Sl. No.	Sub. Code	Theory	Contact Hours			Credit
			L	T	P/S	
2.	22AR624	Advanced Building Systems & Services	**2**	**0**	**1**	**3**

Course Objective	To develop know-how and understanding of important advanced systems and services in buildings, their definitions and terms used, functioning and their applications in building.
Anticipated Learning Outcomes:	By the end of the course students should be aware of the advanced systems and services, used in different kinds of projects with a fair idea of their Standards and Regulations.
Module 1 Fire safety	Classification of Fires and Extinguishers, Dry Riser, Wet Riser and Down Comer systems, Sprinkler and Drencher systems, Fire detection systems, Fire Lifts and Fire Escape Plan, Fire prevention, safety and security measures and regulations. Firefighting layout, Reflected ceiling plan of smoke detectors / sprinklers, etc.
Module 2 Parking and circulation	Multi-Level Parking Systems, Semi-automatic and automatic parking systems, Elevator types and spatial requirements with respect to Passenger, Service and Fire lifts, Escalators and Travelators, Applications of Raised Floor systems.
Module 3 Building utilities	Building Automation – Objectives and advantages, Smart devices used in Illumination, Climate control, Building Security systems etc., Laundry and Garbage chutes, Understanding Bio Medical Waste and their disposal, Chemical and Biological Toilets, Hot water systems for apartments and hotels, cooking gas distribution system for residences. Communication systems: space and connection facilities for LAN, computer server, PABX and telephone.
Module 4 Standards and regulations	Study of building services with reference to NBC (National Building Code), ECBC (Energy Conservation and Building Code) and BIS regulations (Bureau of Indian Standards).
Module 5	Case studies and assignments for students on applications of building systems and services.

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. *Stein Reynolds Mc Guinness – Mechanical and Electrical equipment for buildings, Vols 1 and2, John Wiley and sons.*
2. *Francisco Asensio Cerver – The architecture of Skyscrapers, Hearst Book International, New York, 1997*
3. *Bennetts Ian and others – Tall building structural systems*
4. *William, J. McG. (1971). Mechanical and Electrical Equipment for Buildings*
5. *Bovay, H. E. (1981). Handbook of Mechanical and Electrical systems for Buildings. McGraw Hill Higher Education.*
6. *Bureau of Indian Standards. (2005). Code of Practice for Electrical Wiring Installations IS-732.*
7. *Kloft, E. and Johann, E. (2003). High-rise Manual: Typology and Design, Construction and Technology, 1st Ed. Basel: Birkhauser Verlag AG.*
8. *National Building Code*
9. *Energy Conservation and Building Code*