

## Other Information

### Faculty and Learning Environment at UNU

Students will benefit from working closely with an expert teaching faculty comprising distinguished UN-CECAR scholars and practitioners, and UNU-IAS academic staff. Because it shares a building with many UN agencies, UNU-IAS offers a unique learning environment.

The UNU Library offers access to a wide range of academic books, over 10,000 electronic journals, World Bank and OECD publications, and official UN documents. All students will receive a comprehensive library orientation session at the beginning of the course.

A dedicated computer lab is available with software to cater to the needs of each course, including GIS, environmental modeling applications, and statistical analysis tools. An online learning tool will provide access to lecture videos, notes, reading lists and other materials specific to each course, as well as a message board and forum to facilitate discussion among faculty and students.

### Student Support Services and Accommodation

UNU-IAS will assist students through the courses, acknowledging that students may experience difficulties in adjusting to a new country and culture. Accommodation is the responsibility of students, but UNU-IAS and partner institutes will assist in finding accommodation (in an affordable hotel close to institutes conducting courses) during their stay.

### Daily Schedule

There will be three sessions of courses each weekday:

India: 07:00–09:00, 10:00–12:00 and 12:30–14:30 hours  
 Indonesia: 08:30–10:30, 11:30–13:30 and 14:00–16:00 hours  
 Malaysia: 09:30–11:30, 12:30–14:30 and 15:00–17:00 hours  
 Japan: 10:30–12:30, 13:30–15:30 and 16:00–18:00 hours

### Fees

- Course I: Science, Impacts and Vulnerability US\$1,000 or JPY100,000
- Course II: Approaches to Adaptation US\$1,000 or JPY100,000
- For the whole session (Course I & II) US\$2,000 or JPY200,000

Total Accommodation Cost/Course if arranged by the institutions (covers lodging and breakfast)

Indonesia	Course I: 200 USD Course II: 160 USD
India	Course I: 400 USD Course II: 320 USD
Japan	Course I: 1040 USD Course II: 840 USD
Malaysia	Course I: 730 USD Course II: 580 USD

### Eligibility and Application

Applicants must:

- complete on-line Application and submit necessary documents with a photo
- proof of enrolment in a postgraduate programme for student applicants;
- original transcript of academic record;
- a short description of current research interest or work related to climate change and/or adaptation
- TOEFL scores or equivalent proof of English-language proficiency for non-native speakers or those who do not have an academic degree in an English-speaking country; and
- minimum of two references; one of them from a supervisor

The application deadline for the Autumn 2014 courses is 30th August.

For detailed information on the application and admission procedures, and to apply, please visit the UN-CECAR website at: <http://cecar.unu.edu>



UNIVERSITY NETWORK FOR CLIMATE AND ECOSYSTEMS CHANGE ADAPTATION RESEARCH

# Postgraduate Courses on Building Resilience to Climate Change

Autumn 2014



### University Network for Climate and Ecosystems Change Adaptation Research (UN-CECAR)

Established in 2009 as the first of its kind in the region, UN-CECAR is an institutional platform of universities across Asia that seeks to enhance education and research on adaptation to climate change and ecosystems change, and to build the emerging sustainability science discipline. Specific objectives of the Network are to:

- collect international-level knowledge on climate change adaptation and customize it to the local conditions;
- assess existing and emerging climate change-related research and degree programmes in the region, and identify areas of most need;
- initiate and support the development of joint- or dual-degree educational programmes, credit-sharing common courses, joint research and training programmes

Visit <http://cecar.unu.edu/>

### Institute for the Advanced Study of Sustainability (UNU-IAS)

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 Website: <http://cecar.unu.edu>

### United Nations University

*Promoting science for human security, peace and sustainable development*

The mission of the United Nations University is to contribute, through collaborative research, capacity development and advisory services, to efforts to resolve the pressing global problems of human survival, development and welfare that are the concern of the United Nations, its Peoples and Member States.

The UN University comprises a worldwide network of institutes, presently located in 13 different countries and coordinated by the UN University Centre in Tokyo.



