Sl. No.	Sub. Code	Theory	Contact Hours			Credit
			L	T	P/S	
3.	22AR633	Advanced Building Materials	3	0	0	3

Course Objective	The course intends to introduce different materials used in modern buildings, and innovative alternative materials that are being used to make the building more energy efficient and sustainable.
Anticipated Learning Outcomes:	Students will be able to assess the property, application and performance of various advanced energy efficient and sustainable building materials in modern buildings.
Module 1 Introduction & Advanced Concrete	Introduction to advanced building materials in the building industry. Role of advanced materials in building performance. Contemporary materials in super structure. Ultra-high-performance concrete, Ferrock, Liquid granite, Litracon etc. High-Ductility Concrete for Resilient Infrastructures: Engineered Cementitious Composite (ECC), Engineered stone, etc.
Module 2 Glass	Speciality Glass as a contemporary building material. Types and categories of Glass and its application in building facades. Laminated, curved and tempered glass, Kinetic glass, Smart glass and smart windows. Introduction to Digital building facades: Building kinetics and facade engineering, sensor glasses for interiors.
Module 3 Wood & Composites	Wood as an advanced material for buildings: Reconstructed wood, cross laminated timber, Plyboards, composite boards, Acoustics boards, and panelling materials, laminates and veneers, wood foam. Advanced fibre composite materials: Bamboo, glass-reinforced plastic (GRP), Fibre-reinforced polymers (FRP), Shape memory polymer composites. Vacuum insulation panel (VIP), stretched fabric wall systems External Thermal Insulation Cladding System (ETICS), Insulated Vinyl Siding. Different types of stainless-steel applications, Polycarbonates.

	Aluminium composite panels: application method in interior and exterior facades
Module 4 Introduction to Different Building Finishes	Paints and Varnishes: Properties and uses of ordinary paints, Varnishes and wood preservatives, method of distempering wall surfaces and painting of timber and metal work. Plastic paints, emulsion paints, cement paint and textured plaster. Enamel and epoxy paints. Reflective indoor coatings and High reflectance and durable outdoor coatings. Nano-materials for building construction and finishes. Different types of flooring and wall cladding tiles, Anti-Static Vinyl surfaces.
Module 5	Site visits for practical exposure to different advanced materials and their application in the building industry. Case studies to be conducted for further documentation of the knowledge explored, and report to be submitted.

Note: Most Architectural subjects do not have Textbooks. The Reference books mentioned below are for reference only and University question paper should be prepared from the Syllabus descriptions.

References

1. *Al-homound, M.S., Performance Characteristics and Practical Applications of Common Building Thermal Insulation Materials, Building and Environment, Vol-40(3), 2005.*
2. *Duggal, S.K., Building Materials, New Age International Publishing Co., (3rd Ed.), 2008.*
3. *Varghese, P.C., Building Materials, PHI Learning Pvt. Ltd., 2005.*
4. *www.in.saint-gobain-glass.com*