TERMS OF REFERENCE (TOR)

The 4th International Summer Course of Natural Resources Environmental Management Science (ISCoNREM) - 2025

"Exploring Harmonization in Tropical Ecosystems: A Transdisciplinary Approach to Better Environmental Solutions"

Organizer	:	Master's Program in Natural Resources and Environmental Management Science, Graduate School, IPB University
Implementation Date	:	September 7-15, 2025 (9 days)
Credit Load	:	2 Credits (90 learning hours)
Target Participants	:	30 participants (20 international students, 10 domestic students) - Bachelor, Master, and Doctoral Students

BACKGROUND

Tropical ecosystems play a crucial role in maintaining global climate balance. Tropical ecosystems help balance oxygen supply and carbon absorption and support biodiversity, thus it can be concluded that they have a key role in maintaining the overall health of the earth.

However, pressure on tropical ecosystems is increasing. Tropical regions, with their extremely rich biodiversity and crucial environmental functions, are highly vulnerable to climate change impacts. Rising temperatures, increased storm intensity, and changing rainfall patterns in tropical regions make sustainability a very important issue. This pressure adds to the existing burden caused by growing human needs and pollution. This means that the problems faced are very complex and involve many aspects, ranging from ecology, economics, to sociology. All of these demand more sustainable and innovative solutions.

The 4th International Summer Course of Natural Resources and Environmental Management Program (ISCoNREM) -- 2025 is the fourth annual activity, since it began in 2022. In 2025, the summer course takes the title: "Exploring Harmonization in Tropical Ecosystems: A Transdisciplinary Approach to Better Environmental Solutions."

In this planned summer course, participants will explore various challenges faced by Indonesia and various solutions implemented using a transdisciplinary approach that combines science, policy, technology, and social perspectives. A transdisciplinary approach is essential because sustainable management of tropical ecosystems cannot be done with just

one discipline.

As a response to these complex environmental problems, as a continuation of the three summer course series in previous years, the Master's Program in Natural Resources and Environmental Management Science, IPB Graduate School proposes the implementation of a summer course with the theme "Exploring Harmonization in Tropical Ecosystems: A Transdisciplinary Approach to Better Environmental Solutions."

This theme is chosen so that summer course participants have a deep understanding of how environmental policies need to be built with a transdisciplinary approach, because in this program participants are invited to learn from various disciplines and create more comprehensive environmental solutions. The expected target is that participants have the knowledge and skills to face complex environmental management challenges in the future in their home countries.

This summer course also emphasizes empowering participants to overcome these complex challenges, considering stakeholder involvement from various sectors. The global relevance of environmental and sustainability issues is used as the basis for shaping this summer course as an effective platform for building collaborative networks. With quality instructors, interactive learning methods, and direct practice opportunities, this program is expected to provide meaningful and relevant learning experiences in facing increasingly urgent global problems. Through this summer course, we aim to contribute to a deep understanding of sustainability and comprehensive environmental management policies.

This activity will be held on September 7-15, 2025, which is planned to be attended by graduate students for Master's/Doctoral Programs in Natural Resources and Environmental Management and other programs at IPB as well as international students (both final year bachelor's degree students and graduate students). This year's target participants are 30 people, with 20 of them being international students. Activities will be conducted in a hybrid manner, including offline and online through Zoom rooms, which include 4 activities: online lectures, field lectures, group discussions, and evaluations. Online lectures will be given by 7 resource persons from 4 universities (IPB, Los Banos University, Kyushu University, and Universiti Teknologi MARA, Malaysia). Meanwhile, offline activities are conducted for Field Lectures and classroom lectures with resource persons from Indonesia.

With the Summer Course Program 2025, it is hoped that structured student and lecturer exchange activities with learning credit recognition can continue sustainably and can improve

closer academic cooperation. In addition, this activity can enhance research cooperation, IPB's academic reputation, and IPB's internationalization.

ACTIVITY OBJECTIVES

General Objective: To provide deep understanding of tropical ecosystem harmonization through a transdisciplinary approach to produce sustainable environmental solutions.

LEARNING OUTCOMES

After participating in this program, participants are expected to be able to:

1. Explain the main concepts of natural resources and environmental management
2. Practice cross-cultural communication skills and community empowerment
3. Think critically in environmental problem solving
4. Collaborate in completing final projects
5. Present ideas orally, in writing, and visually effectively

PROGRAM STRUCTURE

A. PRE-SUMMER COURSE ACTIVITIES (14 Learning Hours [LH])

- Lecture 1 (2 hours): "Climate Change Impacts on Tropical Ecosystems" (Asynchronous)
  Resource Person: Prof. Dodik Ridho; Method: Learning video + online quiz (Quizizz)
- Content Creation Assignment (2 LH): Extension presentation "Youth in Climate Change Mitigation and Adaptation Contribution"
  Target Audience: Elementary and Middle School students; Format: PPT or video (15 minutes); Submission Deadline: September 3, 2025
- Independent Assignment (8 LH): Pre-course reading assignment about climate change & tropical ecosystem
- Independent Assignment (2 LH): "Tropical Connections: Getting to Know Your Fellow SC Scholars" Format: 4-minute introduction video