### UNU Institute for the Advanced Study of Sustainability (UNU-IAS)

The United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS) is a leading research and teaching institute based in Tokyo, Japan. Its mission is to advance efforts towards a more sustainable future, through policy-oriented research and capacity development focused on sustainability and its social, economic and environmental dimensions. UNU-IAS serves the international community, making valuable and innovative contributions to high-level policymaking and debates within the UN system.

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The United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS), Tokyo, invites applications for the intensive three week postgraduate programme on Building Resilience to Climate Change. The courses have been developed under the framework of the University Network for Climate and Ecosystems Change Adaptation Research (UN-CECAR). UN-CECAR is a joint initiative of more than 20 leading universities across Asia. It is committed to developing postgraduate educational and research programmes on climate and ecosystems change, adaptation and sustainability science. UNU-IAS acts as the Secretariat for UN-CECAR.

The courses, conducted at UNU-IAS, cover a range of issues on adapting to climate and ecosystems change in a sustainable manner. Topics include climate and atmospheric science, impacts assessment, climate and society, ecosystems resilience, risk and uncertainty, integrated solutions for mitigation and adaptation, mainstreaming adaptation into development planning and community based adaptation.

The assessment will be based on a class exam, final essay, group presentations, group debates and class participation. The courses are practically-oriented and will be taught by a highly qualified and diverse team

of natural and social science scholars. Each course is equivalent to a regular 2 credit postgraduate course in Japan. The courses are also registered in the Master of Sustainability program of UNU-IAS and Master of Sustainability Science programme of the Graduate Programme of Sustainability Science of the University of Tokyo.

The 2014 autumn courses will be delivered simultaneously in 4 UN-CECAR partner institutes in Malaysia, Indonesia, India and Japan, synchronized through WWW and video conferencing tools and applications. All applications should be made through <http://cecar.unu.edu/apply>.

### Target applicants:

- Students who are currently enrolled in a postgraduate programme, in any discipline;
- Young professionals (with a college or university degree) in various occupations in Japan and abroad;
- Those who wish to deepen their knowledge on, and gain practical training in, building resilience to climate and ecosystems change; and
- Those who wish to pursue careers in international fields in public service or private organizations, including the UN, multinational corporations and NGOs as well as national foreign service organizations.

# Course Information

The programme runs for 3 weeks from 14 October to 31 October 2014. Course 1 focuses on Science, Impacts and Vulnerability, and Course 2 focuses on Approaches to Adaptation.

Students who successfully complete the course will be awarded a certificate of completion and a transcript from UNU-IAS. Each course is designed to be worth 2 credits and comprises of 36 hours of teaching time. While a number of universities have negotiated credit transfer agreements with UNU-IAS, ultimately the decision on whether credits are transferrable will be made by the student's university. Please note that the topics listed below may be subject to change.

COURSE I : 14 October to 23 October 2014

## Science, Impacts and Vulnerability 2 credits

### 1. Introduction to the Programme

- Programme overview and philosophy
- Context of the UNFCCC and IPCC
- Structure, expectations and assessment
- Group allocation and discussion of research project

### 2. Weather, Climate and Atmospheric Processes

- Fundamental concepts
- Weather and climate mechanisms
- Structure and composition of the atmosphere
- General circulation of the atmosphere

### 3. Climate Change Science

- Introduction to climate change
- Greenhouse gases and aerosols
- Carbon cycle
- Fundamental principles of climate change
- The oceans and climate change
- Climate variability and change

### 4. Observed Climate Change: Impacts and Extreme Events

- Observation networks
- Overview of climate change responses
- Global and regional scale responses
- Extreme events
- Consequences of observed changes and extreme events

### 5. Scenarios for Future Impact Assessment

- Introduction to scenario principles
- IPCC Special Report on Emissions Scenarios (SRES)
- Introduction to Global Climate Models (GCMs)
- GCM projections for impact assessments
- Introduction to Regional Climate Models (RCMs)
- RCM projections for regional and local impact assessments
- Next-generation IPCC scenarios (5th Assessment Report)

### 6 & 7. Introduction to Complex Systems Science

- Introduction
- Systems behavior
- Agent-based modeling
- Networks

### 8. Observed Climate Change

- Observation networks
- Overview of climate change responses
- Global and regional scale response
- Extreme events
- Consequences of observed changes and extreme events

### 9. Introduction to System Dynamics and Influence Diagrams

- Dynamic downscaling
- Bias correction for dynamic models
- Statistical downscaling

