



Annexure E – Course syllabus

Module 1: Theory and Concepts of Climate Change and Cities

Module 1: Theory and Concepts of Climate Change and Cities		
General Data	Module Number	1
	Semester weeks (duration)	One week full-time (minimum)
Description	Description of module / key content	<p>This foundational module is intended to provide a thorough introduction to the theoretical foundations of both climate change mitigation and adaptation and their relevance to urban planning and development.</p> <p>Climate change poses a complex set of challenges to urban planners and city officials. Not only need the causes of climate change be addressed by reducing greenhouse gas emissions at the city scale. Urban planners and city officials also increasingly face the challenge of dealing with the consequences of climate change, such as increasingly frequent and intense extreme weather events, rising sea levels, and changing water availability.</p> <p>Theoretical knowledge and conceptual frameworks on human responses to climate change are expanding rapidly. It is therefore essential that students explore climate change theory and critically engage with this growing body of knowledge, as a</p>

foundation for translating climate change issues into local planning, policy development and decision-making.

Note: This module does not cover climate science extensively. It is suggested that the module: 'Introduction to Climate Science for Urban Education', developed by UN Habitat and the Steering Committee, be used for teaching climate science to students.

The module content assumes that students have little prior knowledge of climate change issues. It covers the following key sections:

General introduction

An overview of the basics of climate change and how it relates to urban planning and development. This section addresses the following questions:

- What are definitions of anthropogenic climate change?
- What are the dimensions of climate change (mitigation, adaptation)?
- How can cities be described as coupled socio-ecological systems?
- Are cities a cause or a possible solution to climate change?
- How does climate change interact with the socio-economic drivers of urban change?
- How are sustainable development and climate change linked?
- What could be possible roles of cities in international climate change governance?

Climate change mitigation

An introduction to the role of cities and urban areas in producing and reducing greenhouse gas emissions. This section addresses the following questions:

- What is the carbon footprint of cities and urban areas?
- Are there differences in carbon emissions between cities in developed and developing countries?
- What is urban climate change mitigation?
- How can cities be leaders in climate change mitigation?

		<ul style="list-style-type: none"> • What are the basic principles of carbon management in cities? • What are the costs and benefits of climate change mitigation from an urban planning perspective? <p>Climate change adaptation</p> <p><i>An introduction to the role of cities and urban areas in responding to the impacts of climate change. This section covers the following questions:</i></p> <ul style="list-style-type: none"> • What is urban climate change adaptation? • What are the key concepts of urban adaptation? • How are disaster risk management and climate change adaptation linked? • How can adaptation lead to transformational change in cities? • What are emerging good practice approaches to adaptation planning in cities? • What are the costs and benefits of climate change adaptation from an urban planning perspective?
	Rationale for the module	<p>This module is intended to provide a thorough introduction to the theoretical foundations of both climate change mitigation and adaptation and their relevance to urban planning and development. Understanding these foundations is imperative to enable students to critically examine their actions as future urban planners within the ‘bigger picture’ context of climate change, sustainability and urban policy. While climate change mitigation and adaptation differ substantially in the way they can be addressed by urban administrators and decision-makers, it is important to understand that they are essentially two sides of the same coin: climate change adaptation is only necessary because global mitigation efforts have been largely unsuccessful to date and because the planet is already committed to a significant degree of warming due to time lags in the climate system. Reducing greenhouse gas emissions therefore can be considered the single most effective avenue for avoiding severe climate change impacts in the long-term.</p> <p>Cities play a particularly important role in the response to climate change: more than half of the world’s population now lives in cities, a large amount of greenhouse gases</p>

	are associated with urban production and consumption, and many of the most disastrous climate change impacts are hitting urban areas particularly hard. Urban and regional planners need to be able to evaluate these concerns in a holistic manner that integrates a local perspective with national and global developments. This module will make them better equipped to apply and critically examine key climate change theories and concepts within any given local context.
Module objective(s)	<p>This module has two main objectives, namely:</p> <ol style="list-style-type: none"> 1. To understand foundational theories, key concepts and common terminology of climate change mitigation and adaptation, including their theoretical linkages and points of differentiation; and 2. To examine how climate change theories, concepts and terminology can be applied in decision-making, policy development and planning and the city and community levels
Learning objectives	<p>Upon completing this module, students should:</p> <ul style="list-style-type: none"> ▶ Understand the diversity of theories and concepts that can be applied in the context of climate change, their major linkages and differences; ▶ Be able to actively use the identified key terminology relevant to climate change mitigation and adaptation, informed by its varied theoretical foundations; and ▶ Be able to apply theories, concepts and specialized terms to cities, urban planning and urban development.
Key ideas of student led learning	<p>Due to the abstract nature of much of the content, effective delivery of this module would benefit from allowing plenty of time for discussion, reflection and student-led learning. In addition, this module has been conceptualized as a foundational module, to be delivered at the beginning or early on during a course. This requires careful management on behalf of the lecturer, to not overload students with too many abstract ideas and facts.</p> <p>The following is a suggested outline of how the module material could be delivered:</p> <ol style="list-style-type: none"> 1. Two three-hour <i>introductory lectures</i> using multimedia equipment where

