

Course title: Urban Disasters and Climate Risk Reduction and Management				
Course code: MEU 162		No. of credits: 2	L-T-P: 22-6-0	Learning hours: 28
Pre-requisite course code and title (if any): NA				
Department: Energy and Environment				
Course coordinator:			Course instructor: Dr Bhawna Bali	
Contact details: bhawna.bali@terisas.ac.in				
Course type: Elective			Course offered in: Semester 2	
Course description:				
<p>The world has been witnessing increased incidences of disasters and cities that house huge infrastructure and population are vulnerable to disaster risks. This course would focus on risk reduction and management of disaster and extreme climate events in cities. The course would also address the slow onset climate impacts on cities and its systems. The course covers the critical aspect of vulnerability and risk assessment in urban areas and addresses in detail key components relating to disaster and climate risk reduction and management. The existing situation of policy, institutional and funding mechanisms of disaster management in cities in India is examined.</p>				
Course objectives:				
<ul style="list-style-type: none"> To create knowledge on urban disaster risk reduction and climate resilience. To provide students with an understanding of vulnerability and risk assessment tools and techniques. To equip students with knowledge on key components relating to disaster risk reduction and innovative management approaches being adopted by cities. To impart knowledge on policy, institutional and funding mechanisms for disaster management in India. 				
Course contents				
Module	Topic	L	T¹	P
1	Module 1: Concepts and understanding on disasters and climate impacts a) Slow onset climate impacts b) Extreme events and disaster	4		
2	Module 2: Vulnerability and risk assessment in urban areas: Includes risk assessment and vulnerability assessments relating to the slow onset climate risks and disaster/extreme events risks	4	2	
3	Module 3: Disaster risk reduction and management a) Disaster preparedness and response mechanisms b) Urban cyclone and flood risk reduction and management c) Urban earthquake risk reduction and management Design for climate resilience and sustainability a) Climate risk mitigation and adaptation b) Risk resilience housing and infrastructure planning in cities	8	4	
4	Module 4: Disaster management in India: Policy, institutional and funding mechanisms	6		
	Total	22	6	0
Evaluation criteria:				
Assignment : 50%				
Test 3: 50%				
Learning outcomes:				
On successful completion of this course, the students would be equipped with knowledge on disaster risk reduction and climate resilience in cities. The students shall also be able to apply the tools and techniques used for vulnerability and risk assessment.				

¹ An exercise to be introduced to the students where they will work on the following case studies

- Floods in Jammu
- Cyclone in Vizag
- Earthquake in Gujarat

Pedagogical approach:

The course will be delivered through a mix of classroom lectures and discussion sessions and exposure to national and international case studies on the theme.

Materials:**Essential readings:**

1. National Policy on Disaster Management 2009, <http://ndma.gov.in/images/guidelines/national-dm-policy2009.pdf>
2. National Disaster Management Guidelines on Earthquake, Cyclone and Urban Flooding <http://ndma.gov.in/en/ndma-guidelines.html>
3. World Bank, Cities and Flooding: A guide to Integrated Urban Flood Risk Management for the 21st Century, 2011
4. Climate change and cities: first assessment report of the Urban Climate Change Research Network (ARC3) (2011), Cambridge University Press, Cambridge and New York. Eds Rosenzweig C., Solecki, W. D., Hammer, S. A. And Mehrotra, S. P238
5. UNHABITAT. 2011. Global Report on Human Settlements-Cities and Climate Change Policy Directions. Earthscan.
6. The World Bank. 2010. Climate Risks and Adaptation in Asian Coastal Megacities. A Synthesis Report
7. NIDM and UNDP. 2014. National Disaster Management: Toolkit for Urban Planning
8. NIDM and UNDP. 2014.. Mainstreaming DRR in Development Planning

Recommended Readings

1. 2011. Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners. UNDP-UNEP Poverty-Environment Initiative. www.unpei.org.
2. 2011. Addressing Grand Challenges for Global Sustainability: Monitoring, Forecasting, and Governance of Urban Systems. UGEC viewpoints. No.6 . www.ugec.org
3. TERI. 2012. Mainstreaming Climate Resilience in Urban Areas – A case of Gorakhpur City. TERI: New Delhi. (http://accrn.org/sites/default/files/documents/Gorakhpur%20report_Synthesis.pdf)
4. TERI. 2013. Climate Proofing Guwahati, Assam. City Resilience Strategy and Mainstreaming Plan (Synthesis Report). TERI: New Delhi. (http://accrn.org/sites/default/files/documents/TERI_Guwahati%20Synthesis%20Report.pdf)
5. Sharma D et al. 2013. Urban Climate Resilience: A review of the methodologies adopted under the ACCCRN initiative in Indian cities. Asian Cities Climate Resilience Working Paper Series 5. IIED: London (<http://pubs.iied.org/10650IIED.html?k=asian%20cities%20climate%20resilience%20working%20paper>)
6. Documentary Film - "Tales of Gorakhpur" (<https://www.youtube.com/watch?v=93P49Xy4pM8&list=PLJRwiYPH5RkTfzhCjYcSwJPCW0BLIs114>)
7. Webinar on Climate Resilient Cities (<https://www.youtube.com/watch?v=c1OiZbQI9Bs>)
8. TERI. 2014. Climate Resilient infrastructure services - Case study brief: Panaji (<http://www.teriin.org/eventdocs/files/Case-Study-Panaji.pdf>)
9. TERI. 2014. Climate Resilient infrastructure services - Case study brief: Visakhapatnam (<http://www.teriin.org/eventdocs/files/Case-Study-Vishakhapatnam.pdf>)
10. Journal of Disaster & Development, National Institute of Disaster Management, India.
11. Policy brief on Climate Proofing Indian Cities (<http://www.teriin.org/policybrief/docs/Urban.pdf>)
12. Policy brief on Methodologies for urban climate resilience (<http://pubs.iied.org/pdfs/10655IIED.pdf>)
13. TERI. 2014. Working Paper on Planning Climate Resilient Coastal Cities: Learnings from Panaji and Visakhapatnam, India. TERI: New Delhi (<http://www.teriin.org/eventdocs/files/Working-Paper-climate-resilient.pdf>)
14. Divya Sharma, Raina Singh & Rozita Singh (2014): Building urban climate resilience: learning from the ACCCRN experience in India, International Journal of Urban Sustainable Development, DOI:10.1080/19463138.2014.937720

Web links

<http://www.accrn.org/resources>

<http://www.unisdr.org/we/campaign/cities>

<http://www.unisdr.org/we/inform/publications>

<p>http://www.unisdr.org/we/coordinate/hfa http://www.indiaenvironmentportal.org.in/ http://mirror.unhabitat.org/pmss/ http://www.100resilientcities.org/ http://cdkn.org/resources/ http://www.apan-gan.net/ http://resilient-cities.iclei.org/</p>
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<p>Additional information (if any):NA</p>
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<p>Student responsibilities:</p>

<p>Attendance, feedback, discipline: as per university rules.</p>

Course reviewers:

1. Dr G K Bhat; Director; TARU Leading Edge
2. Dr Anil K Gupta; Associate Professor; National Institute of Disaster Management, Government of India, Ministry of Home Affairs