

**COURSE CODE : BUILDING SERVICES**  
**COURSE CODE : 5012/4004**  
**COURSE CATEGORY : E**  
**PERIODS/WEEK : 4**  
**PERIODS/SEMESTER : 72**  
**CREDITS : 4**

**TIME SCHEDULE**

<b>MODULE</b>	<b>TOPIC</b>	<b>PERIODS</b>
I	Introduction, Electrical wiring systems, earthing, Lightning	18
II	Wiring installations, Plumbing-water supply	18
III	Sanitation, Fire fighting systems	18
IV	Acoustics, Lifts, escalators and air conditioning systems	18
	<b>TOTAL</b>	<b>72</b>

**OBJECTIVES**

**MODULE I**

1. Understand the services in building
2. Study the systems of wiring in buildings
3. Know the types of wires, insulating materials and electrical fittings
4. Study the causes and precautions to be taken to prevent electric shock
5. Study the protective devices used in building
6. Study the methods of earthing and specifications regarding earthing
7. Know the different methods of lightning protection
8. Understand the conventional symbols used in electrical installations for houses

**MODULE II**

- 2.1- 2.1.1 Study the various lighting sub circuits in buildings
  - 2.1.2 Understand the positioning of meter board, main switch board, distribution board, various outlets.
- 2.2- 2.2.1 Know about plumbing
  - 2.2.2 Know about water supply distribution system
  - 2.2.3 Study the various types of pipes, pumps, valves and pipe fittings used in buildings
  - 2.2.4 Understand the layout of water supply system in a house

**MODULE III**

- 3.1- Know the hot water supply system in buildings
- 3.2 Study the rain water harvesting system for a house
- 3.3 -3.3.1 Study the terms sewage, sullage, refuse, garbage in sanitation
  - 3.3.2 Study the parts of a house drainage and various types of traps used.
  - 3.3.3 Study the various types of pipes and sanitary fittings used in buildings
  - 3.3.4 Study about manholes, septic tanks, soak pits.

**MODULE IV**

- 4.1-4.1.1 Understand the various types of lifts
- 4.1.2 Study the structural provisions for a lift installation

4.1.3 Know about escalators.

4.2- 4.2.1 Know about ventilation and study the systems of ventilation

4.2.2 Know the essentials in air conditioning systems and study the systems of air conditioning

4.3- 4.3.1 Study the terms reverberation and echoes

4.3.2 Study the common acoustical defects and remedies

4.3.3 Study the various acoustic materials

4.3.4 Study the recommendations for good acoustics in buildings

## **COURSE CONTENT**

### **MODULE I**

Building Services- introduction.

Electrical wiring- introduction to wiring systems in buildings, wiring methods, types of wires and cables, insulating materials used in wiring, different electrical fittings and accessories in wiring and their specifications. Electric shock- causes and precautions. Protective devices used in wiring- fuses MCB, ELCB, RCCB.

Earthing- purpose, specifications regarding earthing, factors effecting earth resistance, methods of earthing

Lightning- different methods of lightning protection.

Conventional symbols used in electrical installations for residential buildings, conductor size calculations.

### **MODULE II**

2.1 Lighting Sub-circuits- series and parallel- circuit diagrams of – one lamp controlled by one switch- two lamp controlled by two switches- two way switching – bed room lighting circuit- godown wiring. Wiring installation in small residential buildings- definition and positioning of equipment, meter board, main switch board, distribution board, fuse, schematic diagram of single phase and 3 phase wiring installation, location of various outlets, light points, fans, switch boards.

2.2 Plumbing- water supply distribution system- method of distribution, lay out of distribution pipe and pipe joints in distribution system-types of pipes, pipe fittings- specifications, types of valves and fittings, water meter, types of pump, service connections in a building, storage tanks- underground and overhead tanks. Lay out of water supply system in a house.

### **MODULE III**

3.1 Hot and cold water supply system in a building

3.2 Rain water harvesting system – objectives, rain water harvesting system

3.3 Sanitation- define terms sewage, sewerage, sewer, refuse, sullage, garbage. house drainage system- parts of a drainage, traps, system of plumbing, laying pipes underground, types of pipes, sanitary fixtures- water closets, urinals, sinks, wash basins, bath tubs, shower fittings, cubicles, flushing cisterns. Man holes, drop man holes, flush tank, septic tank, leach pit, soak pit. Lay out of a house drainage system Services in high rise buildings- fire fighting services, lifts, air conditioning systems Fire fighting services- introduction, classification of fire, classification of building according to fire load, causes and effects of fire, important considerations in fire protection, limiting fire spread, fire resistant construction, fire protection systems- automatic sprinkler system, carbon dioxide system, foam system, water spray system etc. Strong room construction- essential features and components.

#### **MODULE IV**

4.1 Lifts and escalators- Lifts- types of lifts, structural provisions of lift installation- hoist way, machine room, lift pit. Arrangement of lifts. Escalators (brief explanation only).

4.2 Ventilation and Air conditioning. Ventilation- necessity of ventilation, systems of ventilation ( brief explanation only). Air conditioning- objects, essentials in air conditioning systems, systems of air conditioning.

4.3 Acoustics- introduction, reverberation and echos, common acoustical defects and remedies, acoustical materials, recommendations of different types of buildings for good acoustics.

#### **REFERENCES**

1. Building Services by V.K.Jain
2. Building Construction by Gurcharan Singh
3. Building Construction by P.C.Varghese
4. Electrical installation and estimating by J.B. Gupta