B. DAY 1 - SUNDAY, SEPTEMBER 7, 2025 (4 LH)

Activities: Registration & Orientation

- 08.00-09.00: Registration & Welcome Coffee (1 LH)
- 09.00-12.00: Orientation Session: "Course Overview & Expectations" + PSL Video (3 LH)

- 13.00-14.00: Pre-test & Baseline Assessment (Quizizz) - not counted in LH

C. DAY 2 - MONDAY, SEPTEMBER 8, 2025 (8 LH)
Theme: Opening & Introduction to Tropical Ecosystems

Opening Ceremony:

- 08.00-08.10: Opening Ceremony (Indonesian Anthem, Hymne IPB, Opening Prayer)
- 08.10-08.20: Report from Chair Organizing Committee
- 08.20-08.30: Welcoming Speech - Dean IPB Postgraduate
- 08.30-08.40: Opening Speech - Rector IPB University
- 08.40-09.00: Keynote Speech "Harmonization in Tropical Ecosystems" (Walikota Bogor)

Academic Sessions:

- 09.30-12.00: Workshop 1 - "Tropical Connections Presentation" (2.5 LH)
- 13.00-14.00: Lecture 2 - "Tropical Ecosystems Diversity & Conservation" (Dr. Bambang Supriyanto - Asynchronous) (1 LH)
- 14.15-15.15: Lecture 3 - "Transdisciplinary Approach Methodology" (Prof. Damayanti) (1 LH)
- 15.15-17.15: Workshop 2 - "Climate Change Impact and Youth's Contribution" (2 LH)

D. DAY 3 - TUESDAY, SEPTEMBER 9, 2025 (8 LH)
Theme: Community Outreach and Ecosystem Services

- 08.00-09.30: Community Service - Extension Session 1 (Elementary School) (1.5 LH)
- 10.00-11.30: Community Service - Extension Session 2 (Middle School) (1.5 LH)
- 13.00-14.30: Lecture 4 - "Stakeholder Analysis in Environmental Management" (Dr. Fujiwara Takahiro - Kyushu University, Japan) (1.5 LH)
- 14.45-16.15: Lecture 5 - "Climate Change and The Built Environment" (Dr. Raziah Ahmad - Universiti Teknologi MARA, Malaysia) (1.5 LH)
- 16.15-17.45: Lecture 6 - "Climate Change: Heat and Human" (Prof. Dr. Efi Yuliati Yovi) (2 LH)

E. DAY 4 - WEDNESDAY, SEPTEMBER 10, 2025 (8 LH)
Theme: Ecosystem Services & Biodiversity

- 08.00-10.30: Field Lecture Site 1 - "Biodiversity Conservation & Botanical Gardens Role" (Bogor Botanical Gardens) (2.5 LH)
- 10.30-12.00: Field Lecture Site 2 - "Regenerative Ecosystem and Agrobiodiversity Conservation" (Soil and Agriculture Museum) (1.5 LH)
- 13.00-14.00: Lecture 7 - "Tropical Ecosystem and Its Challenge" (Prof. Dr. Hadi Susilo Arifin) (1 LH)

- 14.00-17.00: Workshop 3 - "Ecosystem Services Valuation Methods" (3 LH)

F. DAY 5 - THURSDAY, SEPTEMBER 11, 2025 (7 LH)
Theme: Human, Community and Ecosystem Management
- 09.00-12.00: Field Lecture Site 3 - "Community Engagement in Environmental Education and Services" (KWT ASRI Bubulak) (3 LH)
- 13.45-15.15: Lecture 8 - "Ecological Indicators of Biodiversity in Urban Landscapes and Seascapes" (Prof. Jhonamie Abiner Mabuhay-Omar - Western Philippines University) (1.5 LH)
- 15.30-17.00 Lecture 9: "From Village to City: Harmonizing Indigenous Wisdom and Urban Innovation in Climate Change Mitigation" (Prof. Mizuno Kosuke - Kyoto University/Universitas Indonesia) (1.5 LH)
- 17.00-18.00: Field Lecture Preparation (1 LH)

G. DAY 6 - FRIDAY, SEPTEMBER 12, 2025 (8 LH)
Theme: Small Island Ecosystem Management
- 05.00-11.00: Journey to Tidung Island (travel not counted as LH)
- 11.00-12.00: Field Lecture Site 4 - "Small Island Coastal Ecosystems: Potentials, Challenges, and Sustainable Solutions" (1 LH)
- 13.30-17.30: Field Workshop 1 - Independent observation at Tidung Island (4 LH)
- 18.30-22.30: Cultural Exchange (3 LH)

H. DAY 7 - SATURDAY, SEPTEMBER 13, 2025 (6 LH)
Theme: Small Island Ecosystem Management (Continued)
- 08.00-12.00: Field Workshop 2 - Underwater & coral reef observation (4 LH)
- 13.00-15.00: Field Workshop 3 - Wrap up discussion (2 LH)
- 15.00-21.00: Return journey to Bogor (travel not counted as LH)

