



UNITED NATIONS
UNIVERSITY

UNU-ISP

Institute for Sustainability and Peace

UNIVERSITY NETWORK FOR CLIMATE AND ECOSYSTEMS CHANGE ADAPTATION RESEARCH

Postgraduate Courses on Building Resilience to Climate Change



AUTUMN 2010

www.isp.unu.edu/cecar

The United Nations University Institute for Sustainability and Peace (UNU-ISP), Tokyo, invites applications for the new intensive 3-week postgraduate programme on Building Resilience to Climate Change, developed under the framework of the University Network for Climate and Ecosystems Change Adaptation Research (UN-CECAR). UN-CECAR is a collaborative 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-ISP acts as the Secretariat for UN-CECAR.

The new courses, conducted at UNU-ISP, cover a range of issues on sustainability and adaptation to climate and ecosystems change. 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. Students also will receive practical training in the use of Geographic Information Systems (GIS) and in downscaling rainfall forecasts.

Assessment will be based on a research paper, presentations, class participation, and intermediate tests. The courses are practically-oriented and will be taught by a highly qualified and diverse team of natural and social science scholars.

Target applicants:

- Students who are currently enrolled in a masters or Ph.D. programme, in any discipline, and
- who wish to deepen their knowledge on, and gain practical training in, building resilience to climate and ecosystems change, and
- who desire a future career as a climate change specialist.

Course Information

The programme runs for three weeks from 13 September 2010. It is open to students who are currently enrolled in a university postgraduate programme and who have already identified their thesis topic prior to arriving in Japan. Week 1 focuses on Science, Impacts and Vulnerability, and week 2 focuses on Approaches to Adaptation. The final week provides training on geographic and climate models and software, with time also allocated for students to complete their research paper. A requirement for the research paper is that students must link their thesis topic to climate change.

Students who successfully complete the course will be awarded a certificate with transcripts from UNU-ISP. Each course is designed to be worth 2 credits and comprises of 30 hours of teaching time. While a number of universities have negotiated credit transfer agreements with UNU-ISP, 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 / WEEK 1:

Science, Impacts and Vulnerability 2 credits

1. Introduction to the Programme

- Welcome and introductions
- Programme overview and philosophy
- Context of the UNFCCC and IPCC
- Structure, expectations and assessment
- Group allocation and discussion of student research papers

2. Weather, Climate and Atmospheric Processes

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

3. Climate Change

- 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 and Impacts

- Overview of climate change responses
- Global and regional scale responses

- Extreme events
 - Consequences of observed changes and extreme events
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5. Scenarios for Future Impact Assessments

- 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)
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6. Impacts on Ecosystems

- Defining ecosystems
 - Ecosystems change
 - Climate and ecosystems: effects and feedbacks
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7. Natural Disasters

- Intensity, Duration and Frequency (IDF) concepts
 - How climate change influences IDF
 - Vulnerable ecosystems
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8. Climate Change Impacts on Society in Regional and Local Contexts

- Climate change and indigenous livelihoods
 - Climate change impacts on urban and coastal Societies
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9. Vulnerability and Risk

- Introduction: identifying vulnerability and adaptive capacity
 - Sectoral vulnerability
 - Integrated approaches to vulnerability
 - Risk and risk management approaches
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10. Resilience, Risk Management and Development Planning

- Introduction
 - Building resilience
 - Capacity building
 - Adaptation and mitigation as risk management
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COURSE II / WEEK 2:

Approaches to Adaptation 2 credits

1. Basic Understanding of Key Concepts

- Key concepts of risk and risk management
- Mitigation and adaptation
- Adaptive capacity
- Sustainable resilience
- Top-down and bottom-up strategies and synergies

2. Global and Regional Challenges

- Climate change regime (physical dimension)
 - Security issues
 - Capacity and awareness issues
 - Policy processes and challenges
 - Studies of global-level assessments
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3. National and Local Challenges

