



BUILDING MATERIALS AND COMPOSITES

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INTENDED AUDIENCE : Architecture

COURSE OUTLINE :

Students as a beginner in the trade of Architecture through this course will get exposed to the different materials used in building construction. Conventional materials would be discussed with an outline of its manufacturing or procuring process, properties, applications and simultaneously the alternative materials replacing them would be also covered. A number of engineered materials have come up in use in the building industry as a substitute of the original material like engineered wood replacing wood or AAC and flyash bricks replacing clay bricks. A coverage on such alternate materials would be included. Large span and highrise structures use composite flooring system or steel for structural system, use of precast walling and flooring systems for fast delivery are other contents to expose students to other material applications in building industry. Finishes as in floors and walls like tiles, stone and clay tile cladding, paints and their appropriateness on different surfaces would be discussed. Nanotechnologies used in this trade would also be mentioned for specific materials stating their use. Specific ways of assembling different materials would also be highlighted to give consolidated knowledge to the students.

ABOUT INSTRUCTOR :

Prof. Sumana Gupta is currently working as Assistant Professor in the Department of Architecture and Regional Planning at IIT Kharagpur since 2013. She completed her Masters degree and Doctoral Degree from the same Institute in 2008 and 2012 with a special interest in transportation planning and service quality evaluation of transport related facilities. Prior to this she worked for fourteen years as a professional architect and as a Lecturer in a Government Polytechnic College in India. She completed her Bachelor degree in Architecture in 1992 from Calcutta University. During her professional exposure as an architect she was involved in Science city auditorium design and presently offers the Building Acoustics course to the fourth year architecture students for the last four years.

COURSE PLAN :

- Week 1:** Clay products and alternatives like Fly-ash, CEB, CSEB
- Week 2:** Stone, stone tiles and stone dust blocks Wood and engineered wood
- Week 3:** Glass and glazing systems, ceramic tiles, vitrified tiles, insulation
- Week 4:** Fine aggregate, Coarse aggregate, Cement, Concrete
- Week 5:** Precast items – flooring, roofing, walling system, HBC, AAC
- Week 6:** Ferrous and non-ferrous metals
- Week 7:** Bitumen as damp proofing materials, Paints
- Week 8:** Plastics, Composites, nanotechnology applications