UN HABITAT
FOR A BETTER URBAN FUTURE

Annexure C – Course syllabus
Module 5: Climate Change and Urban Energy

Module 5: Climate Change and Urban Energy		
General Data	Module Number	5
	Semester weeks (duration)	As appropriate
Description	Description of module / key content	This module provides an introduction to the linkages between urban energy and climate change. It contains four parts. First, it summarizes how climate change occurs in cities and explains why 'energy' is important with respect to climate change in cities (note: this connects to the Module 1, which provides some basics about the changing climate but takes it to the urban area). Secondly, it introduces some fundamental concepts about the link between energy and Greenhouse Gas Emission in Cities, in particular: residential, commercial and government uses / facilities, power generation, water – wastewater-waste; transport Thirdly, it provides an introduction to areas of energy-related climate action: Reduce emissions from energy (electricity) production; Environmental planning and design;

		Land use planning (urban development and design); Carbon capture and storage, It thereby draws linkages to other sectors, in particular 'Transportation' (see module 5a) and housing. Fourth and finally: The lecture provides examples of energy related policy and planning approaches from cities around the world.
	Rationale for the module	Urban energy is at the core of the linkages between cities and climate change and any strategy for climate action, whether on mitigation or adaptation need to take urban energy into focus. Urban energy' is a major culprit of climate change and by far the most relevant sector for assessing GHG emissions, The combustion of fossil fuels for electricity generation, heating, cooling, cooking, transportation and industrial production is the major source of GHGs. Energy consumption is particularly high in cities; cities consume between 60 – 80 % of energy production worldwide and account for a roughly equivalent share of global CO2 emissions. But the urban energy system is also a 'victim' of climate change. Energy services and infrastructure are vulnerable to the effects of climate change. Side effects of energy consumption like its contribution to local heat islands make adaptation necessary.
	Module objective(s)	This module has two main objectives, namely: 1. To understand how cities consume energy and how different sectors contribute to energy consumption and GHG emissions 2. To examine the type and potential of actions in energy (electricity) production, environmental planning and design and land use planning for mitigating GHG emissions and facilitating adaptation
	Learning objectives	Upon completing this module, students should:

		▸ Understand the key theories and concepts that can be applied in the context of urban energy and climate change, ▸ Know how different urban activities and sectors contribute to energy consumption and GHG emissions ▸ Have a systematic understanding on the type of energy-related action for mitigation and adaptation
	Key ideas of student led learning	The basis of the module is a lecture composed of 50 annotated slides; The slides contain several concrete examples, each of which is designed as a point of departure for students discussion, exchange and follow-on individual work In addition, the module is complemented with 3 pages of key and secondary literature.
	Class hours	3 hours per week
	Student led learning hours	12 class hours in total
	Expected hours of individual study	40 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)	**Main case study**: • Urban Farming, Cuba **Other case study examples (introduced in lecture):**

		• Solar Water heaters in Cape Town • Rainwater Harvesting Delhi • Solar Settlement Freiburg Vauban • Brownfield Regeneration New York • Green Roof Programme Mexico City • Eco City Masdar
	(Suggestions) of Collaboration	
	Means of assessment	The main means of student assessment are proposed for this module: 1. *Seminar presentation* of a case study
Annexes	Annexure A: Lecture	One comprehensive PowerPoint is attached. The PowerPoint can be delivered over two lectures.
	Annexure B: Reading list	One document is attached. The list contains recommended required and supplementary reading.
	Annexure C.	Course syllabus
	Annexure D: Case studies	One long case study titled “the urban agriculture experience in Cuba” is attached as a separate document. One short case study titled “Saint Luis – the use of local building materials is attached as a separate document.