COURSET TITLE : COST EFFECTIVE CONSTRUCTION & GREEN BUILDING
COURSE CODE : 5002
COURSE CATEGORY : E
PERIODS/WEEK : 4
PERIODS/SEMESTER : 72
CREDITS : 4

TIME SCHEDULE

MODULE	TOPIC	PERIODS
I	Introduction, Definition , Materials	18
II	Technologies in Construction, Methods in Construction	18
III	Global Warming, Green Building, Green Materials, Life cycle Cost of Building	18
IV	Green Building Rating Systems, Green Design	18
	TOTAL	**72**

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

1.2.0 Understand the Materials Used.

1.2.1 Understand the availability of Materials
1.2.2 Understand the Recycling of Used Materials
1.2.3 Understand the Environmental Issues
1.2.4 Understand the Cost Effective Techniques

MODULE II

2.0.0 To Understand the Technologies and Methods in Construction

2.1.0 Understand the alternatives for Wall Construction.
2.1.1 Understand Ferro cement & Ferro concrete Structures
2.1.2 Understand Alternative Roofing System
2.2.0 Understand Pre Engineered Construction
2.3.0 To know Agencies Involved and their contributions

MODULE III

3.0.0. To Understand the Problem due to Global Warming

3.1.1 To Understand the Concept of Carbon Foot Print
3.2.0 To Understand the Concept of Green Building
3.2.1 To understand the necessity of Green Buildings
3.2.2 To understand the major Energy Efficiency areas for Building – Green Materials
3.2.3 Embodied Energy of Materials
3.2.4 Comparison of Initial Cost of green buildings V/s Conventional Building

MODULE IV

4.0.0 Green Buildings

4.1.0 To know Green Building Rating Systems- BREEAM, LEED, GREEN STAR
4.2.0 To know GRIHA
4.3.0 To know Green Design, Principles of sustainable development in Building Design, Sustainably managed Materials
4.4.0To know the concept of Integrated Life cycle deign of Materials and Structures

COURSE CONTENT

MODULE– I

INRODUCTION: 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 materials such as Brick, Concrete, Steel, Plastics etc.
Environmental issues related to quarrying of building materials.

MODULE– II

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