		<p>available. The lecture should be delivered in an interactive fashion, allowing for questions, discussion and reflection. Audiovisual equipment permitting, one or two short films on how cities are responding to climate change could enhance the introductory character of the lecture. A guest lecture from a professional working on climate change responses in an urban context would be beneficial.</p> <p>2. A three-hour <i>seminar</i>, where students discuss a small number of theoretical readings on climate change. Groups of two students to present short summaries of their interpretation of a particular text, to stimulate further discussion. The focus of the discussion should be placed on (a) generating a shared understanding of key concepts among the students and (b) on examining how these concepts relate to urban areas, urban planning, and urban development.</p> <p>3. A three hour <i>studio</i>, where students examine how climate change issues have been addressed by the City of Semarang (see case study) and relate the case study findings to other city case studies (ideally cities they are familiar with).</p> <p>4. A student <i>group project</i>, where students conduct qualitative research (semi-structured interviews) with different groups of local city administrators and decision-makers, to examine how they interpret climate change concepts and apply them in their organizational environment. Each group submits a project report of up to 20 pages, summarizing and critically examining key findings. The use of standard qualitative research methods and tools (audio recording, transcription, electronic data coding and software supported analysis) should be encouraged where possible. The lecturer may need to obtain human research ethics clearance from the university prior to commencing the module.</p>
	Class hours	8 hours
	Student led learning hours	24 hours
	Expected hours of individual study	8 hours

	Target Learners (Related fields of study/compatible specializations/associated programs) (incl. year and degree level)	Third year tertiary undergraduate in urban studies, urban planning, environmental management, geography, international development, public administration, public policy
	Use of local case studies (to be developed by users)	<p>Main case study: Semarang, Indonesia</p> <p>Other case study examples:</p> <ul style="list-style-type: none"> • Lagos, Nigeria (included in Lecture presentation) • Ho Chi Minh City, Vietnam (included in Lecture presentation) • Durban, South Africa (included in Module 2) • Reducing vulnerability in Southeast Asian cities (e.g. ACCCRN Projects, see www.acccrn.org)
	(Suggestions) of Collaboration	<p>For the <i>introductory lectures</i>, it is recommended to engage a guest lecturer from a local government, urban utility provider, or professional private sector firm working on climate change mitigation and adaptation in an urban context. The guest lecture should focus on the practical relevance of the key concepts discussed and underline how climate change theories and concepts can be interpreted and applied in many different ways.</p> <p>For the <i>group project</i>, it is suggested that each group of 4-6 students is put in contact with a local organization from different sectors (local government, service provider, NGO, research group) involved in climate change mitigation and adaptation. Students are to conduct short semi-structured interviews to explore how these organizations work on climate change issues, what the individuals' roles are, and how they interpret some of the key concepts discussed as part of the module. Interview questions can be developed as part of the case study work taking place in the <i>studio</i>.</p>

	Means of assessment	<p>Two main means of student assessment are proposed for this module:</p> <ol style="list-style-type: none"> 1. <i>Seminar presentation</i> on a key text: students are to summarize and critique a theoretical text on climate change of moderate to difficult nature. Students submit their key points prior to the seminar. Assessment is based both on the quality of the written submission and the presentation. 2. <i>Group project report</i>. It is recommended that the following aspects of the assignment are assessed against predefined criteria: (a) quality of data presentation, analysis and interpretation, (b) quality of discussion of project findings within the context of the module, (c) quality of evidence provided for the application of qualitative research methods. <p>Additional assessment options could be considered, such as incorporating module content in a final exam for the course, or assessing individual student presentations given during the <i>studio</i>.</p>
Annexes	Annexure A: Lecture	One comprehensive PowerPoint presentation is attached. The PowerPoint can be delivered over two lectures.
	Annexure B: Lecture notes	One pdf document is attached.
	Annexure C: Reading list	One pdf document is attached. The list contains recommended required and supplementary reading.
	Annexure D: Case study	One long case study is attached as a pdf document.
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