- Problems at national and local levels
 - Local institutions
 - Local-level climate change adaptation
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4. Mitigation and Adaptation Practices and Resilience (Urban Areas, Cities and Towns)

- Introduction
 - Framing the problem in urban areas
 - Mitigation and adaptation options
 - Key constraints and measures
 - Case studies
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5. Mitigation and Adaptation Practices and Resilience (Rural Areas)

- Introduction: problem definition and mapping
 - Potential hazards and vulnerability
 - Examples of climate change impacts and associated hazards
 - Impact mitigation options
 - Adaptation strategies and community attitudes
 - Key constraints and measures
 - Case studies
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6. Mitigation and Adaptation Practices and Resilience (Coastal Areas and Small Islands)

- Introduction
 - Framing the problem
 - Potential hazards and impacts
 - Local wisdom and indigenous technologies
 - Mitigation and adaptation options
 - Case studies (practical)
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7. Lessons Learned From Practical Work

Mainstreaming adaptation into development planning
(land-use planning and implementation)

8. Community Development

Community-based adaptation for sustainable development

9. Community Engagement Practices

Methodologies and principles for engaging communities(simulation and practical)

Applied Training

Geographic Information Systems (GIS) for environmental problem solving

This training provides a basic understanding of the theory and application of GIS as a tool for environmental problem-solving. Through practical hands-on experience with current environmental issues, students can obtain basic skills in spatial analysis and webmapping application development. ArcGIS series software will be used in this training.

Downscaling Weather Forecasts

Students will receive training on downscaling global weather forecasts to the local scale using dynamic Local Area climate models. Forecasting skills will be evaluated by comparing local observations with national level data.

Other Information

Faculty and Learning Environment

Students will benefit from working closely with an expert teaching faculty comprising distinguished UN-CECAR scholars and practitioners, and UNU-ISP academic staff. Because it shares a building with many UN agencies, UNU-ISP 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 will be provided for students, with software to cater to the needs of each course, including GIS, environmental modelling applications, and statistical analysis tools. An online learning tool will be provided for students to access lecture 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 Housing

UNU-ISP will assist students through the courses, acknowledging that students may experience difficulties in adjusting to a new country and culture. Students will be provided accommodation (in an affordable hotel close to UNU) during their stay in Tokyo.

Daily Schedule

There will be three sessions of courses each weekday:
10:00–12:00, 13:00–15:00 and 16:00–18:00 hours.

Fees

Tuition fee: USD 1,000 (or JPY 100,000) for both courses

A limited number of fellowships (covering tuition fees and living expenses) are available for outstanding students from developing countries and who can demonstrate

a need for financial assistance. All students are expected to pay for their own travel expenses.

Eligibility and Application Applicants must provide:

- a completed Application & Fellowship Form with photo and signature;
- proof that they are currently enrolled in a master's or Ph.D. degree programme;
- a detailed proposal of their research topic, and explain how it will link their current university thesis topic to that of climate change;
- 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
- two references; one from the student's supervisor and one from another faculty member.

The application deadline for the autumn 2010 courses is 15 July 2010 for overseas applicants, and 31 July 2010 for applicants currently residing in Japan and who are enrolled in a university.

For detailed information on the application and admission procedures, and to download the application form, please visit the UNU-ISP website at: <http://isp.unu.edu/cecar>.

University Network for Climate and Ecosystems Change (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 level;
- 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/>



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 Sustainability and Peace (UNU-ISP)

Located in Tokyo, the UNU Institute for Sustainability and Peace (UNU-ISP) was established in January 2009. UNU-ISP takes an innovative, integrated approach to sustainability — one that encompasses global change, development, peace and security. The Institute bridges these cross-cutting issues through research, educational and collaborative initiatives with the aim of solving current problems and anticipating future challenges. UNU-ISP works in collaboration with other UNU institutes as well as through co-operative relationships with the global academic and policy-making communities.

Institute for Sustainability and Peace

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