Building Research Institute Japan
国立研究開発法人建築研究所
https://www.kenken.go.jp/

IISEE

International Institute of
Seismology and Earthquake Engineering

Building a sustainable future,
Building an earthquake resilient world,
through international training programs

United Nations
Educational, Scientific and
Cultural Organization

The International Institute of Seismology and Earthquake Engineering (IISEE) in the Building Research Institute has conducted various training on seismology, earthquake engineering, and tsunami disaster prevention in collaboration with the Japan International Cooperation Agency (JICA) for more than 60 years.

We have trained 2,027 participants from 105 countries and regions as of March 2024. During this time, we have received a lot of support and cooperation from universities, national research institutes, private design and construction companies, and other governmental and private organizations that agree with the training programs' purpose and vision. We are confident that we have provided extremely high-quality training to young researchers worldwide thanks to their support and cooperation. Many of the ex-participants who graduated from our training course play a leading role in earthquake and tsunami disaster mitigation in their home countries.

The IISEE will continuously conduct international training to contribute to earthquake and tsunami disaster mitigation globally as much as possible. We will make the utmost efforts to provide more consummate training content while incorporating an international perspective by collaborating with overseas research institutes and utilizing human networks with former participants.

Dr. Yushiro Fujii
Director of IISEE

Organization

The IISEE is the institute for research and training established in the Building Research Institute (BRI). We have seismologists, research engineers, as well as administration staff members to manage the training courses. Some guest researches are supporting us to implement the training.

BRI President

Vice President

Auditors
- Permanent
- Part-time

Executive Directors

Department of General Affairs

Department of Research Planning and Management

Departments related to 6 research fields

(Structural Engineering, Environmental Engineering, Fire Engineering, Building Materials and Components, Production Engineering, Housing and Urban Planning)

International Institute of Seismology and Earthquake Engineering (IISEE)

Director

Head of administration Office
Administration officers
Secretaries

Research scientists
Research engineers
Guest researchers

History of IISEE Training Course

1960 1st International Training in Seismology and Earthquake Engineering was held (University of Tokyo)

1961 2nd International Training was held (Waseda University)

1962 IISEE was established in BRI, under the Ministry of Construction

1963 UNESCO participated in the joint training project (-1972)

1972 IISEE course was operated under the Japanese Governments Technical Cooperation Program

1973 BRI/IISEE moved to Tsukuba from Tokyo

1995 Global Seismological Observation Course was launched

2005 One-year training program was certified as a master program of the National Graduate Institute for Policy Studies (GRIPS)

2006 Tsunami Disaster Mitigation Course was launched

2009 China Seismic Building Course was launched (-2012)

2015 Latin American Earthquake Engineering Course was launched (-2022)


2023-2024 Regular course

2024 New course **"Strengthening Seismic Disaster Risk Reduction Countermeasures for Critical Buildings"** will be launced

Regular Course

IISEE offers three one-year courses; seismology, earthquake engineering, and tsunami disaster mitigation.

Seismology

Course leaflet

Seismology course provides advanced knowledge and technology concerning earthquakes and seismic hazards. Participants belong to organizations responsible for seismic observation and earthquake disaster mitigation in their countries.
Lectures such as **seismic hazard assessment and earthquake disaster mitigation policies** are designed to be useful for the participants after returning to their countries.
Practical training, study trips, and participation in international conferences are also included in the program.

Curriculum

Earthquake observation	Crustal deformation
Theory of seismic waves	Plate tectonics
Local earthquake analysis	Seismic tomography
Focal mechanism/moment tensor	Strong ground motion
Earthquake source	Microtremor observation
Earthquake early warning	Seismic microzonation

Earthquake Engineering

Course leaflet

Earthquake Engineering course is designed to contribute to the reduction of structural damages by earthquakes and human suffering caused by those damages in developing countries.
Participants are mainly researchers, engineers from governments and universities. The curriculum consists of basic studies (**structural analysis**, **structural dynamics**, **earthquake resistant structures for reinforced concrete construction**, **steel structures**) and the latest studies (**seismic isolation, response control technique, seismic performance design**).
These are systematically provided through lectures, practices and study trips.

