



Building Materials and Composites

SWAYAM PRABHA Course Code: C8

Free DTH Channel for Education

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DEPARTMENT	Architecture & regional Planning
INSTITUTE	IIT Kharagpur
COURSE OUTLINE	<p>Building types and role of materials</p> <p>Clay products - Clay products and its composition, Steps for manufacturing, Brick as most commonly used clay product, Types, Characteristics, Brick Masonry, Bricks made with Alternate materials, Terracotta, Porcelain & Stoneware, Clay roofing tile;</p> <p>Stone – Quarrying of Stone, seasoning and dressing, Characteristics of stones, Detoriation of stone, Types of stone, Prevention of decay / maintenance of stones, Uses of stone, Use of Stone dust, Stone masonry;</p> <p>Wood - What is wood, Classification of wood, Processing of wood, Types of Seasoning, Types of Conversion, Ways of Preservation, Properties of wood Commercial classification of wood;</p> <p>Defects of wood and Wood joinery;</p> <p>Engineered wood- What is engineered wood, Different types of engineered wood: Use, Advantages, Disadvantages;</p> <p>Introduction to bamboo- Advantages of Bamboo, Limitations, Application of Bamboo;</p> <p>Glass – Introduction, Steps for manufacturing, Ingredients for manufacturing, Properties of glass, Different types of glass, Types of glass Special properties, Particular use</p> <p>Glass fixing and different uses - Fixing of glass, Single glazing, In wooden frame, In iron frame, In aluminum frame, Without framing, Double glazing, Cleaning of glass, Hydrophilic and hydrophobic glass, Glass block walling fixing, Glass as insulator, Glass Fiber Reinforced Gypsum, Glass Fiber Reinforced Plastic;</p> <p>Ceramic tiles and vitrified tiles- Introduction, Manufacturing, Ceramic wall tiles, Ceramic floor tiles, Vitrified tiles;</p> <p>Introduction to concrete - What is concrete, Basic constituents of concrete, Making of concrete, Tests of concrete, uses of concrete, Definition of Fine Aggregate, Sand as fine aggregate, grading of sand, Bulking of sand;</p> <p>Coarse Aggregates and cement - Definition of coarse aggregate, Classification of coarse aggregate, Coarse aggregate size and Grading, Manufacturing of cement, Composition of cement, Hydration of cement, Gel Space Ratio, Setting of cement, Heat of hydration, Types of cement;</p> <p>Concrete tests - Water Cement Ratio, Tests of concrete, Plasticizers, Admixtures;</p> <p>Prefabricated Construction - Introduction to prefabricated items,</p>

	<p>Advantages of use, Limitations of use, CMU, AAC and Pavement blocks, Characteristics and Ingredients, Advantages and disadvantages;</p> <p>Prefabs: Wall Panels and fixing details - Precast wall panels, Characteristics and Ingredients, Fixing details, EPS panels, PLC panels, Wafflecrete;</p> <p>Prefabs: Floor panels column and foundation - Floor panels for small span, Floor panel for long span, Combined floor panel, Assembling system, Precast Concrete Foundation, Precast Concrete columns, Ferro-cement;</p> <p>Metals: Ferrous and non-ferrous metals- Introduction to metals, Metals properties, Ferrous and non-ferrous metals, Comparison, Extraction of ferrous metals, Extraction of pig iron, Cast iron extraction, characteristics and uses, Wrought iron extraction, characteristics and uses;</p> <p>Ferrous metals - Steel manufacturing, Properties of steel, Rolling of steel, Joining of metals, Steel reinforcement bars and use, Corrosion and its prevention, Light gauge steel;</p> <p>Non-ferrous metals- Introduction to non-ferrous metals, Metals extraction properties & use, Aluminum, Copper, Zinc, Lead;</p> <p>Damp proofing- Causes of damp, Methods of Damp Proofing, Different methods and materials of damp proofing in details;</p> <p>Thermal insulation and sound insulation - Thermal insulators, Different types of insulators, Application, Sound insulation – some examples;</p> <p>Insulation, Bitumen and Gypsum - Some practices of insulation, What is Bitumen, Different available forms, Application of Bitumen, Gypsum, Application of gypsum;</p> <p>Composites - What are composites, Applications in buildings, Composites in structural systems, Nano material applications;</p> <p>Paint - What are paints, Purpose of paint, Characteristics of good paint, Composition and function of ingredients, Steps for manufacturing of paint How does paint work? Calculating CPVC, Defects of paints, Types of paints Application of paint, Special paints, Nano application in paints;</p> <p>Plastics - What are plastics, Thermoplasts and thermosets, Characteristics of plastics, Constituents of plastic, Different types of plastics and applications, Poly Vinyl Chlorides, Acrylics, Fluoropolymers, Polycarbonates, Polystyrene and polyethylene</p>
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COURSE DETAILS			
S. No	Module ID/ Lecture ID	Lecture Title/Topic	Duration
1	C8-Mod1	Introduction	0:32:27
2	C8-Mod2	Clay products-1	0:44:47
3	C8-Mod3	Clay products-1	0:28:22
4	C8-Mod4	Stone	0:29:40
5	C8-Mod5	Stone (Contd.)	0:28:30
6	C8-Mod6	Introduction to wood	0:25:35

7	C8-Mod7	Procurement details, properties, classifications	0:32:01
8			
9			
10			