



## Annexure E – Course syllabus

### Module 2: The Practice of Urban Climate Change Adaptation and Mitigation

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<b>Module 2: Practice of Urban Climate Change Adaptation and Mitigation</b>		
<b>General Data</b>	Module Number	2
	Semester weeks (duration)	One week full-time (minimum)
<b>Description</b>	Description of module / key content	This module is intended to provide an understanding of the challenges cities in the developing world face and may face in future given climate variability and change, and the urgency of taking action against the impacts of climate change. The module investigates the projected long-term impacts of climate change on cities; the contribution cities make to climate change and principles for how to measure GHG emissions; the vulnerability of cities in the developing world to climate variability and change given the already severe development challenges; an introduction to risk and vulnerability assessments; some broad-ranging, general adaptation and mitigation measures; what this all mean for urban planning and sustainable development; and lastly looking at the case study of the City of Durban and its quest for climate change adaptation.

The following table outlines the content of the module:

Introduction	
How cities are affected by climate change	What the long term consequences of climate change are for: human settlements, economic development, urban ecosystems, infrastructure and energy, food and water security, health, and coastal cities.
How cities contribute to climate change – assessing GHG contributions	<u>Cities are not only impacted by climate change, but are one of the biggest contributors in terms of energy, transport and other sectors such as buildings.</u>  <u>This section also introduces the IPCC principles for conducting GHG emission assessments.</u>
Introduction to climate change risk and vulnerability assessments	This section describes the challenges of urbanisation for developing countries; how this contributes to urban disaster risk and vulnerability; climate change exacerbating this risk and vulnerability; how such vulnerability can be assessed; and examples of vulnerability indicators.
Climate change adaptation and mitigation: rationale, objective and measures	<u>What the rationale is for mitigating and adapting to climate change, i.e. to reduce urban vulnerability, to enhance sustainable development, and to build climate resilient cities. What climate change adaptation and mitigation means and how disaster risk reduction and climate change mitigation are linked.</u>
Climate change mitigation and adaptation measures for sustainable urban	<u>Integrated climate change mitigation and adaptation measures that will build sustainable and resilient cities, including for: urban transport, urban growth management, green space and urban agriculture, water,</u>

		planning	<u>energy and housing and buildings.</u>
		Case study examples	<p>Planning for climate change adaptation (and mitigation) in the city of Durban, South Africa (module 2);</p> <p>Climate change resilience building in the city of Semarang, Indonesia (module 1);</p> <p>Vulnerability to climate change: Dhaka (Bangladesh);</p> <p>Vulnerability of a coastal city: Lagos (Nigeria).</p>
		<p>This module on the Practice of Urban Climate Change Adaptation and Mitigation could be offered as a stand-alone module, but could also be integrated into other planning modules on, for example, spatial planning or land use management. This module furthermore has close links with modules 1 and 3, and builds on the concepts and definitions dealt with in module 1.</p>	
	Rationale for the module	<p>Climate change is ‘at its core a call for planning’ and climate change adaptation and mitigation is the ‘type of planning that fits naturally the agenda of urban and regional planning.’<sup>1</sup> Nonetheless, planners in the developing world in particular have been slow to join the debate and contribute to new conceptual models to address the complexity of climate change in urban areas. There are good reasons for this: planners in the developing world are faced with (seemingly) much more immediate development challenges, and cities in the developing world have not contributed to the emission of greenhouse gases to the same extent as their developed counterparts have. However, most scientists agree that the developing world – and cities in particular – will be hit hardest by the impacts from climate change, thus the effectiveness of</p>	

<sup>1</sup> Blanco, H., Alberti, M., Forsyth, A., Krizek, K., Rodríguez, D., Talen, E., et al. (2009). Hot, congested, crowded and diverse: Emerging research agenda in planning. *Progress in Planning*, 71, 153-205.

		<p>development strategies may be reduced and vulnerability enhanced if climate change adaptation and mitigation are not integrated with development planning. As the scope of need for adaptation to climate changes becomes clearer, the urgent nature of action is also becoming clearer. Planning is essential to responding effectively to climate change and other sustainable development challenges, and should therefore contribute to knowledge, expertise and capacity building in addressing climate change issues. This has huge implications for planning education in terms of the competencies required of planners, and thus the rationale for this module.</p>
	<p>Module objective(s)</p>	<p>This module has four main objectives, namely:</p> <ul style="list-style-type: none"> <li>▶ To understand the complexity of urban realities in the developing world, and how climate change is exacerbating the urban challenges of risk and vulnerability;</li> <li>▶ To examine how cities contribute to greenhouse gas emissions;</li> <li>▶ To understand urban risk and vulnerability and why it is important to assess vulnerability; and</li> <li>▶ To describe what measures cities can take to mitigate and adapt to climate change.</li> </ul>
	<p>Learning objectives</p>	<p>Upon completing this module, students should:</p> <ul style="list-style-type: none"> <li>▶ Describe how climate change can impact on cities;</li> <li>▶ Understand how urban development in general and urban sectors in particular contribute to the emission of greenhouse gases;</li> <li>▶ Define urban risk, vulnerability and resilience;</li> <li>▶ Explain how climate change mitigation and adaptation contribute to reducing urban risk and vulnerabilities;</li> <li>▶ Understand why vulnerability assessments are important in deciding what measures to take, and mention vulnerability indicators; and</li> <li>▶ Describe how cities can mitigate and adapt to climate change, and explain some of the sector-specific interventions that can be taken.</li> </ul>
	<p>Key ideas of student led learning</p>	<p>Based on the above outline of suggested content, it is proposed that the module be delivered using a combination of student-lead learning activities such as:</p>