Curriculum

- Nonlinear earthquake response analysis and damage evaluation
- Seismic isolation and response control techniques
- Seismic performance design method
- Seismic evaluation and retrofitting techniques of existing structures
- Post-earthquake damage inspection method
- System identification and health monitoring
- Effects of surface geology and soil structure interaction
- Geotechnical engineering and foundation structures
- Strategies for earthquake disaster mitigation and recovery

Tsunami Disaster Mitigation

Course leaflet

Tsunami Disaster Mitigation course was established after the tsunami disaster caused by the earthquake off Sumatra in 2004. Lectures provide advanced education and technology for dealing with earthquakes and tsunamis.

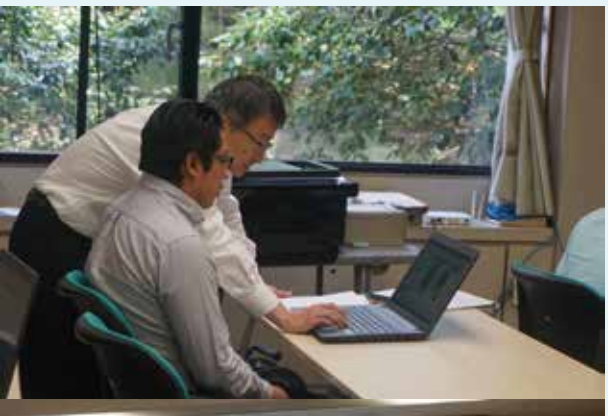
The participants will apply and disseminate their acquired knowledge and techniques for tsunami disaster mitigation and introduce tsunami hazard evaluation and early warning systems in their countries as specialists.

Curriculum

Seismology for tsunami (same with Seismology course)
Tsunami generation and propagation
Tsunami simulation, inundation modeling
Tsunami evacuation planning and simulation
Tsunami observation
Tsunami early warning system

Individual study

In the last half of the one-year course, participants work on their own research projects. IISEE researchers or experts at other institutions will support the projects as supervisors/advisors.



abstracts

presentations

Short-term Course

IISEE also offers two-month courses focusing on specific themes.

Global Seismological Observation

Global Seismological Observation Course is conducted as part of the Japan's contributions to the world's nuclear disarmament in cooperation with the Japan Meteorological Agency and JICA. The participants are expected to play an important role in the Comprehensive Test Ban Treaty (CTBT) and the International Monitoring System (IMS).

The lectures are seismological observation technologies for monitoring nuclear tests and earthquakes, and **data analytical techniques to discriminate nuclear tests from natural earthquakes**.

NEW

Strengthening Seismic Disaster Risk Reduction Countermeasures for Critical Buildings

Earthquake disaster countermeasures include seismic strengthening, development of evacuation centers, designation and maintenance of emergency transportation roads, formulation of earthquake disaster plans, etc. In particular, seismic strengthening is important to reduce damage from earthquakes, and governments must strengthen **facilities such as government buildings, hospitals, fire departments, and police departments**, and make efforts to ensure that emergency response and administrative services are not delayed in the event of a disaster. This course aims to learn

(1) **basic concepts necessary to ensure functional continuity of critical buildings**, through understanding design methods and technologies, thereby contributing to strengthening earthquake risk countermeasures for critical buildings, (2) **pre-disaster investment measures** (seismic diagnosis methods and seismic retrofit for existing buildings), and (3) **response measures after disasters** (emergency risk level assessment, recovery technical guidelines, etc.).

Study Trips

Participants in both regular and short-term courses will visit research facilities, relevant administrative organizations, as well as damaged areas by recent earthquakes/tsunamis to learn disaster prevention measures, disaster recovery policies, and natural physical phenomena.

Activity Examples of **Former Participants**

The former participants of the IISEE training are making efforts to mitigate earthquake and tsunami disasters at government agencies, national research institutes, universities, etc.

