

NIRMA UNIVERSITY

Institute of Architecture and Planning

Bachelor of Architecture

Semester-III

L	W	S	C
1	2	-	2

Course Code	2AR366
Course Title	Environmental Science & Services – I

Course Learning Outcomes (CLO):

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

- Explain the role and importance of climate as one of the major determinant of built form.
- Identify climate as modifying factor of built environment.
- Comprehend various climate-controlling devices.

Syllabus: 15 weeks (3 hours/week)

Total Teaching hours: 45 Hr

Unit No.	Syllabus Topic	Sub Topic	Teaching Hours
1	Introduction to climatology	Elements of climate Solar Geometry its effect & importance Built environment, conditions, impact and issues of climatic balance in traditional/ vernacular and contemporary built environments. Study of Passive Environmental Control Mechanisms Tropics and its Climatic zones Macro and Micro Climate (site climate). Implications of climatic forces in nature of spaces and forms, patterns of organization, & elements of built form at individual building & collective form.	30 hours
2	Thermal Comfort	Understanding of human body's comfort level. Thermal comfort indices Defining Comfort, Comfort zone & scale. Different way of heat gain in the building. Behavior & properties of material/s	15 hours

		Psychometrics study and analysis. Studies through built environment, case analysis, theory and its application, models and testing.	
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L= Lecture, W= Workshop, S= Studio, C= Credit

Suggested Readings:

1. Ahluwalia, V K. Environmental Science. New Delhi :The Energy and resources Institute, 2015.Print.
2. Koenigsberger, Ingersoll, Mayhew, Szokolay, Manual of Tropical Housing & Building, Hyderabad:Universities Press, March 2010
3. Krishan A, Baker, Climate Responsive Architecture: Tata McGraw-Hill Education (Asia) Co.& China Architecture &Building Press, 2004/2005
4. Kukreja. C P, Tropical Architecture: Tata McGraw-Hill Publishing Company, 1978
5. Shah. M G, Padki. S Y, Kale, C M, Building Drawing: with an integrated approach to built environment, New Delhi: Tata McGraw-Hill Education, 2002
6. Dekay, Mark, Sun, Wind, And Light: Architectural Design Strategies. USA: John and Wiley Sons, Inc., 2014
7. Olgy,Victor. Design With Climate – Bio-Climatic Approach to Architectural Regionalism. New Jersey: Princeton University Press,1963
8. Tipnis, Aishwarya.Vernacular Traditions- Contemporary Architecture. New Delhi: The Energy and resources Institute, 2012, Print.
9. Nayak,J K. Hazra, R . Prajapati, J. Manual On Solar Passive Architecture. New Delhi: Solar Energy Centre, MNES, Gov. Of India, 1999
10. Galloe, Salam and Sayigh A.M.M. Architecture, Comfort and Energy, U.K : Elsivier Science Ltd., Oxford, 1998
11. B. Givoni. Passive and Low Energy Cooling of building, New York: Van Nortrand Reinhold,1994
12. B. Givoni. Man,Climate and Architecture, Architectural Sciences Series – applied, London: Science Publishers Ltd.,1981
13. Martin Evans , Housing Climate and Comfort, London : Architectural Press,1980
14. Passivhaus Designer's Manual: A Technical Guide to Low and Zero Energy Buildings: Routledge Taylor & Francis Ltd.
15. Oliver, Paul. Built to meet needs: cultural issues in vernacular architecture: Burlington, Elsevier. 2006
16. Majmudar, Mili. Energy Efficient Building in India. New Delhi: The Energy and resources Institute.
17. Bansal, K N.Mathur, Jyotirmay & Rndall,McMullen.Energy
18. Efficient Window Book.
19. Laureano.Water conservation techniques in traditional human settlements. Ghaziabad: Copal, 2013
20. Chawla, Shashi .Textbook of Environmental Studies .New Delhi:Tata McGraw Hill Education Private Limited,2013
21. Rajagopalan, R. .Environmental Studies: From Crisis to Cure .New Delhi:Oxford University Press,2011
22. Desai, Madhavi .Traditional Architecture: House From of the Islamic Community of Bohras in Gujarat .Maharashtra:National Institute of Advanced Stuides in Architecture (NIASA), COA,2007