### BUILDING PLANNING AND SERVICES (Job Oriented Elective – I)

### Course Code: 20CE11Q1

L T P C 3 0 0 3

Pre-requisites: Engineering Drawing, Building Materials and Concrete Technology

### **Course Outcome:**

At the end of the course the student will be able to:

**CO1:** Distinguish the different income groups in India and concept of climatology for housing requirements (L2)

**CO2:** Apply the concept of Building byelaws in planning of the House (L3)

**CO3:** Classify various types of plumbing and power supply systems (L2)

CO4: Discuss the maintenance of building and its various repairing techniques (L2)

CO5: Discuss fire safety requirement of a building (L2)

# UNIT-I

# (10 Lectures)

# **BUILDING CLASSIFICATION:**

Classification of buildings – row houses (chawls) –Brief information about Duplex houses, Apartments, housing colonies for HIG, MIG, LIG and EWS in India – Sizes of plots

# **CLIMATOLOGY:**

Elements of climate, climate zones in India, climate and comfort, building orientation, factors affecting orientation, Sun, wind, optimum orientation of a building, principles of anthropometry.

# Learning outcomes:

At the end of the unit, the student will be able to

- 1. classify different types of Houses (L2)
- 2. explain various climatic zones (L2)
- 3. identify the factors affecting the orientation of the building (L2)

# UNIT-II

# (10 Lectures)

# **BUILDING BYELAWS & REGULATIONS:**

Building byelaws, objectives of byelaws, minimum plot sizes, open spaces, minimum standard dimensions, built-up area, super built up area, plinth area, carpet area, floor area and FAR, FSI, lighting & ventilation, rules governing parking, fire, water supply -provisions of NBC, HVAC.

# **BUILDING PLANS:**

Line plans for a residential building of a minimum of three rooms including W/C, bath, and staircase as per principles of planning - Line plans for public building - school building, primary health center, post office, function hall, and library.

# Learning outcomes:

At the end of the unit, the student will be able to

1. explain minimum plot sizes and standard dimensions of the rooms (L2)

2. explain about lighting & ventilation (L2)

3. draw line plans for any public buildings (L2)

### UNIT-III

### **PLUMBING SYSTEMS:**

Drainage, gas pipelines, drinking water pipelines, Plumbing accessories installation, Plumbing fixtures, sanitary fixtures, RO and water features and services

### **ELECTRICAL MAINTENANCE:**

Basics of electricity – Single / Three phase supply– Earthing for safety – Types of earthing – ISI specifications – Types of wires, wiring systems and their choice – Planning electrical wiring for building – Main and distribution boards – Transformers and switch gears – Layout of substations – Solar power system.

#### Learning outcomes:

At the end of the unit, the student will be able to

- 1. identify the basic electric components used in the buildings (L2)
- 2. explain the various plumbing accessories installation (L2)
- 3. discuss the various techniques used in plumbing fixtures (L2)

# UNIT-IV

### MAINTENANCE AND SPECIAL REPAIRS:

# **BUILDING MAINTENANCE:**

Repairs to damaged part of the flooring, Removal of stains from concrete and terrazzo floor, Antitermite treatment (in building, foundations, floors and woodwork) Repair of water storage sumps and tanks, Repair of any joints i.e. wall-beam joint leak, beam column and slab-beam, joints, water proofing and grouting.

### **SPECIAL REPAIRS:**

Strengthening of foundation and foundation soils, rectification of leaking roof and concrete cover, spalled roof, repairs to cracks in masonry wall, repairs to leakage at window sill, repairs to expansion and contraction joints, Repair materials, Criteria for selection of repair materials, Classification of repair materials.

#### Learning outcomes:

At the end of the unit, the student will be able to

- 1. identify various repair methods for flooring, Storage tanks (L2)
- 2. identify how to do strengthen the foundations, various repair materials used (L2)
- 3. explain the classification of repair materials (L2)

#### UNIT-V

# FIRE SAFETY INSTALLATION:

Causes of fire in buildings – Safety regulations – NBC – Planning considerations in buildings like non-combustible materials in construction of staircases and lift lobbies. Special features required for physically handicapped and elderly in buildings – Heat and smoke detectors – Fire alarm system, Snorkel ladder – Fire lighting pump and water storage – Dry and wet risers – Automatic sprinklers.

#### Learning outcomes:

At the end of the unit, the student will be able to

### (10 Lectures)

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- 1. discuss basic principles of fire safety and its codal provisions in buildings (L2)
- 2. demonstrate the various firefighting equipment and their installation (L2)
- 3. explain the prevention of fires, breathing apparatus, first aid & electricity (L2)

# **Text Books:**

- 1. N.Kumara Swamy and A.Kameswara Rao, "Building Planning and Drawing", 8<sup>th</sup> Edition, Charotar Publications, 2010.
- 2. H.W. Harrison and P.M. Trotmanm, "BRE Building elements, Building service", BRE Press Publishers, 2000.
- 3. B.S. Gahlot and Sanjay Sharma, "Building repair and maintenance and management", CBS Publishers, 1<sup>st</sup> Edition, 2006.

### **References:**

- 1. Gurucharan Singh, "Building Planning, Scheduling and Design", 2<sup>nd</sup> Edition, Khanna Publishers, 2010.
- 2. V.N. Vazirani and S.P. Chandola, "Building Construction", Khanna Publishers, 3<sup>rd</sup> Edition, 2003.
- 3. E.R.Ambrose, "Heat Pumps and Electric Heating", John and Wiley and Sons, Inc., New York, 1968.
- 4. Handbook for Building Engineers in Metric systems, NBC, New Delhi, 1968.
- 5. Philips Lighting in Architectural Design, McGraw-Hill, New York, 1964.
- 6. R.G.Hopkinson and J.D.Kay, "The Lighting of buildings", Faber and Faber, London, 1969.
- 7. National Building Code 2016.