El Salvador

A research project "**Project for Capacity Development for the Evaluation and Seismic Reinforcement of Buildings in the Metropolitan Area of San Salvador (HOKYO project)**" was initiated in 2020, and BRI researchers have been giving technical advice as appropriate. In 2023, the BRI Vice President visited El Salvador to survey the progress of the project on-site and provide technical guidance on achieving the project's goals.

Indonesia

The Meteorology, Climatology, and Geophysics Agency (BMKG) is in charge of earthquake and tsunami observation and warning dissemination in Indonesia. The country is implementing a three-year project "**Capacity Development on Operation of Earthquake and Tsunami Analysis and Warning Dissemination**" starting in February 2022. The BRI researchers have visited BMKG Indonesia for technical cooperation in order to contribute to the study of the utilization system of observation data from strong-motion seismographs and seismic intensity meters and to the improvement of ShakeMap.

Nicaragua

A technical cooperation project "**Project for Strengthening of Capacity of the Central American Tsunami Advisory Center**" had been conducted from October 2016 to October 2019, and the Central American Tsunami Advisory Centre (CATAC) was established in Nicaragua. Six main staff members at the Nicaraguan Institute of Territorial Studies (INETER) participated the IISEE regular course and they made contributions to the CATAC establishment.

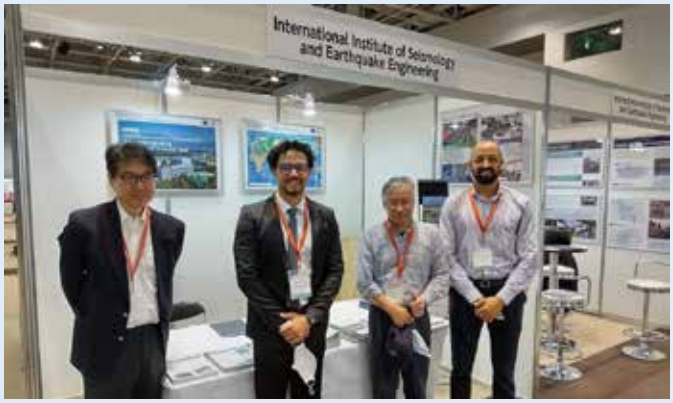
Technical Cooperation

IISEE is following up former participants and conducting collaborative researches throughout international technical cooperation programs.

SATREPS Program (Bhutan)

IISEE Reunion

When a major international conference is held, IISEE holds a reunion to meet IISEE alumni and exchange information and deepen friendship.



