International Marine Biology Course (IMBC) 2025

July 22-29, 2025

In late July, the International Marine Biology Course (IMBC) 2025 was organised by the Marine Biological Station, Sado Island Center for Ecological Sustainability, Niigata University (SMBS). We provided an international hybrid practice course at SMBS from July 23rd to 27th. IMBC2025 was supported by the "Sakura Science Exchange Program" under a grant from the Japan Science and Technology Agency. We have invited four guest lecturers from Bangladesh, Viet Nam, New Caledonia and Japan for this course. Eighteen students from Bangladesh, India, Malaysia, Viet Nam, Hong Kong and Japan have joined this in-person course. Moreover, as last year, we streamed some parts of the course for online participants. Fifty-seven students and researchers from two countries have also joined online.

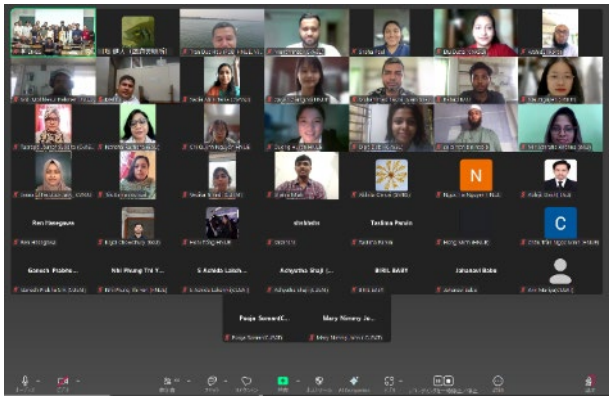
Number of participants

University	In-person		Online
	Student	Researcher	
Bangladesh			
Bangladesh Agricultural University (BAU)	2		15
Chattogram Veterinary and Animal Science University (CVASU)	2	1	7
India			
Cochin University of Science and Technology (CUSAT)	2		23
Malaysia			
Monash University Malaysia (MUM)	1		
Sunway University (SU)	1		
Viet Nam			
Hanoi National University of Education (HNUE)	2	1	12
Hong Kong			
The University of Hong Kong (HKU)	2		
New Caledonia			
French National Research Institute for Development (IRD)		1	
Japan			
Niigata University (NU)	6		
Toyama University (UT)		1	
Total	18	4	57

The goals of the IMBC2025 are to develop young researchers with monitoring techniques for marine environments and ecosystems, as well as knowledge of marine biodiversity and animal evolution. To achieve this goal, we provided lectures, fieldwork and lab work utilising the beautiful and well-preserved coastline of Sado Island. Because this course was held as a hybrid for in-person and online participants, some activities for the in-person course were also broadcast. The list of activities in this program was as follows:

- Five lectures in different fields of marine and aquatic biology
  (Three of them were broadcast online)
- Animal sampling by snorkelling at a rocky shore
- Microplastic sampling at a sandy beach
  (Broadcast online)
- Plankton and benthos sampling using a research vessel IBIS II
- Classification, observation, biological drawing, group/individual discussion and presentation about collected marine animals
  (Part of the classification and observation was broadcast online)
- Observing the bioluminescence of sea fireflies.
- Visiting the world heritage site "Sado Gold Mine" and the geosite "Meotoiwa".
- Visiting Niigata City Aquarium "Marinepia Nihonkai"
- Visiting National Museum of Nature and Science

Every in-person participant safely gathered at the Ryotsu ferry terminal on July 23rd. After moving to SMBS, we started the first day of this course with in-person and online participants. Following opening remarks and self-introduction, SMBS staff presented two lectures about the marine environment of the Japan Sea and the taxonomic classification of marine animals. After the lectures, we held an ice-breaking dinner for in-person course participants.