I. DAY 8 - SUNDAY, SEPTEMBER 14, 2025 (7 LH)
Theme: Data Analysis, Synthesis & Presentation
- 09.00-12.00: Workshop 4 - "Learned Points and Collaborative Ideas on Tropical Ecosystem Harmonization" (3 LH)
- 13.00-16.00: Workshop 4 Presentation (10 minutes/group) (3 LH)
- 16.00-16.30: Post-test & Evaluation (not counted as LH)
- 16.30-17.30: Closing Ceremony & Certificate Distribution (1 LH)

J. DAY 9 - MONDAY, SEPTEMBER 15, 2025 (10 LH)
Independent Activities (No Face-to-Face):
- Independent study assignment & reflection

- Final project report completion
- Post-course reflection essay
- Peer evaluation form submission Online portfolio development
- Individual consultation (optional, online 09.00-12.00)

LEARNING METHODS

1. Hybrid Learning: Combination of online and offline
2. Field Lectures: 4 different locations (Bogor Botanical Gardens, Soil and Agriculture Museum, KWT ASRI Bubulak, Tidung Island)
3. Interactive Workshops: 4 workshops with practical focus
4. Group Discussion: Group division based on diversity of country of origin and disciplines
5. Community Service: Community service in schools
6. Cultural Exchange: Cultural exchange among participants
7. Peer Learning: Collaborative learning among participants

CREDIT TRANSFER SYSTEM

Credit Weight: 2 Credits (90 learning hours)

Credit Conversion:

- Southeast Asia, Japan, China: 1 Credit = 1 Credit → 2 Credits
- Europe: 1 Credit = 1.5 ECTS → 3 ECTS
- South Korea: 1 Credit = 0.9 Korea Credit → 1.8 Credits

ACTIVITY OUTPUTS

A. Academic Outputs

This program will produce an official Certificate of Credit Earning (CEA), comprehensive learning modules on tropical ecosystem harmonization, and a collection of participant presentation and scientific discussion results. In addition, the program will compile best practices from field case studies, develop transdisciplinary frameworks for tropical environmental management, and formulate evidence-based policy recommendations from workshop results.

Academic outputs also include final project reports from each participant group and complete documentation of all learning activities.

B. Institutional Outputs

This activity will enhance the visibility and reputation of the PSL-IPB Study Program internationally through collaboration with partner universities. The program will strengthen existing cooperative relationships and open opportunities for developing similar programs in the future. Institutional outputs also include documentation of credit transfer systems that can be used as references for other international programs and comprehensive program evaluations for continuous improvement.

C. Human Resource Outputs

The program will enhance the capacity of 30 participants in environmental management and form an ISCoNREM alumni communication network. This activity will develop participants' presentation abilities, cross-cultural communication, and international collaboration. HR outputs also include increased understanding of cultural diversity, learning experiences in multicultural environments, and development of soft skills relevant for careers in the environmental field.

D. Research and Innovation Outputs

The activity will produce a compilation of innovative ideas from participants to address tropical environmental challenges and documentation of creative solutions from group discussions. The program will facilitate knowledge exchange among participants from various disciplinary backgrounds and generate practical recommendations for tropical ecosystem management. Research outputs also include a database of best practices from various participant countries and identification of future research collaboration opportunities.

E. Community Service Outputs

The program will conduct extension activities for more than 300 elementary/middle school students about climate change and the role of young generations in mitigation and adaptation. This activity will produce educational materials that can be reused for similar programs and provide direct experience to participants in community engagement. Community service outputs also include documentation of community response and enthusiasm as well as evaluation of the effectiveness of extension methods used.

F. Publication and Dissemination Outputs

The activity will produce complete documentation in the form of photos, videos, and activity reports that can be used for future program promotion. The program will produce special newsletters or bulletins for ISCoNREM 2025, articles for institutional websites, and social media content to increase awareness about tropical environmental issues. Publication outputs also include press releases for local media and promotional materials to attract

future program participants.

G. Economic and Social Outputs

The program will provide participants with understanding of opportunities for sustainable economic development based on tropical natural resources and environmentally friendly business models. This activity will facilitate experience exchange about sustainable development practices from various participant countries. Economic and social outputs also include identification of best practices in community-based conservation and better understanding of the balance between economic development and environmental conservation.

H. Long-term Outputs

The activity will become a foundation for the sustainability of the ISCoNREM program as an annual agenda and strengthen IPB's position as an environmentally conscious higher education institution in Southeast Asia. The program will create momentum for developing similar international programs and build an alumni database that can become an asset for future networking.

Long-term outputs also include increased awareness about tropical environmental issues and contribution to forming young generations who care about environmental sustainability.

PERSON IN CHARGE

Head of Program: Prof. Dr. Ir. Hadi Susilo Arifin, MS
Implementing Organization: Master’s Program in Natural Resources and Environmental Management, Graduate School, IPB University