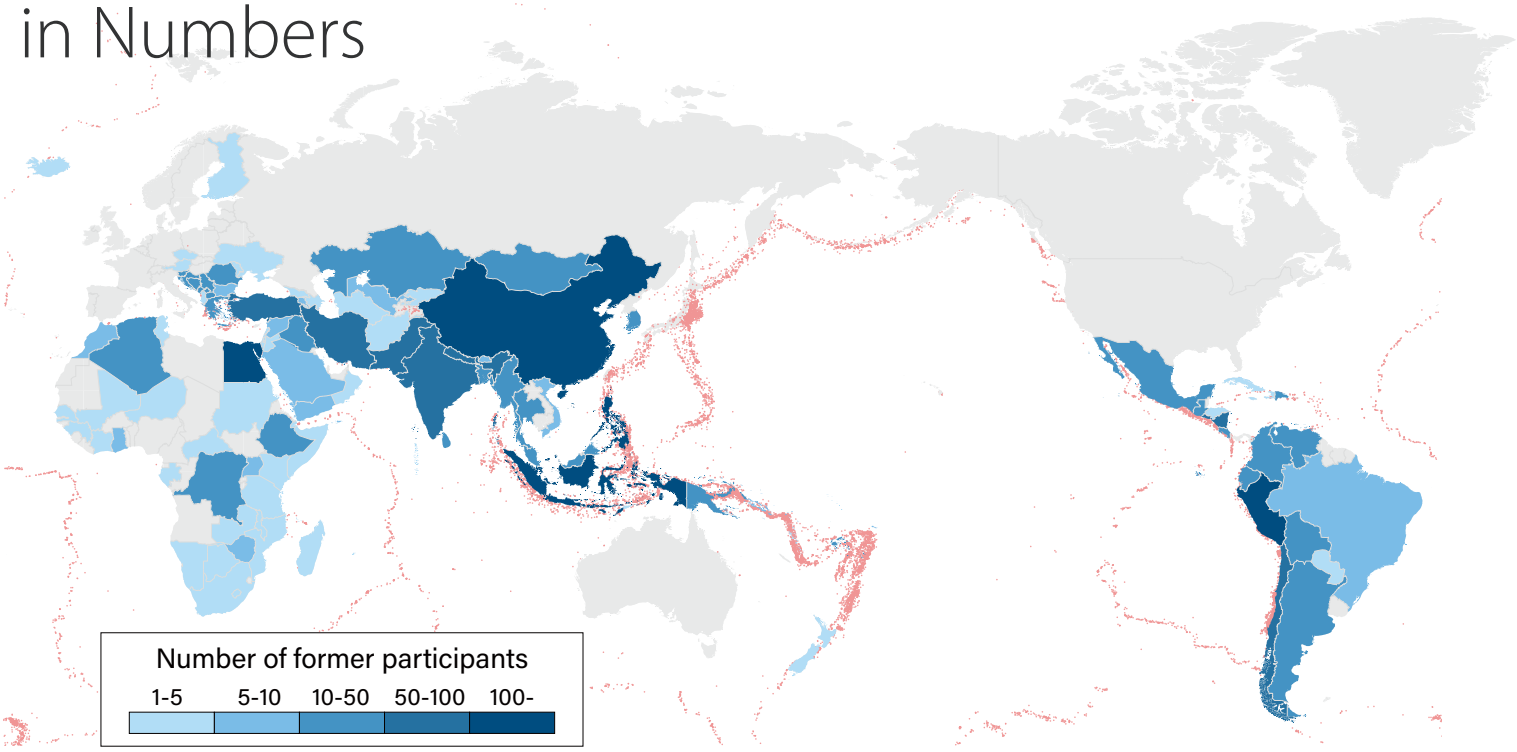
17WCEE (Sendai, Japan)

IAG-IASPEI 2017 (Kobe, Japan)

IISEE Online Seminar

IISEE holds online seminars (irregular basis) for IISEE alumni to discuss recent research topics.

IISEE Achievements
in Numbers



Red dots: Epicenters of > M5 earthquakes from 2010 to 2020 (source: U.S. Geological Survey)

2,027 Participants

105 Countries since 2000

347 Master's degrees since 2005

IISEE course outline

IISEE training courses are classified in regular (one-year) course and short-term course.

Training Course		Field	Participants	Period	Commencement
Regular	**Seismology**	Seismology	5	1 year (Oct.–Sep.)	1960
	Earthquake Engineering	Earthquake Engineering	10		
	Tsunami Disaster Mitigation	Tsunami	5		2006
Short-Term	**Global Seismological Obaservation**	Seismology	10	2 months	1995
	NEW **Strengthening Seismic Disaster Risk Reduction Countermeasures for Critical Buildings**	Earthquake Engineering	15	2 months	2024
Individual		Seismology/ Earthquake Engineering/ Tsunami	several	upon request	1968

Main Target Persons

The IISEE training courses are conducted by BRI and JICA as a part of Japan's ODA program. The target persons are employees in government agencies, research institutes, or universities with public interest in seismology, earthquake engineering, or mitigation of tsunami disasters.
For details, please see the JICA website:
https://www.jica.go.jp/english/faq/faq.html#02

Master's Program

Owing to the partnership with **the National Graduate Institute for Policy Studies (GRIPS)**, regular course participants are conferred the degrees of **"Master of Disaster Management"** certified by GRIPS* and BRI/IISEE. With the master's degree, the participants will devote their career to earthquake disaster mitigation in their respective countries.

*Applicants must satisfy all requirements for entrance before admission application.

