

B.Tech III Year I Semester

JNTUA COLLEGE OF ENGINEERING (AUTONOMOUS) PULIVENDULA

19ACE55b-GREEN BUILDINGS

(Open Elective-I)

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Course Objectives: The objectives of the course are to make the students learn about

- Learn the principles of planning and orientation of green buildings.
- Acquire knowledge on various aspects of green buildings

UNIT – I:

Introduction: Concept of Green Building, Need for Green Building, Benefits of Green Buildings, Green Building Materials and Equipment in India, Key Requisites for Constructing a Green Building, Important Sustainable features for Green Building,

Learning Outcomes:

At the end of this unit, the student will be able to

- Understand need for green building
- Obtain knowledge on features of green building

UNIT – II:

Green Building Concepts and Practices: Indian Green Building Council, Green Building Movement in India, Benefits Experienced in Green Buildings, Launch of Green Building Rating Systems, Residential Sector, Market Transformation;

Green Building Opportunities And Benefits: Opportunities of Green Building, Green Building Features, Material and Resources, Water Efficiency, Optimum Energy Efficiency, Typical Energy Saving Approach in Buildings, LEED India Rating System and Energy Efficiency,

Learning Outcomes:

At the end of this unit, the student will be able to

- Knowledge on benefits and energy efficiency of green buildings
- Knowledge on practices and concepts of green buildings

UNIT – III:

Green Building Design Introduction, Reduction in Energy Demand, Onsite Sources and Sinks, Maximise System Efficiency, Steps to Reduce Energy Demand and Use Onsite Sources and Sinks, Use of Renewable Energy Sources. Ecofriendly captive power generation for factory, Building requirement,

Learning Outcomes:

At the end of this unit, the student will be able to

- Learn steps in design of green buildings
- Learn how renewable energy resources are used in green buildings

UNIT – IV:

Air Conditioning Introduction, CII Godrej Green business centre, Design philosophy, Design interventions, Energy modeling, HVAC System design, Chiller selection, pump selection, Selection of cooling towers, Selection of air handling units, Precooling of fresh air, Interior lighting system, Key feature of the building. Eco- friendly captive power generation for factory, Building requirement.

Learning Outcomes:

At the end of this unit, the student will be able to

- Learn designing of air conditioning in green building

UNIT – V:

Material Conservation Handling of non process waste, waste reduction during construction, materials with recycled content, local materials, material reuse, certified wood, Rapidly renewable building materials and furniture; Indoor Environment Quality And Occupational Health: Air conditioning, Indoor air quality, Sick building syndrome, Tobacco smoke control, Minimum fresh air requirements avoid use of asbestos in the building, improved fresh air ventilation, Measure of IAQ, Reasons for poor IAQ, Measures to achieve Acceptable IAQ levels

Learning Outcomes:

At the end of this unit, the student will be able to

- Suggest materials and technologies to improve energy efficiency of building.

Text Books:

1. Handbook on Green Practices published by Indian Society of Heating Refrigerating and Air conditioning Engineers,2009.
2. Green Building Hand Book by Tomwoolley and Samkimings,2009.

Reference Books:

1. Complete Guide to Green Buildings by Trish riley
2. Standard for the design for High Performance Green Buildings by Kent Peterson, 2009

Course Outcomes:

At the end of this Course the student will be able to

- Explain the principles of green buildings , its byelaws
- Understand the concepts of design of green buildings and material conversation in green buildings
- knowledge on rating systems of green buildings
- Suggest materials and technologies to improve energy efficiency of building.

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