Fire Safety in Buildings		Semester	3
Course Code	BCV306D	CIE Marks	50
Teaching Hours/Week (L: T:P: S)	3:0:0:0	SEE Marks	50
Total Hours of Pedagogy	40	Total Marks	100
Credits	03	Exam Hours	03
Examination type (SEE)	Theory		

Course objectives:

- To understand the importance fire safety
- To learn various techniques involved in fire safety
- To design fire resistant buildings using proper materials and methods

Teaching-Learning Process (General Instructions)

These are sample Strategies, which teachers can use to accelerate the attainment of the various course outcomes.

1. The online courses available should be shared with students
2. YouTube videos
3. Power point presentations
4. Visit to fire stations and understand various fire accidents.

Module-1

Fire: Introduction, Basic concepts of fire protection, Fire as a process of combustion, planning for fire protection, fire resistance Ventilation and fuel controlled fire, process of combustion: flashover condition, effect of fire on construction material, design of fire resistance steel structure, concrete structure

Module-2

Fire safety: urban planning, escape and refuge, internal planning, detection and suppression Introduction to lift design, design of lift system, expected stop and floor of reversal, different cases, simulation, arrangements and escalators

Module-3

Introduction to flow system: water supply, constant demand, variable demand and diversity factor, control systems Flow in pipe networks and fixture units, design of water supply distribution system, flow in waste water pipes

Module-4

Introduction to HVAC: governing equations to HVAC process, numerical problem on HVAC system, psychometric chart, equation based approach Electrical systems: design of electrical systems, intelligent building, life cycle cost and basics of building maintenance, stages of maintenance management, planning for building maintenance, periodicity of maintenance management, estimation of repair cycle, cost profile of maintenance, lamp replacement, building inspection, planned and Ad-hoc maintenance

Module-5

Condition survey and health evaluation of buildings, diagnosis of building by visual survey, case studies of visual survey, effect of corrosion and alkali aggregate reaction, sampling and choice of test location Non-destructive testing, core strength test, carbonation and chloride measurement, electrical method of progress measurement Repair, rehabilitation, retrofit, periodicity and economics of condition survey, interpretation of test results

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11. Concept of building fire safety - D.EGAN.
12. Design of fire resisting structures - H.L. MALHOTRA.

List of reference materials/books/

1. An introduction to fire dynamics -D.DRYSDALE
2. Structural fire protection Edt by T.T.LIE
3. Elevator technology - G.C.BARNEY
4. HEATING VENTILATING AND AIR CONDITIONING Analysis and Design - Faye C. McQuiston and Jerald D. Parker.
5. Building Maintenance Management-R.LEE
6. Developments In Building Maintenance -I.EJ. GIBSON
7. Concrete Structures: materials, Maintenance And Repair D.CAMPBELL,ALLEN & H.ROPER

Web links and Video Lectures (e-Resources):

- https://archive.nptel.ac.in/courses/105/102/105102176/

Activity Based Learning (Suggested Activities in Class)/ Practical Based learning

- Assignment students: A case study of fire hazard in building and restoration procedure adopted

H.O.D.
Dept. of Civil Engineering
Alva's Institute of Engg. & Technolo
Mijar, Moodbidri - 574 225