IPRED

International Platform for Reducing Earthquake Disasters (IPRED) was established by UNESCO in 2007. IPRED aims to promote collaboration in research, training and education in the fields of seismology and earthquake engineering. IISEE plays as the Centre of Excellence supported by UNESCO and Ministry of Land, Infrastructure, Transport and Tourism, Japan.
The main goals are;

(1) exchange information and propose plans for reducing earthquake disasters, especially on buildings and housing.
(2) address policy-relevant issues related to the reduction of earthquake disaster risks and implementation of the Hyogo Framework for Action, including the formulation of recommendations on priorities of the International Strategy for Disaster Reduction (ISDR).
(3) establish a system to dispatch experts to earthquake stricken countries in order to carry out post-earthquake field investigations and draw lessons for future risk reduction, by utilizing the worldwide connection of the former IISEE participants.

IPRED11 in Bucharest, Rumania (June 2019)

Voices from former participants

This training program provided me with a profound understanding of seismology, from seismic waves to intricate factors underlying seismic activity. Engaging with research broadened my perspective on various approaches and significantly enhanced my problem-solving abilities alongside analytical skills to interpret results.
This training offers personal growth and holds promise for countries seeking to understand and address disasters.

Mr. Paulo Pangan SAWI

Philippine Institute of Volcanology and Seismology
Philippines
(2022-2023 Seismology Course)

The experience of studying the earthquake engineering course helped me to grow professionally. Since returning to my country, I have been able to put into practice what I learned in Japan regarding disaster management. I am very grateful and I encourage the new generations to take full advantage of the programs offered by IISEE that help countries like El Salvador to strengthen the culture of prevention.

Ms. Susan Ivania DURAN SARAVIA

Urban Development Department,
Mayors Council and Planning Office of the Metropolitan Area of San Salvador
El Salvador
(2020-2021 Earthquake Engineering Course)

Participating in the Tsunami Course offered by IISEE has been an invaluable experience, equipping me with essential knowledge and skills in tsunami disaster mitigation.
From understanding the science behind tsunamis to implementing effective mitigation strategies, this program has empowered me to contribute meaningfully to tsunami disaster preparedness and building resilience efforts.

Mr. Muhammad HARVAN

Agency for Meteorology Climatology and Geophysics (BMKG)
Indonesia
(2022-2023 Tsunami Disaster Mitigation Course)

The courses at the IISEE have changed and expanded my horizons in the field of seismology. To live in the scientific town of Tsukuba and immerse yourself in the process of learning and understanding something new. During our studies, I improved my skills in processing and evaluating seismic data, which is important for further research.
In addition to studying, we visited various cities, historical sites, and museums in Japan.

Dr. Abylay UZBEKOV

Institute of Geophysical Research of the National Nuclear Centre
Republic of Kazakhstan
(2023 Global Seismological Observation Course)

IISEE issues monthly **newsletters**, which can be acceessed from our website (iisee.kenken.go.jp). IISEE is also posting more information related to the training courses and recent research activities on **Facebook** (fb.com/IISEE.Japan).
We are looking forward to your comments, likes, and shares!

Join IISEE course!

Practical

You can gain practical skills and advanced knowledge useful for your work and research.
IISEE researchers will support your study throughout the course.

Cross-cutting

IISEE has experts in a wide range of earthquake and tsunami sciences, and earthquake engineering fields. You can expand your knowledge by exchanging and discussing ideas.

Master's Degree*

IISEE supports your career advancement with a master's degree program.

* Regular (one-year) course only
* Applicants must satisfy all requirments before enrollment.

Global Network

IISEE alumni consisting of more than 2,000 people from 105 countries will expand your social network and make your future life productive.

Study hard, Enjoy Japan!

International Institute of
Seismology and Earthquake Engineering
Building Research Institute

1 Tachihara, Tsukuba, Ibaraki 305-0802, Japan
Tel: +81-29-879-0680 Fax: +81-29-864-6777
https://iisee.kenken.go.jp
e-mail: iisee@kenken.go.jp

Download this brochure