Group photo with online participants

Ice-breaking dinner

The second day started with a brief introduction about the rules of biological drawing and a group presentation on the fourth day. Students were divided into four groups and chose one phylum that they would introduce. Then we started animal sampling at a rocky shore. Before entering the sea, the SMBS staff explained the equipment and how to collect animals hidden in seaweed or under the rocks. Thus, even beginners in snorkelling can collect animals safely. Blessed with good weather, participants enjoyed the beautiful sea of Sado Island. In the afternoon, we gave a brief lecture about the ocean microplastic problem and moved to a sandy beach. We collected small pieces of plastic waste from the sands using the sieve. Then we returned to the practice room and listened to a lecture by Dr. Sylvain Agostini (IRD, New Caledonia) for the in-person and online participants. He talked about his research on the microplastic pollution of coastal waters around the Japanese archipelago via online. After the lecture, we observed items collected from the sandy beach under a stereo microscope. Fortunately, we collected only a very small amount of microplastics. After this, Dr. Omori (SMBS) lectured about the characteristics of typical phyla in the ocean for both courses and introduced the animals which we had captured this morning. After dinner, Dr. Nguyen Lan Hung Son (HNUE, Viet Nam) lectured about the marine ecosystems of seabirds and their importance as bioindicators.

Animal sampling by snorkelling

Collecting microplastic at Tassha beach

On the morning of the third day, we carried out the plankton and benthos sampling using the research vessel IBIS II. Participants threw the plankton net and collected small animals drifting under the water. SMBS staff demonstrate sampling of benthos by using a bottom sampler. We also tried to measure water transparency. Students realised how clear the water was from the measurement. After going back to the SMBS, we observed the collected plankton and benthos under the microscopes. In the afternoon, we collected small animals living on seaweeds. Participants understood that Sado has rich seaweed beds and how important these landscapes are for biodiversity. After the practice, we visited the world cultural heritage site "Sado Gold Mine" and some geosites on the west coastline of Sado Island (Sotokaifu). Through

this experience, participants realised how the geographical features of Sado are diverse. At the end of the day, we observed a bioluminescence of sea fireflies (*Vargula hilgendorfii*). The blue illumination was so fantastic!

Plankton sampling on IBIS II

Observation of animals living in seaweeds

The fourth day was the final day of the activity at SMBS. Prof. Ishwar S. Parhar (UT, Japan) gave a lecture about the effects of environmental hormones on reproduction and development. After the lecture, students finished the preparation for the presentation. In the afternoon, we hold an optional activity of snorkelling at Tassha beach. Most of the students joined it and enjoyed the beautiful beach, and observed the animals that differ from those living at the rocky shore. Then, we held the group and individual presentations. Every presentation had excellent drawings and was well-organised! Through these presentations, we believe that students gained a deeper understanding of phylogeny and diversity in marine animals. Last night at SMBS, we had a BBQ party to celebrate the success of this course.

Snorkelling at Tassha beach

Group presentation

On the fifth day morning, we closed the practical course at SMBS. Then we moved to the Rotsu ferry terminal and dismissed the participants who were Japanese university students. After moving to Niigata City, we visited the Niigata City Aquarium "Marinepia Japan Sea". Participants viewed the aquariums and the special exhibition about Sado Island. On the sixth day, we moved to Tokyo and visited the National Museum of Nature and Science. Through these well-designed exhibits and valuable specimens of the aquarium and museum, they might study the diversity of the marine ecosystems along Japan.

Through these 2-day online course and 8-day in-person practical course, participants learned about the diversity and evolution of marine animals, understood the impact of human activity on the marine environment, and experienced some techniques for assessing marine ecosystems and biodiversity. Moreover, students made strong friendships across borders. We hope all the participants enjoyed this course and will continue to communicate with each other. We would also be happy if online participants could realise this course's attractiveness and look forward to seeing you in the next course. SMBS will continue to hold the international course in the future. We hope participants will use this experience for their future lives and research, and we will have a chance to meet again!

Group photo taken in front of SMBS on July 27