CLIMATOLOGY AND SOLAR ARCHITECTURE–(PEHD5101) Cr-3

Role of Climate in Habitat Design-Climate responsive vernacular settlements, urban climate, dynamics of the urban heat island, meso-climatic changes caused by urban heat island, climatic and urban design, city aerodynamics, the aerodynamics of a tall building, Wise effect, Monroe phenomenon, Venturi, Cell and Row Effect, wind effects in the vicinity of tall buildings, preliminary idea about wind tunnel.

Need for solar architecture, solar geometry and shading Solar Passive architecture, Direct gain heating, water wall heating, water wall cooling, trombe wall, greenhouse heating and cooling, roof ponds, Thermosiphoning air systems, Active solar systems, Collector systems for heating and cooling purposes, air systems, liquid systems, flat plate and parabolic reflectors, photo voltaics.

References:

1. Wind in Architectural and Environmental Design by Michelle G. Melargano
2. Architectural Aerodynamics by R.M. Anysley, W. Melbourne and B.J.Vickery.
3. Solar Heating and Cooling – Sunset Home Owners Guide.
4. Design with Climate by Victor Olgay
5. Solar Energy Fundamentals in Building Design by Bruce Anderson
6. Design for Cold Climates by Mathus.