

NIRMA UNIVERSITY

Institute of Architecture and Planning

Bachelor of Architecture

Semester-IV

L	W	S	C
1	2	-	2

Course Code	2AR466
Course Title	Environmental Science & Services – II

Course Learning Outcomes (CLO):

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

- Explain parameters of water supply and drainage in building design
- Illustrate the theory of Light and acoustics in Architectural Design.
- Apply of Light and acoustics in building design

Syllabus: 15 weeks (3 hours/week)

Total Teaching hours: 45 Hrs.

Unit No.	Syllabus Topic	Sub Topic	Teaching Hours
1	Water supply, Plumbing & Drainage	<ul style="list-style-type: none">• Water supply, Plumbing Water related supply systems Potable & Usable water's supply-storage and sewage, Rainwater's harvesting & Clearance system. Water consumption for various activities & designing the plumbing system.• Drainage General principles of drainage, manholes, grease chambers Principles of design of drainage lines, drainage layouts Refuse, different forms of refuse garbage, sullage, toilet waste and storm water collection and disposal systems. Drainage in non-municipal areas – soak wells, septic tanks.	15 hours
2	Lighting	<ul style="list-style-type: none">• Sunlight, its principles, radiation Spectrum	

	aspects of a building	<ul style="list-style-type: none"> • Vision, Colors and Visual Comfort • Day-Lighting in buildings, its sources, lighting criteria, the visual field, it's Behavior-transmission, reflection • Day lighting factor, prediction methods • Physics of light, Photometry • Artificial lighting, lighting levels for various activities 	21 hours
3	Sound & Acoustics	<ul style="list-style-type: none"> • Sound waves, its nature, power, transmission& spread pattern. Intensity of sound-output level of various activities hearing mechanics-ear's sensitivity. • Noise control and protection methods • Acoustics methods and material, designing for desired hearing. • Sound insulation, introduction to reverberation • Case study and demonstration in building design with suitable conditions. 	9 hours

L= Lecture, W= Workshop, S= Studio, C= Credit

References:

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3. Egan, M Paul. Architectural Acoustics : J. Ross Publishing Classics, Jan 2007
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8. Livingston, Jason.Designing with light : the art, science, and practice of architectural lighting design.Canada:John and Wiley Sons, Inc.,2014
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11. Moore, Fuller. Concepts and practice of architectural daylighting. New Delhi, New York: Van Nostrand Reinhold 1991
12. Steane, Mary Ann. . Architecture of light : recent approaches to designing with natural light Book.London :Routledge, 2011
13. Zaretsky, Michael. Precedents in zero-energy design: architecture and passive design in the 2007 solar decathlon. London & New York :Routledge ,2010
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15. Tregenza, Peter; Loe, David. Design of lighting Book. Oxon: Taylor & Francis ,2009 Edwards, Brain Ed. Green buildings pay Book.London: Spon Press, 2003
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18. Construction Technology - BY B.C. Punamiya
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