



## School of Planning and Architecture: Vijayawada

(An institution of National Importance under the Ministry of Education, Govt. of India)

Survey No.4/4, ITI Road, Vijayawada-520008, Andhra Pradesh, India

### Department of Architecture

<b>Course:</b> MSAR213 - Eco sensitive accessories and Green materials <b>Instructors:</b> Dr. Iyer Vijayalaxmi Kasinath <b>Contact Periods/ week:</b> 03 periods.(55 min each) <b>Time Table:</b> As per Time-Table <b>Attendance:</b> Min 75%	<b>Class:</b> II M. Arch (Sustainable Architecture) III Sem A.Y. 2023- 24 (ODD SEM) <b>Internal Assessment:</b> 50 <b>External Theory Exam:</b> 50 <b>Total Marks:</b> 100 <b>Credits:</b> 3
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**Total:** 48 Periods Min. Passing Marks: 40% each in Internal & External Assessment and 40% in Aggregate

#### Objective:

To create awareness, exposure and educate the students with green building materials and products used in the industries as on date.

#### Outcome:

Students shall explore and learn various eco-sensitive accessories and green building materials from the market and also learn their applicability in real-time. Students shall understand and assess the LCA and Carbon Emissions of Building materials

### LECTURE PLAN

WEEK	TOPIC OF CLASS LECTURE & DISCUSSION	DURATION / ASSIGNMENTS / REMARKS
1	<b>Introduction to Sustainable Design</b> <ul style="list-style-type: none"> <li>● Discuss the concept of sustainable design and its importance in creating high-performance "green" buildings.</li> <li>● Explore the challenges faced by designers in finding environmentally friendly materials and construction processes.</li> <li>● Introduce the concepts of adaptability, disassembly, reuse, reduced waste, and energy self-sufficiency in building design. Introduction to Instruments in the Climatology Lab</li> </ul>	<b>2 Lecture + 1 tutorial</b>
2	<ul style="list-style-type: none"> <li>● DESIGNING FOR ADAPTABILITY</li> <li>● DESIGN FOR DECONSTRUCTION</li> </ul>	<b>2 Lecture + 1 tutorial</b>
3	<ul style="list-style-type: none"> <li>● DESIGN FOR REUSE (UPCYCLING)</li> <li>● Introduction of Assignment - 1</li> </ul>	<b>2 Lecture + 1 tutorial</b>
4	<ul style="list-style-type: none"> <li>● Introduce sustainable product certification methods and their role in evaluating materials</li> <li>● Book Review</li> </ul>	<b>2 Lecture + 1 tutorial</b>
5	<ul style="list-style-type: none"> <li>● INTRODUCTION TO LIFE CYCLE ASSESSMENT, Mathematical calculation of Carbon Emissions</li> <li>● Variants of LCA</li> <li>● Assessment 1 Submission</li> </ul>	<b>2 Lecture + 1 tutorial</b>
6, 7	Field Study Week	
8	<ul style="list-style-type: none"> <li>● Steps of the LCA Process</li> <li>● Environmental Impact Categories</li> </ul>	<b>2 Lecture + 1 tutorial</b>

9	<ul style="list-style-type: none"> <li>● Life Cycle Impact Assessment (LCIA) Method</li> <li>● Life Cycle Inventory (LCI) Database</li> <li>● Life Cycle Management (LCM)</li> <li>● Life Cycle Costing (LCC)</li> <li>● Mid Sem Assessment Submission</li> </ul>	<b>2 Lecture + 1 tutorial</b>
10 and 11	<ul style="list-style-type: none"> <li>● Carbon Accounting , Mathematical Calculations and Introduction to Software (OneClick LCA, Athena, EDGE)</li> <li>● Life Cycle Assessment in the Building Industry</li> </ul>	<b>2 Lecture + 1 tutorial</b>
12	<ul style="list-style-type: none"> <li>● LCA and the Design Process</li> <li>● Introduction of Assignment - 3</li> </ul>	<b>2 Lecture + 1 tutorial</b>
13	<ul style="list-style-type: none"> <li>● Eco-Labeling and LCA assessment tools</li> <li>● ATHENA® Impact Estimator</li> <li>● One Click LCA</li> </ul>	<b>2 Lecture + 1 tutorial</b>
14	<ul style="list-style-type: none"> <li>● Market Analysis of Sustainable Materials</li> </ul>	<b>2 Lecture + 1 tutorial</b>
15 and 16	<ul style="list-style-type: none"> <li>● Demonstration of use of EcoSensitive Accessories in the Design Project</li> <li>● Submission fo Assessment 3</li> </ul>	<b>2 Lecture + 1 tutorial</b>
<b>S.No</b>	<b>Stages of Evaluation</b>	<b>Weightage</b>
1	First stage: Internal Assessment –1	10
2	Second stage: Mid-semester Examination	20
3	Third stage: Internal Assessment –2	20
	TOTAL	50

### References

1. Mohan S., Vijayalaxmi J.,2024, *Embodied and Operational Carbon in Buildings- Strategies to Decarbonize*, Springer Publications
2. Ross Spiegel.G, *Green Building Materials A Guide to Product Selection and Specification*, 3rd Edition by, John Wiley & Sons, 2010
3. Jagadish. K.S. *Alternative Building Materials and Technologies*, New age International Pvt Ltd Publishers, 2008
4. Traci Rose Rider, Stacy Glass, Jessica McNaughton, *Understanding Green Building Materials*, W.W.Norton and Company, 2011
5. Johan van Lengen, *The Barefoot Architect: A Handbook for Green Building*, Shelter Pub, 2008

### **3 Days Workshop on Designing for Greater Efficiency (DfGE) Course by International Finance Corporation on EDGE**

The workshop aims to equips students with the knowledge to design resource-efficient structures contributing to the building sector's transition to a low-carbon future. They can develop the expertise to design buildings with a reduced environmental impact