	<ol style="list-style-type: none"> <li>1. A day during which students <i>review</i> the key literature in the reading list, and compile a <i>framework</i> of the most important issues in climate change mitigation and adaptation;</li> <li>2. A half day <i>seminar</i>, where students present reviews and discuss key readings on the urban realities in the face of climate change. People from government and industry can be invited to participate;</li> <li>3. A day's <i>lecture</i> using multimedia equipment, as well as a set of questions to encourage interaction between the lecturer and the students (parts of this lecture can be offered by experts in the field);</li> <li>4. A half day <i>studio</i>, where students examine the City of Durban case study as well as other case studies from around the world on how cities have started to adapt and mitigate to climate change; and</li> <li>5. A two-day practical <i>group project</i> in which students have to compile a risk and vulnerability assessment of a specific town or part of a city in a consultative process, and then present their findings to a panel of people from the local community, government and industry.</li> </ol>
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)	Students in the 3 <sup>rd</sup> year of a 3 or 4-year degree in urban and regional planning, architecture, geography, public management and administration, transport planners, or development planning.
Use of local case studies (to be developed by users)	This module is accompanied by a case study on the City of Durban that was specifically written for this module (see annexure C). The case studies that were developed for module 1 of this CCCA curriculum on Semarang, Indonesia may also

		<p>be consulted.</p> <p>It is also proposed that students, as part of the student-lead learning activities, gather more local case studies on risk and vulnerability assessments as well as climate change adaptation and mitigation for use in seminars and projects.</p>
	(Suggestions) of Collaboration	<p>It is suggested that the public and private sectors as well as NGOs be involved in the teaching of the module. The collaboration could take on the form of:</p> <ul style="list-style-type: none"> <li>▶ A guest lecture by organisations involved in combating climate change or mitigating its effects;</li> <li>▶ A seminar in which experts from industry or government participate in the discussions;</li> <li>▶ Organised consultation sessions with people in local government, NGOs and industry during which students can gather information for their group projects; and/or</li> <li>▶ Inviting experts from various organisations to serve on a panel to comment on student presentations of their group projects.</li> </ul> <p>Students could also exchange learning internationally by interacting on-line with students from other countries taking similar courses, or even the exact same course by the CCCA.</p>
	Means of assessment	<p>It is proposed that students participate in a group project in which they have to compile a risk and vulnerability assessment of a specific town or part of a city in a widely consultative process. Students then present their assessment, based on their understanding of the potential threats of climate variability and change, to a panel of experts who assess their presentation.</p> <p>Students are required to visit a specific village/town/part of a city in their groups. The settlement should be big enough to gather a diversity of risk and vulnerability data. Before embarking on the fieldtrip, students need to compile a risk and vulnerability assessment sheet by consulting case studies, reports and scholarly articles, as well as local strategies and plans that make mention of any such factors. The sheet should</p>

		<p>include qualitative and quantitative environmental, social, economic, physical, cultural, political, technological and industrial risk and vulnerability indicators.</p> <p>During the visit, students should, apart from making observations, consult widely with the formal and informal business community, residents, local authority, non-governmental-, faith- and community-based organisations, etc. in completing the risk and vulnerability sheet. The final product should be a risk and vulnerability assessment presentation/report on that specific village/town/part of a city.</p> <p>For more credits, the assignment can be done individually, or groups can submit a written report, or the assignment can be extended to propose climate change adaptation and mitigation option based on the risk and vulnerability assessment.</p>
<b>Annexes</b>	Annexure A: Lecture (PowerPoint presentation)	One PowerPoint presentation.
	Annexure B: Lecture notes	One pdf document.
	Annexure C: Reading list	List with prescribed and recommended reading, as well as references to internet sources.
	Annexure D: Case study	Planning for climate change adaptation in the city of Durban, South Africa.
	Annexure E: Course syllabus	Description of the modules with a course outline, objectives of the module, and means of assessment among other.