



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Master of Engineering

Level: PG

Branch: Construction Engineering and Management

Subject Code: ME02014091

Subject Name: Building Services and Management

w.e.f. Academic Year:	2024-25
Semester:	2
Category of the Course:	Professional Elective Course

Prerequisite:	
Rationale:	Building services are the systems installed in buildings to make them comfortable, functional, efficient and safe. They can include fire safety, HVAC (heating, ventilation and air conditioning), lighting, plumbing, ICT (information and communications technology), and so on. Building services management seek to provide safe and comfortable environments for building occupants and for any activities happening within buildings:

Course Outcome:

After Completion of the Course, Student will able to:

No.	Course Outcomes
01	Learn management of building services provisions in construction sites.
02	Identify the building services for the requisite functional needs.
03	Estimate space requirements for vertical transportation services.
04	Execute relevant system of heating, ventilation and air conditioning for buildings.
05	Study the role and strategies of building maintenance in construction process.

Teaching and Examination Scheme:

Teaching Scheme(in Hours)			Total Credits L+T+(PR/2)	Assessment Pattern and Marks				Total Marks
L	T	PR		Theory		Tutorial/Practical		
			ESE (E)	PA/ CA (M)	PA/CA(I)	ESE (V)		
3	0	2	4	70	30	20	30	150



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Course Content:

Unit No.	Content	No. of Hours	% of Weightage
1	FIRE PROTECTION SYSTEM : Fire Protection: Process of combustion in fire, Effect of fire load and ventilation condition on enclosure fire, growth and decay of fire in enclosure, Concepts of fire resistant and severity, Effect of fire on materials. Design of elements for given fire resistance, structural fire protection, Site Planning, Internal planning for Escape and refuges, Fire detection and suppression systems, Smoke venting.	10	22
2	VERTICAL TRANSPORTATION AND HVAC Lifts and Vertical Transportation: arrangement of lifts and Design for optimum service condition, HVAC System: Design Consideration. Basic psychrometry, Air conditioning process and system. Methods of Air Conditioning, Problems.	10	22
3	ELECTRICAL SYSTEM Element of Electrical Services in building, Illumination and intelligent building.	08	18
4	WATER SUPPLY AND SANITARY SYSTEM Typical village/town Water Supply System, Planning Principles of Water Supply System, Components of Water Supply System, Pipeline Distribution Networks, Water Treatment and Quality Control, Sanitary Installations, Maintenance of water supply and sanitary systems	07	16
5	MAINTENANCE AND REPAIR STRATEGIES Definition, Role of building maintenance in construction process Maintenance generators, Expression of Standards, selection of level of maintenance and fixing standards, Maintenance cycle, maintenance profile, repair and replacement models, statistical methods, decision models, optimal renewal cycle, budgeting etc.	10	22
	Total	45	100

Suggested Specification Table with Marks (Theory):



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Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
20	30	30	10	10	0

Where R:Remember; U:Understanding; A:Application, N:Analyze and E:Evaluate C:Create(as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

1. Markus, T A, and Morris, E N (1980) Buildings, climate, and energy, Pitman Publishing.
2. Merritt, F S (2012) Building engineering and systems design, Springer Science and Business Media.
3. SP-35 (1987) Handbook of Water supply and drainage, BIS
4. Clements-Croome, D, and Roberts, B M (1975) Airconditioning and ventilation of buildings (Vol. 10), Pergamon.
5. Buchanan, A H, and Abu, A K (2017) Structural design for fire safety, John Wiley and Sons.
6. Drysdale, D (2011) An introduction to fire dynamics, John Wiley and Sons.
7. Chanter, B, and Swallow, P (2008) Building maintenance management, John Wiley and Sons.
8. Purkiss, J A, and Li, L Y (2013) Fire safety engineering design of structures, CRC Press.
9. National Building Code Part 4 – Fire and Life Safety, BIS.
