NATIONAL INSTITUTE OF TECHNOLOGY, TIRUCHIRAPPALLI

Course Title	**Energy Efficient Landscape Design**		
Course Code	**AR 708**	**Credits**	**3**
Department	**Architecture**	**Faculty**	**Dr D.Kannamma**
Pre-requisites Course Code	-		
Course Coordinator(s)	NA		
Course Teacher / Tutor E-mail	**kanama@nitt.edu**	**Tel. No.**	**0431 – 250 3566**
Course Type	☑ **Core course**	☒ **Elective course**	

COURSE OVERVIEW

Energy and landscape are critical constituents in the physical development of built environment. Energy conservation and landscape quality have been widely acknowledged as important parameters in design of building, surroundings and built-up Areas. It is essential to understand its contribution towards energy and environment to enable the designer to utilize its potential effectively in an integrated design approach and thought process with due consideration to climate change.

COURSE OBJECTIVES

Using principles and practices that are environmentally friendly to generate significant changes in climate for the users. To analyse the outcome of applying landscape towards different scales of energy efficiency.

COURSE OUTCOMES (CO)

Course Outcomes	Program Outcome (PO)
1. To enable the understanding of components of Landscape. 2. Introducing the relationship between climatic factors and landscape elements. 3. To recognize the various applications of landscape towards energy efficiency. 4. The course provides an exposure on various tools used. 5. To gain knowledge through case studies and to probe for further research in the applications of energy efficient landscape.	

COURSE TEACHING AND LEARNING ACTIVITIES

No	Week	Topic	Mode of Delivery
1	1 – 2	The climatic impact of natural elements. Site analysis processes & techniques. Integration of building & site for energy conservation.	Lecture
		Thermal properties of commonly used building materials for outdoor spaces.	Lecture
		Site selection, siting & orientation for energy conservation.	Lecture
3	3 - 4	Site planning, Site design for energy conservation.	Lecture
		Selection & use of landscape elements for microclimatic modification, Radiation modification, Wind modification, Temperature, humidity & precipitation modification.	Lecture
4	5 - 8	Water conserving landscape design.	Lecture
		Conservation of embodied energy thro landscape design.	Lecture
5	9 - 10	Radiation Modification. Wind Modification	Lecture
		Human thermal comfort in outdoor spaces.	Lecture
6	11 - 12	Eco sensitive, sustainable landscapes.	Lecture
		Atmospheric Systems. Microclimatology and Energy Budgets.	Lecture
7	13 – 14	Temperature, Humidity, and Precipitation Modification.	Lecture
		Integrating Microclimate Information in Design.	Lecture
		Urban Heat Island, Types of Urban Heat Island, Thermodynamics of the Urban Heat Island, Urban Planning Contribute to Urban Heat Island, Identifying	Lecture

		methods of Urban Heat Island, Effects of Urban Heat Island, Mitigation measures to restrict Heat Island.	

COURSE ASSESSMENT METHODS

No	Mode of Assessment	Date / Week / Month	Duration	%
1	Assignment - 1	Week 3	Two Weeks	25
2	Assignment - 2	Week 8	Two Weeks	25
3	Assignment - 3	Week 10	One Hour	20
3	Compensation Assessment	As per academic calendar	One Hour	20
4	Final Assessment	As per academic calendar	3 Hours	30

ESSENTIAL READINGS :

1. Gray, O., Robinetle, "Landscape Planning for Energy Conservation", Van Nostrand Reinhold, New York, 1984.
2. Geiger, R. "The Climate near the Ground" Harvard University Press, Cambridege, Massachusetts, 1965.
3. McPherson, E. G. "Energy Conserving site Design" American Society of Landscape Architects, 1984.
4. MEBsh, W. M., "Landscape Planning Environmental Applications", John Wiley & Sons Inc., New York, 1991.
5. Oke, T. R., "Boundary Layer Climates" 2nd edition Melthuen & Co. Ltd., London.
6. Robers D. Brown, Terry J. Gillespie, "Microclimatic Landscape Design", John Wiley & Sons, Inc., New York.

COURSE EXIT SURVEY

1. Feedback survey about course content and suggestions for any improvement / modification – online.
2. Assessment of the knowledge the students gained through this subject – online.
3. Feedback regarding the teaching – learning process – online.

COURSE POLICY

1. A minimum of 30% should be scored in the final assessment (for all courses) for a pass. The passing minimum for all the courses shall be the maximum of 35% or Class Average/2.
2. Students with less than 75% of attendance should undertake mandatory classes and with less than 50% of attendance must redo the course.
3. Plagiarism or any kind of academic dishonesty will not be entertained.
4. Students are to follow the given schedule for each project and submissions are to be made on time.
5. Submission dates are normally decided in consultation with students. Late submissions unless for valid genuine reasons will get 40 % reduction in marks.

ATTENDANCE POLICY

1. At least 75% attendance in each course is mandatory.
2. A maximum of 10% shall be allowed under On Duty (OD) category.
3. Students with less than 65% of attendance shall be prevented from writing the final assessment and shall be awarded 'V' grade.

ACADEMIC DISHONESTY & PLAGIARISM

1. Possessing a mobile phone, carrying bits of paper, talking to other students, copying from others during an assessment will be treated as punishable dishonesty.
2. Zero mark to be awarded for the offenders. For copying from another student, both students get the same penalty of zero mark.
3. The departmental disciplinary committee including the course faculty member, PAC chairperson and the HoD, as members shall verify the facts of the malpractice and award the punishment if the student is found guilty. The report shall be submitted to the Academic office.
4. The above policy against academic dishonesty shall be applicable for all the programmes.

ADDITIONAL COURSE INFORMATION

The faculty member is available for consultation during working hours on all working days. The students can also e-mail their queries to **kanama@nitt.edu**.

FOR SENATE'S CONSIDERATION

Course Faculty (Dr. D. Kannamma) **CC-Chairperson** (Saurabh Kuthiy) **HOD** HEAD

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