COURSE TITLE : COST EFFECTIVE CONSTRUCTION & GREEN BUILDING
COURSE CODE : 5016
COURSE CATEGORY : E
PERIODS/WEEK : 4
PERIODS/SEMESTER : 52
CREDITS : 4

TIME SCHEDULE

MODULE	TOPIC	PERIODS
I	Introduction to cost effective construction and green buildings	10
II	Technologies & Methods in Construction	13
III	Global Warming & the relevance of green buildings	16
IV	Green Building Rating Systems, Green Design	13
TOTAL		**52**

OBJECTIVES:

Upon completion of the course the student should be able to:

MODULE I

1.1.0 Understand the Definition, Concept & Objectives of the terms cost effective construction and green building

1.1.1 Define green building
1.1.2 Explain the concept of green buildings
1.1.3 State the importance of cost effective construction
1.1.4 Evaluate the objectives of green buildings

1.2.0 Apply cost effective techniques in construction

1.2.1 List the Materials used
1.2.2 Study the availability of Materials
1.2.3 Comprehend the importance of Recycling used Materials
1.2.4 Identify Environmental Issues

MODULE II

2.1.0 Apply cost effective Technologies and Methods in Construction

2.1.1 Identify alternatives for Wall Construction.
2.1.2 Know the application of Ferro cement & Ferro concrete Structures
2.1.3 Select alternative Roofing System
2.1.4 Explain how Pre Engineered Construction can be cost effective

2.2.0 Know Agencies involved and their contributions

MODULE III

3.1.0 Understand the Problems due to Global Warming

3.1.1 Explain the Concept of Carbon Foot Print

3.2.0 State the Concept of Green Building

3.2.1 Justify the necessity of Green Buildings

3.2.2 List the major Energy Efficiency areas for Building – Green Materials

3.2.3 Identify Embodied Energy of Materials

3.2.4 Compare Initial Cost of green buildings V/s Conventional Building

MODULE IV

4.1.1 Understand Green Buildings

4.1.2 Identify Green Building Rating Systems- BREEAM, LEED, GREEN STAR, GRIHA

4.1.3 Apply principles of sustainable development in Building Design,

4.1.4 List Sustainably managed Materials

4.1.6 Know the concept of Integrated Life cycle design of Materials and Structures

CONTENT DETAILS

MODULE– I

Introduction to the concept of cost effective construction -Uses of different types of materials and their availability -Stone and Laterite blocks- Burned Bricks- Concrete Blocks- Stabilized Mud Blocks- Lime-Poszolana Cement- Gypsum Board- Light Weight Beams- Fiber Reinforced Cement Components- Fiber Reinforced Polymer Composite- Bamboo- Availability of different materials-Recycling of building materials – Brick- Concrete- Steel- Plastics - Environmental issues related to quarrying of building materials.

MODULE– II

Environment friendly and cost effective Building Technologies - Different substitute for wall construction Flemish Bond - Rat Trap Bond – Arches – Panels - Cavity Wall - Ferro Cement and Ferro Concrete constructions – different pre cast members using these materials - Wall and Roof Panels – Beams – columns - Door and Window frames - Water tanks - Septic Tanks - Alternate roofing systems - Filler Slab - Composite Beam and Panel Roof -Pre-engineered and ready to use building elements - wood products - steel and plastic - Contributions of agencies - Costford - Nirmithi Kendra - Habitat

MODULE– III

Global Warming – Definition - Causes and Effects - Contribution of Buildings towards Global Warming - Carbon Footprint – Global Efforts to reduce carbon Emissions
Green Buildings – Definition - Features- Necessity – Environmental benefit - Economical benefits - Health and Social benefits - Major Energy efficient areas for buildings – Embodied Energy in Materials- Green Materials - Comparison of Initial cost of Green V/s Conventional Building - Life cycle cost of Buildings.

MODULE– IV

Green Building rating Systems- BREEAM – LEED - GREEN STAR -GRIHA (Green Rating for Integrated Habitat Assessment) for new buildings – Purpose - Key highlights - Point System with Differential weight age.
Green Design – Definition - Principles of sustainable development in Building Design - Characteristics of Sustainable Buildings – Sustainably managed Materials - Integrated Lifecycle design of Materials and Structures (Concepts only)

REFERENCE BOOKS

1. Alternative Building Materials and Technologies – By K S Jagadeesh, B V Venkatta Rama Reddy & K S Nanjunda Rao – New Age International Publishers
2. Integrated Life Cycle Design of Structures – By Asko Sarja – SPON Press
3. Non conventional Energy Resources – By D S Chauhan and S K Sreevasthava – New Age International Publishers
4. Buildings How to Reduce Cost – Laurie Backer - Cost Ford