NIRMA UNIVERSITY

INSTITUTE OF ARCHITECTURE & PLANNING

NAAC ACCREDITED 'A+' GRADE

NIRMA UNIVERSITY

Institute of Architecture and Planning

PhD Program - Part Time

Course Curriculum

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Course Code	**PhD PT/04**
Course Title	**Cities and Nature Based Solutions**

Course Learning Outcomes (CLO):

At the end of the course, students will be able to -

1. Learn the basics of Nature Based Solutions and understand the basic concepts and principles

2. Comprehend the role of NBS in urban development and climate change

3. Apply knowledge on NBS to Urban Design Concepts

Syllabus: **Teaching hours: 45**

Unit 1: Introduction to Nature Based Solutions

Introduction to the theory, methodology and application of nature-based solutions for cities and their governance. Issues of urban & peri-urban landscape quality that need to be addressed through project planning and transition management.

Unit 2: Data and Parameters for Nature-Based Infrastructure

Defining data and parameters based on cultural tradition, philosophical richness, societal challenges, governance processes, environmental justice and indigenous knowledge and using them for economic recovery and sustainable living.

Unit 3: Nature-based solutions to mitigate climate change through adaptation in urban areas

NBS designs to become a carbon sink and shifting ecosystems from being a source of emissions to a net sink for storing carbon.

Unit 4: International Best Practices applying urban Nature Based Solutions

Study international best practices of applying urban nature-based solutions and development of smart cities; green corridors, green-blue infrastructure; challenges in physical planning

Unit 5: NBS creating Sustainable Urban Form and sense of place

Need for sustainable cities, Sense of place; open spaces and green spaces

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Essential Readings:

- Amend, T. (2019). Governance for ecosystem-based adaptation: Understanding the diversity of actors & quality of arrangements. Deutsche Gesellschaft für Internationale Zusammenarbeit. https://www.adaptationcommunity.net/wp-content/uploads/2019/09/giz2019-en-ebagovernance-study-low-res.pdf

- Dazé, A., Ambrose, K., & Ehrhart, C. (2009). Climate vulnerability and capacity analysis handbook. Care International. https://care.org/wp-content/uploads/2020/05/CC-2009-CARE_CVCAHandbook.pdf

- Girot, P., Ehrhart, C., & Oglethorpe, J. (n.d.). Integrating community and ecosystem-based approaches in climate change adaptation responses. https://d2ouvy59p0dg6k.cloudfront.net/downloads/integrating_community_and_ecosystem_based_approaches_in_climate_change_ adaptation_res.pdf

- Conservation International. (2015). Tool for integrating ecosystems into climate change adaptation planning: Linking biodiversity and ecosystems into the National Adaptation Planning (NAP) process. https://www4.unfccc.int/sites/NAPC/Documents%20NAP/Supplements/Ecosystems_Tool_NAPs.pdf

- Chiesura, A. (2004). The role of urban parks for the sustainable city. *Landscape and Urban Planning, 68*, 129-138.

- Dave, S. (2011). Neighbourhood Density and Social Sustainability in Cities of Developing Countries. *Sustainable Development, 19*, 189-205.

- Jenks, M. (2000). *Achieving sustainable urban form*: Taylor & Francis.

- Global Sustainable Development Report 2015

Suggested Readings:

- Burton, E., Jenks, M., & Williams, K. (2003). The compact city: a sustainable urban form? : Routledge.

- Burgess, R., & Jenks, M. (2002). Compact cities: sustainable urban forms for developing countries: Routledge.

- TCPO. (2015). Urban and Regional Development Plans Formulation and Implementation Guidelines. Ministry of Urban Development, GOI.

- UN-Habitat. (2016). Sustainable Development Goal 11 Monitoring Framework:

- Raman, S. (2010). Designing a Liveable Compact City: Physical Forms of City and Social Life in Urban Neighbourhoods. Built Environment *(1978-), 36*(1), 63-80.