



Department of Architecture

Course: ARC313; Building Services - II

Class: III Yr B. Arch V Sem. AY 2024-25

Instructor: Dr. Uma Sankar Basina

Internal Assessment: 50

Contact Periods/Wk: 03 periods

External Assessment: 50

Timetable: Tuesday (1,2,3 periods)

Total Marks: 100

Attendance: Min 75%

Credits: 03

Min. Passing Marks: 50% each in Internal & External Assessment, 50% in Aggregate

Objective: To develop the understanding of important Services in buildings, definitions and terms used, functioning and their applications in building.

Out Line of the Course: Fundamental Electrical Concepts, Electrical Systems in Built-Environment, Air Conditioning, Fire Safety in Buildings & Building Automation

LECTURE PLAN

Sl.No.	Week	Topic of Class Lecture & Discussion	Class activities & Assignments
01	Week 1	INTRODUCTION to Building Services. Importance of the subject for Architecture course Expectations and Learning outcomes Different types of Services in a building.	Lecture
02	Week 2	UNIT-1 FUNDAMENTAL ELECTRICAL CONCEPTS Introduction, Fundamental principles of Electricity, Voltage, amperage, wattage, Generation & distribution of power, LT & HT lines.	Lecture
03	Week 3	UNIT-1 FUNDAMENTAL ELECTRICAL CONCEPTS Electricity conductors, Indian Electricity Act. UNIT-2; ELECTRICAL SYSTEMS IN BUILT ENVIRONMENT Electricity distribution in buildings, Service wires, meter boards, Circuits, Switch boards.	Lecture
04	Week 4	UNIT-2: ELECTRICAL SYSTEMS IN BUILT ENVIRONMENT Electrical safety devices in buildings, MCBs, Earthing, Introduction of Electric layouts	Lecture
05	Week 5	Field Visit/Study Tour*	Lecture
06	Week 6	Field Visit/Study Tour*	Lecture
07	Week 7	UNIT-3: AIR CONDITIONING Introduction to Air conditioning Working of Air conditioning, Refrigeration cycle. Systems of Air conditioning: Unit, split, package etc,	Lecture
08	Week 8	Mid-term Assessment	Written
09	Week 9	UNIT-3: AIR CONDITIONING systems - Decentralized Air conditioning systems - Semi centralized & Centralized system, Ducting & air-conditioning layout, fittings & fixtures.	Lecture
10	Week10	UNIT-4: FIRE SAFETY IN BUILDINGS Introduction to Fire, causes of fire & spread of fire, fire-fighting, protection & fire resistance, equipment & methods. Code of fire safety, fire regulations, fire insurance.	Lecture
11	Week11	UNIT-4: FIRE SAFETY IN BUILDINGS Combustibility of materials, Structural elements, planning & design of fire escape routes & elements. Fire protection requirements, sprinklers, smoke detectors, fire dampers, fire doors & water curtains etc.	Lecture
12	Week12	Internal Assessment - 1	Presentation
13	Week13	UNIT-5: BUILDING AUTOMATION Concept and application of Automation Systems in buildings. Design issues related to building automation and its effect on functional efficiency.	Lecture
14	Week14	UNIT-5: BUILDING AUTOMATION Components of building automation systems integrating HVAC, electrical, lighting, security, fire-fighting, communication etc. Current trend and innovation in building automation systems;	Lecture
15	Week15	UNIT-5: BUILDING AUTOMATION Knowledge base and decision support systems and building automation and management system; Application of expert system in building automation.	Lecture
		Internal Assessment - 2	Presentation

Tentative break-up of internal assessment marks.

S. No.	Category of Evaluation	Marks
01	Internal Assessment 1	15
02	Internal Assessment 2	15
03	Mid-term Assessment	20

Reference Books:

1. National Building Code of India 2016 & Bureau of Indian Standards. (2005). Code of Practice for Electrical Wiring Installations IS-732.
2. Sawhney GS (2006). Fundamentals of Mechanical Engineering: Thermodynamics, Mechanics & Strength of Materials. Prentice Hall of India.
3. Bovay, H. E. (1981). Handbook of Mechanical & Electrical systems for Buildings. McGraw-Hill Higher Education.
4. Fred Hall & Roger Greeno. (2011). Building Services Handbook (6th Ed). Elsevier Limited.
5. Shan K. Wang. (2000). Handbook of air conditioning and refrigeration (2nd Ed). McGraw-Hill Publications.
6. PN Ananthanarayanan (2006). Basic Refrigeration and Air-conditioning (3rd Ed). Tata McGraw-Hill Publishing Company Ltd.
7. George Hassan (1996). Building Services. Palgrave Macmillan Publishers.
8. James Sinopoli. (2016). Advanced Technology for Smart Buildings. Artech House.
9. Shengwei Wang (2010). Intelligent Buildings and Building Automation. Spon Press.