### 10 & 11. Climate Projections & Uncertainty

- Major sources of uncertainty in climate change projections
- Concepts and practical examples: evaluating, quantifying and reducing uncertainty in climate projections
- Issue of uncertainty in the wider context of natural variability

### 12. Dynamical and Statistical Downscaling

- Dynamic Downscaling
- Bias Correction for Dynamic Models
- Statistical downscaling

### 13. Climate Change Impacts: Water Sector

- Hydrological cycle and its changes
- Floods and draughts
- Glacier melting and sea-level rise
- Quality and accessibility to water resources
- Adaptation measures for the water sector

### 14 & 15. Climate Change Impacts: Food Security

- Climate change impacts on food production
- Quantifying food production changes due to weather changes
- Adaptation measures for climate change impacts on food production
- Cost-benefit analysis of adaptation measures

COURSE II: 24 October to 31 October 2014

## Approaches to Adaptation 2 credits

### 1. Basic Understanding of Key Concepts

- Mitigation and adaptation
- Programme overview and philosophy
- Context of the UNFCCC and IPCC
- Structure, expectations and assessment
- Group allocation and discussion of major research project

### 2. Global and National Challenges

- Security issues
- Capacity and awareness issues
- Policy processes and challenges
- Problems at national and local levels
- Local institutions
- Local-level climate change adaptation

### 3. Mitigation and Adaptation Practices and Resilience (Urban Areas)

- Introduction: drivers of urban growth
- Framing the problem in urban areas: social, cultural and economic aspects
- Mitigation and adaptation options
- Key constraints and measures
- Case studies

### 4. Mitigation and Adaptation Practices and Resilience (Rural Areas)

- Introduction
- Mitigation options: engineering (hard) vs. ecological (soft) approaches, and socio-economic approaches
- Adaptation options in various sectors
- Adaptation strategies and re-adjustments
- Local wisdom and indigenous technologies
- Case studies

### 5. Community Engagement Practice: National Target Programme Development

- Introduction
- Participatory and non-participatory approaches
- Adaptive management and multi-layer approach
- Yonmenkaigi System Method (YSM)
- Illustrations and exercises

### 6. Community Adaptation

- Climate Vulnerability and Capacity Analysis (CVCA)
- CVCA process and analysis
- Participatory tools
- Policy analysis

### 7. National policy on climate change

- Glossary of terms
- Climate change in Viet Nam
- The process of development of National Climate Change Program
- Challenges

### 8. Adaptation in Practice: National Target Programme Development

- Climate change observations
- Greenhouse gas emission scenarios
- Methods used for scenario development (GCM, dynamic downscaling, statistical downscaling, others)
- Climate change scenarios and impact assessments
- Institutional, budgetary and implementation challenges

### 9 & 10. Economic damage evaluation of water disasters caused by climate change and adaptation using the evaluation

- Evaluation of water disaster risks
- Adaptation for water disasters
- Training session (hands on exercise) on countermeasure selection
- Wrap-up ideas for policy

### 11. Economics of Climate Change: Weighing the Costs and Benefits

- Basic economic principles
- Putting a price on carbon
- Uncertainties and assumptions
- Market-based solutions: carbon markets (ETS) and carbon taxes

### 12. Economic Assessment of Climate Change Impacts and Adaptation Measures

- Climate change parameters and potentially vulnerable system assets (flood and food production)
- Integrated assessment of economic costs of climate change impacts and adaptation policies
- Introduction to economic models used for assessing the impacts of climate change: e.g. Stern Review, AIM
- Critical review of the framework, assumptions and value judgments of economic models

### 13. Global and National Policies on Financing Adaptation Strategies

- International adaptation policy framework and financing
- Role and impact of the Global Environment Facility
- Assessment of past and existing adaptation projects
- Co-benefits of adaptation and development
- Mainstreaming adaptation into development planning

### 14. Climate Change and Water Cycle

- Relationship between climate system and water cycle
- Climate projection uncertainty
- Toward integrated human security

### 15. Climate and Ecosystems Change Adaptation

- Global development challenges and sustainability
- Adaptation to climate and ecosystems change linkages
- Context of the IPCC and IPBES