‘Climate Change in the Past, Present, and Future’ which will be delivered by class activities. Class activities are held to deliver new insights and knowledge of climate change, its driver, its impact to the earth’s components of air, ocean, land, and ice in order to initiate the discussion of emerging issues and the prospect of research in the earth sciences and study contribution as an innovation for a better earth.

#### Class Activities

<b>Lectures</b>	Participants attend classes where the lecturers deliver materials on specific topics, followed by discussion sessions.
<b>Group Discussion</b>	Students conduct discussions about given tasks and compile a report as an output.
<b>Assignments</b>	Students accomplish the assignment and send it to the requested directory

#### Organizing Committees

- Dr. Irwan Meilano (Executive Advisor)
- Dr. rer.nat. Mutiara R. Putri (Executive Advisor)
- Dr. Agus Mochamad Ramdan (Executive Advisor)
- Dr. rer. nat. Rima Rachmayani (Person in Charge)
- Mika R. Puspaningrum, PhD (Person in Charge)
- Erlin Beliyana, S.Si., M.Si., Adnya Pratiwi, M.Sc., Iwan P. Anwar, M.Si. (Research Assistant)



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- Rizqi Valentra, S.T., Adam Librian, Salsabila (Secretary)
- Siti Tamalia Zuraydah, A.Md., An-Nur, Isma Wulandini (Department of Logistic and Network)

### Speakers

1. Prof. Dr. Sri Yudawati Cahyarini (National Research and Innovation Agency, Indonesia)
2. Dr. Gino De Gelder (ISTerre, Université Grenoble-Alpes, France, and BRIN Postdoctoral)
3. Dr. Donaldi Permana (Meteorological, Climatological, and Geophysical Agency)
4. Dr. Muhammad Rais Abdillah (Institut Teknologi Bandung)
5. Prof. Dr. Miriam Pfeiffer (Kiel University, Germany)
6. Supari, Ph.D (Meteorological, Climatological, and Geophysical Agency)
7. Dr. Rina Zuraida (National Research and Innovation Agency, Indonesia)
8. Dr. Albertus Sulaiman (National Research and Innovation Agency, Indonesia)
9. Siswanto, M.Sc. (Meteorological, Climatological, and Geophysical Agency)
10. Prof. Michael N. Evans (University of Maryland, USA)
11. Dr. Yudha Setiawan Djamil (National Research and Innovation Agency, Indonesia)
12. Prof. Dr. Hendrik Vogel (University of Bern, Switzerland)
13. Prof. Ashok Karumuri (University of Hyderabad, India)
14. Dr. rer. nat. Maria Proborukmi (Institut Teknologi Bandung)
15. Dr. Dilruba Erkan (Université de Paris 1 Panthéon-Sorbonne, France, and BRIN Postdoctoral)
16. Dr.rer.nat. Rima Rachmayani (Institut Teknologi Bandung)
17. Dr. Laurent Husson (ISTerre, Université Grenoble-Alpes, France)

### Participants

The participants of this course consist of undergraduate and graduate students from various universities around the world, also some professionals from Indonesia.

### Program Timeline

This course will be held on 22 August – 16 September 2022. Detailed timeline can be seen on the table below.

Week	Day/ Date	Time	Activity	PIC
Week 1	Monday, August 22 <sup>nd</sup> 2022	15-16.00	Opening Ceremony	Organizing Committee
		16-17.00	Program Overview	Dr.rer.nat. Rima Rachmayani
	Tuesday, August 23 <sup>rd</sup> 2022	15-17.00	Paleoclimate/ Paleoceanography	Lec.: Prof. Sri Yudawati Cahyarini  Mod.: Marfasaran Hendrizan, S.T., M.T.
	Wednesday, August 24 <sup>th</sup> 2022	15-17.00	Paleo Sea-Level and Coastal Modeling	Lec.: Dr. Gino de Gelder  Mod.: Dr. Tubagus Solihuddin
	Thursday, August 25 <sup>th</sup> 2022	15-17.00	Climate Change: Past, Present and Future	Lec.: Dr. Donaldi Permana  Mod.: Dr. Rusmawan Suwarman
Friday, August 26 <sup>th</sup> 2022	15-17.00	ENSO Dynamics	Lec.: Dr. Muhammad Rais Abdillah	



