

- iii. Select the suitable electrical as well mechanical services for particular requirements of buildings.
- iv. Ensure green building applications to the new constructions.

4. TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P)	Examination Scheme				
				Theory Marks		Practical Marks		Total Marks
L	T	P	C	ESE	PA	ESE	PA	150
3	0	2	5	70	30	20	30	

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P - Practical; C - Credit; ESE - End Semester Examination; PA - Progressive Assessment

5. COURSE CONTENT DETAILS

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – I Introduction to Building Services	1a. Describe basics of building services. 1b. Apply various types of services as per needs of building. 1c Apply Lighting and Ventilation provisions	1.1 Definitions 1.2 Objective and uses of services 1.3 Applications of services for different types building considering 1.4 Classification of building services 1.5 Types of services and selection of services 1.6 Natural and artificial lighting-principles and factors 1.7 Arrangement of luminaries, Distribution of illumination, Utilization factors 1.8 Necessity of Ventilation Types – Natural and Mechanical Factors to be considered in the design of Ventilation
Unit – II Electrical Services and Layout	2a. Prepare electrical services requirement and Layout of a given building	2.1 electrical services in the building Technical terms and symbols for electrical installations and <i>Accessories of wiring</i> 2.2 Systems of wiring like wooden casing, cleat wiring, CTS wiring conduit wiring 2.3 Types of insulation 2.4 electrical layout for residence, small work shop, show room, school building, etc.

Unit	Major Learning Outcomes	Topics and Sub-topics
Unit – III Mechanical Services in Buildings	3a. Identify the services like lift, elevators, conveyors and escalators, etc. 3b. Plan various types of mechanical services as per requirements of building 3c. Select the right type of air conditioning and the position of air conditioning	3.1 Introduction of mechanical services 3.2 Lift 3.2 (a) Definition, Types of Lifts, Design Considerations, Location, Sizes, Component parts- Lift Well, Travel, Pit, Hoist Way, Machine, Buffer, Door Locks, Suspended Rope, Lift Car, Landing Door, Call Indicators, Call Push 3.3 Elevators & Escalators 3.3 (a) Different types of elevators and Escalators, Freight elevators, Passenger elevators, Hospital elevators, 3.3 (b) Uses of different types of elevators Escalators. 3.4 Dumbwaiters 3.4 (a) Different types of Dumbwaiters 3.4 (b) Uses of different types of Dumbwaiter. 3.5 Conveyors 3.5(a) Different types of Conveyors 3.5(b) Uses of different types of Conveyors 3.7 Air Conditioning 3.7(a) Definition, Purpose, Principles, Temperature Control, Air Velocity Control, Humidity Control, Air Distribution system, Cleaners, Filters, Spray washers, Electric preceptors, 3.7(b) Types of Air Conditioners, (Central type, Window Type, Split Unit)
Unit – IV Fire Protection, Acoustic and Sound Insulations	4a. Identify the services of Fire 4b. Apply various types of fire services as per requirements of building 4c. Select the suitable type of Fire protection. 4d Provide Acoustic and sound insulation as per needs	4.1 Introduction 4.2 Causes of fire and Effects of fire 4.3 General Requirements of Fire Resisting building as per IS and NBC 2005 4.4 Characteristics of Fire resisting materials 4.5 Maximum Travel Distance 4.6 Fire Fighting Installations for Horizontal Exit, Roof Exit / Fire Lifts, External Stairs 4.7 Requirement of good Acoustic 4.8 Various sound absorbent 4.9 Factors to be followed for noise control in residential building
Unit – V Miscellaneous Services and	5a. Plan for Rain Water Harvesting in the new buildings	5.1 Rain water Harvesting for buildings 5.2 Concept of GREEN buildings 5.3 Components of GREEN building.

Unit	Major Learning Outcomes	Topics and Sub-topics
Green Buildings Provisions	5b. Apply Green Building technology aspects	5.4 Introduction and Significance to Grey water 5.6 Components of Grey water system 5.7 Management of Grey water system

6. SUGGESTED SPECIFICATION TABLE WITH HOURS & MARKS (Theory)

Unit	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction to Building Services	8	2	4	4	10
II	Electrical Services and Layout	10	4	8	8	20
III	Mechanical Services in buildings	10	4	8	8	20
IV	Fire Protection, Acoustic and Sound Insulations	8	2	4	4	10
V	Miscellaneous Services and Green Buildings Provisions	6	2	4	4	10
Total		42	14	28	28	70

7. SUGGESTED LIST OF EXERCISES

The practical/exercises should be properly designed and implemented with an attempt to develop different types of skills (**outcomes in psychomotor and affective domain**) so that students are able to acquire the competencies/programme outcomes. Following is the list of practical exercises for guidance.

Note: Here only outcomes mainly in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of certain outcomes in affective domain which would in turn lead to development of **Course Outcomes** related to affective domain. Thus over all development of **Programme Outcomes** (as given in a common list at the beginning of curriculum document for this programme) would be assured.

Faculty should refer to that common list and should ensure that students also acquire outcomes in affective domain which are required for overall achievement of Programme Outcomes/Course Outcomes.