

# AMAR-25 ENERGY EFFICIENT ARCHITECTURE

## UNIT-1 PASSIVE DESIGN

- 1.1 Significance of Energy Efficiency in the contemporary context,
- 1.2 Simple passive design considerations involving Site Conditions,
- 1.3 Building Orientation,
- 1.4 Plan form and Building Envelope
- 1.5 Heat transfer and Thermal Performance of Walls and Roofs

## UNIT-2 ADVANCED PASSIVE ARCHITECTURE- PASSIVE HEATING

- 2.1 Direct Gain Thermal Storage of Wall and Roof
- 2.2 Roof Radiation Trap
- 2.3 Solarium- Isolated Gain

## UNIT-3 PASSIVE COOLING

- 3.1 Evaporative Cooling
- 3.2 Nocturnal Radiation cooling
- 3.3 Passive Desiccant Cooling
- 3.4 Induced Ventilation- Earth Sheltering
- 3.5 Wind Tower- Earth Air Tunnels

## UNIT-4 DAY LIGHTING AND NATURAL VENTILATION

- 4.1 Daylight Factor
- 4.2 Daylight Analysis
- 4.3 Daylight and Shading Devices
- 4.4 Types of Ventilation
- 4.5 Ventilation and Building Design.

## UNIT-5 CONTEMPORARY AND FUTURE TRENDS

- 5.1 Areas for innovation in improving energy efficiency such as Photo Voltaic Cells, Battery Technology,
- 5.2 Thermal Energy Storage, Recycled and Reusable Building materials,
- 5.3 Nanotechnology,
- 5.4 Smart materials and the future of built environment,
- 5.5 Energy Conservation Building code.

### References Books:

1. Fuller Moore, "Environmental Control Systems", McGraw Hill INC, New Delhi - 1993
2. Sophia and Stefan Behling, Solpower, "The Evolution of Solar Architecture", Prestel, New York, 1996
3. Patrick Waterfield, "The Energy Efficient Home: A Complete Guide", Crowood press ltd, 2011.