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Week 2	Monday, August 29 <sup>th</sup> 2022	15-17.00	Coral Paleoclimatology in the Tropical Indian Ocean	Mod.: Faiz, S.Si., M.Si. Lec.: Prof. Dr. Miriam Pfeiffer Mod.: Dr.rer.nat. Rima Rachmayani
	Tuesday, August 30 <sup>th</sup> 2022	15-17.00	Future Climate of Southeast Asia	Lec.: Dr. Supari Mod.: Faiz, S.Si., M.Si.
	Wednesday, August 31 <sup>st</sup> 2022	15-17.00	Marine Sediment Proxy	Lec.: Dr. Rina Zuraida Mod.: Iwan P. Anwar, S.Si., M.Si.
	Thursday, September 1 <sup>st</sup> 2022	15-17.00	Nonlinear Dynamics of Earth Climate Modeling	Lec.: Dr. Albertus Sulaiman Mod.: Dr. Muhammad Rais Abdillah
	Friday, September 2 <sup>nd</sup> 2022	15-17.00	Change of Climate Variability in the Indo-Pacific region in the simulated collapsed AMOC	Lec.: Siswanto, M.Sc. Mod.: Faiz, S.Si., M.Si.
Week 3	Monday, September 5 <sup>th</sup> 2022	15-17.00	Global and Tropical Climate Change; Paleoclimate Data Acquisition, Modeling, Analysis, Synthesis.	Lec.: Prof. Dr. Michael N. Evans Mod.: Dr. Dr.rer.nat. Maria Sekar Proborukmi
	Tuesday, September 6 <sup>th</sup> 2022	15-17.00	Holocene Paleoclimate Modeling	Lec.: Dr. Yudha Setiawan Djamil Mod.: Adnya Pratiwi, M.Sc
	Wednesday, September 7 <sup>th</sup> 2022	15-17.00	-	-
	Thursday, September 8 <sup>th</sup> 2022	15-17.00	Orbital and Millennial-scale Climate Change as Viewed from Continental Climate Records	Lec.: Prof. Dr. Hendrik Vogel Mod.: Vera, S.T.
	Friday, September 9 <sup>th</sup> 2022	16-18.00	ENSO Mainly During Last Millennium An ENSO, Its Recent Changes, and Its Future Projections	Lec.: Prof. Ashok Karumuri Mod.: Dr.rer.nat. Rima Rachmayani
Week 4	Monday, September 12 <sup>th</sup> 2022	15-17.00	Palynology	Lec.: Dr.rer.nat. Maria Sekar Proborukmi Mod.: Vera, S.T.
	Tuesday, September 13 <sup>th</sup> 2022	15-17.00	Urban Geography and Urban Sociology	Lec.: Dr. Dilruba Erkan Mod.: Erlin Beliyana, S.Si., M.Si.



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	Wednesday, September 14 <sup>th</sup> 2022	15-17.00	Web-based interface: Solutions La2004 from -50 Myr to +20 Myr	Lec.: Dr.rer.nat. Rima Rachmayani  Mod.: Salsabila
	Thursday, September 15 <sup>th</sup> 2022	15-17.00	Paleobiogeography	Lec.: Dr. Laurent Husson  Mod.: Dr. Tubagus Solihuddin
		17.00-18.00	Closing Ceremony	Organizing Committee

### Additional Information

Listed below are the key points to be discussed on the course:

1. General knowledge about Paleoclimate and Climate Change.
2. Proxies that can be observed related to paleoclimate.
3. Future climate projections and modeling.

### Standard Operating Procedure (SOP)

#### General:

- The course will be held on Zoom
- Participants are expected to comply with the SOP

#### Course SOP:

1. All lecturers must deliver the course with the camera open, using the designated virtual background.
  2. Participants use username on the zoom meeting under the format: **[Institution/University] (Space) Full Name**
  3. All participants' microphones are muted during the lectures.
  4. QnA session will be held after the lecture through Zoom chat box or directly by unmuting the microphone. The QnA session is conducted by the moderator.
  5. If breakout room are available, please join the room "IVC22-121".
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1. **Course preparation and opening session (5')**
    - Moderator officially opens the course session.
  2. **Lecturer introduction (5')**
    - Moderator introduces the lecturer as per the lecturer's CV.
  3. **Lecture session (60-70')**
    - The lecturer delivers the topic for 60-70 minutes minutes.
  4. **QnA session (30-60')**
    - Each course will only have one QnA session guided by the moderator.
  5. **Closing session**
    - Moderator arranges a photo session before closing the session.

### Course Completion

To complete the program, participants need to attend the entire course and submit a final report on a given task. Participants that completed the program will be awarded a certificate and a course transcript along with the score (for registered students). However, to convert the score to index for credit transfer purposes, additional payment is required.



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**Undergraduate Study Program of Oceanography**

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