



SUSTAINABLE ARCHITECTURE

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IIT Roorkee

PRE-REQUISITES : Climatology, Building materials

INTENDED AUDIENCE : Architecture and Planning

INDUSTRIES APPLICABLE TO : IGBC, GRIHA, BEE, BIS, Green Building Consultants, Practicing Architecture Firms

COURSE OUTLINE :

The pace at which resource consumption is increasing in every field, it has become imperative to consider sustainability in all aspects. Buildings are a major consumer of resources through their life time. This has been realized by the nations world over and hence stricter norms and laws for construction are being laid. Buildings are supposed to be more and more efficient and optimal in consuming resources. Such buildings are called sustainable buildings and all buildings will be required to be sustainable. Hence this course becomes important in understanding-

1. The basic parameters of sustainable buildings.
2. Design, Practices and technology which would lead to creation of such buildings.
3. Science behind performance of efficient buildings.

ABOUT INSTRUCTOR :

Prof. Avlokita Agrawal earned Bachelor of Architecture degree from IIT Roorkee in 2003 and PhD from IIT Roorkee in 2010. Right from college, the subject which most interested her were climatology and passive designing which were taught to them by one of the most accomplished teachers of those times, Dr. M R Sharma and Dr. I C Sharma, both from CBRI. After B Arch, Prof pursued PhD where studied Impact of Vaastushastra on thermal comfort in traditional Havelis of Rajasthan. While pursuing PhD and post completion of PhD, Prof worked for companies like Asahi India Glass (where she headed their Green Design Division) and Honeywell international (where Prof worked in Corporate Affairs division with a focus on building energy efficiency vertical). In corporate jobs, Prof. Avlokita Agrawal was mainly working toward various aspects of building energy efficiency. After joining back academics, Prof have mainly taught subjects like Sustainable Built Environment. Prof. Avlokita Agrawal also manage the IGBC student chapter at IIT Roorkee.

COURSE PLAN :

Week 1: Fundamentals of sustainability, definitions, historical development of the concept of sustainability and sustainable development, Sustainable architecture as a subset of sustainable development.

Week 2: Impacts of built environment on natural environment, Sustainable Development, Agenda 21, UN Goals,

Week 3: Characteristics of sustainable architecture, fundamentals of passive designing and climatology, thermal comfort, visual comfort, acoustic comfort

Week 4: Sustainable buildings, parameters of sustainable buildings, Green buildings, indicators of green buildings, Terminologies related to sustainable buildings- carbon footprint, life cycle analysis,

Week 5: Site development- site selection, UHI, Public Transport, vegetation, development footprint, storm water runoff, SRI

Week 6: Water – estimating the use, reductions in consumption, recycling, reuse, landscape requirement, strategies and technology for water conservation

Week 7: IEQ- day lighting, views, CFC free, ventilation, comfort, VOC free,

Week 8: Materials and Resources- segregation, recycling, reduction in waste, reuse of materials and building, renewability

Week 9: Energy- energy efficiency, energy conservation, ECBC, renewable energy, M&V

Week 10: Codes and compliances – ECBC, NBC, other rating systems prevalent in india

Week 11: Vernacular architecture and sustainability, culture and sustainability,

Week 12: Software use for Energy compliance- Design Builder, Climate Consultant etc