



Kot Bhalwal, Jammu



Model Institute of Engineering  
& Technology (Autonomous)  
Course Handout

## COURSE HANDOUT

*BUILDING SERVICES & MAINTENANCE (CE-201)*

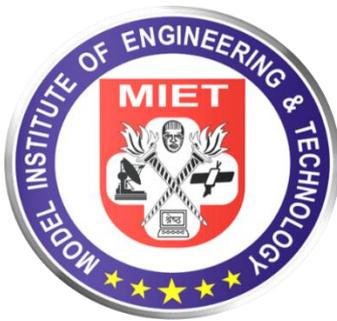
*CE-2<sup>ND</sup> SEMESTER*

*ACADEMIC YEAR (2025-26)*

**Dr Niranjan Singh**

*Professor*

*Department of Civil Engineering*



*Department of Civil Engineering*

*Model Institute of Engineering & Technology (Autonomous)*

*Kot Bhalwal, Jammu - 181122*

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Dr. Arun K. Gupta Teaching-Learning Centre

Version 1.1



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Course Code	Course Name	Course Type	Cd	L	T	P	Marks		
							Sessional	Final Exam	Total
CE-201	Building Services & Maintenance	Core	4	3	1	2	50	100	150

### COURSE OUTCOMES

At the end of the course the student will be able to:	
CO1	Understand and articulate the spectrum of building services provisions in residential and commercial buildings
CO2	Appreciate different mechanical services in buildings including lifts, escalators, classes of elevators, air conditioning etc.
CO3	Comprehend and describe basic plumbing layouts for buildings
CO4	Develop understanding of fire safety systems, evacuation systems and acoustics management systems in buildings
CO5	Prepare basic electrical services plan and layout for a given building.

#### Unit-I

*Introduction to Building Services: Objective and uses of services, Applications of services for different types building considering Classification of building services, Types of services and selection of services, Natural and artificial lighting-principles and factors, Arrangement of luminaries, Distribution of illumination, Utilization factors, Necessity of Ventilation. Requirement of good Acoustic, Various sound absorbents, Factors to be followed for noise controlling residential building*

(8 Hours)

#### Unit-II

*Mechanical Services in Building: 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. Elevators & Escalators-Different types of elevators and Escalators, Freight elevators, Passenger elevators, Hospital elevators, Uses of different types of elevators Escalators. Air Conditioning-Definition, Purpose, Principles, Temperature Control, Air Velocity Control, Humidity Control, Air Distribution system, Cleaners, Filters, Spray washers, Electric preceptors, Types of Air Conditioners, ( Central type, Window Type, Split Unit).*

(8 Hours)

#### Unit-III

*Plumbing and Water Distribution: Studying of building plan for marking the position of the sanitary fittings, Use and care of the plumber's tools and equipments. Description of plumber tools and equipments-ratchet, brace, threading die, pipe wrench, sliding wrench, spanner set, chain Wrench etc. and their safety. Plumbing Symbols, Care & use of tools, Pipes different kinds, Pipe fitting –bends, elbows, sockets, tees, unions etc.*

(6Hours)

#### Unit-IV

*Safety Services and Management: Classification of fire, Portable fire extinguishers, Pumps and primers, Water relay systems, Breathing apparatus, Fire protective clothing, Ladders, Ropes and lines, Electrical fire hazards. General Requirements of Fire Resisting building as per IS and NBC2005, Fire Fighting Installations for Horizontal Exit, Roof Exit/Fire Lifts, External Stairs, Characteristic of fire Resisting Materials. (8 Hours)*

#### Unit-V

*Electrical Services and Distribution: Electrical services in the building Technical terms and symbols for electrical installations and accessories of wiring, Systems of wiring like wooden casing, cleat wiring, CTS wiring conduit wiring, Types of insulation electrical layout for residence, small workshop, showroom, school building, etc.*

(10 Hours)



### Textbooks

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	<i>A text book on Building Services</i>	<i>R. Udaykumar</i>	Eswar Press	<i>1st Edition (2009)</i>
2.	<i>Building Construction by</i>	<i>P.C. Varghese</i>	<i>PHI Learning Ltd</i>	<i>1st Edition (2017)</i>

### Reference Books

S.No	Name of the Books	Name of the Author	Publisher Name	Edition (Pub.Yr.)
1	<i>Building repair and Maintenance Management</i>	<i>P.S. Gahlot</i>	<i>CBS Publishers &amp; Distribution (P) Ltd.</i>	<i>1st Edition (2006)</i>

### COURSE PLAN

#### Unit-I Introduction to Building Services

S.No	Topics	Recommended Books
1	<i>Building Services Objective and uses of services</i>	<i>Book 1, Ch.1</i>
2	<i>Applications of services for different types building considering</i>	<i>Book 1, Ch.1</i>
3	<i>Classification of building services, Types of services and selection of services</i>	<i>Book 1, Ch.1</i>
4	<i>Natural and artificial lighting-principles and factors, Arrangement of luminaries, Distribution of illumination, Utilization factors</i>	<i>Book 2, Ch.2</i>
5	<i>Necessity of Ventilation.</i>	<i>Book 2, Ch.2</i>
6	<i>Requirement of good Acoustic</i>	<i>Book 2, Ch.2</i>
7	<i>Various sound absorbents</i>	<i>Book 2, Ch.2</i>
8	<i>Factors to be followed for noise controlling residential building</i>	<i>Book 2, Ch.2</i>
<b>Unit-II Mechanical Services in Building</b>		
9	<i>Types of mechanical Lifts</i>	<i>Book 1, Ch.2</i>
10	<i>Design Considerations, Location, Sizes of a lift</i>	<i>Book 1, Ch.2</i>
11	<i>Component parts of a lift</i>	<i>Book 1, Ch.1</i>
12	<i>Elevators &amp; Different types of elevators</i>	<i>Book 2, Ch.2</i>
13	<i>Uses of different types of elevators</i>	<i>Book 2, Ch.2</i>
14	<i>Escalators and their applications</i>	<i>Book 2, Ch.2</i>
15	<i>Air Conditioning-Definition, Purpose, Principles, Temperature Control, Air Velocity Control, Humidity Control, Air Distribution system, Cleaners, Filters, Spray washers, Electric preceptors</i>	<i>Book 2, Ch.2</i>
16	<i>Types of Air Conditioners</i>	<i>Book 2, Ch.3</i>
<b>Unit-III Plumbing and Water Distribution</b>		
17	<i>Introduction to plumbing and water distribution system for a building</i>	<i>Book 2, Ch.3</i>
18	<i>Use and care of the plumber's tools and equipments</i>	<i>Book 2, Ch.3</i>
19	<i>Description of plumber tools and equipments-ratchet, brace, threading die, pipe wrench, sliding wrench, spanner set, chain</i>	<i>Book 2, Ch.3</i>



	<i>Wrench etc. and their safety</i>	
20	<i>Plumbing Symbols, Care &amp; use of tools</i>	<i>Book 2, Ch.3</i>
21	<i>Different kinds Pipes used in plumbing system</i>	<i>Book 2, Ch.3</i>
22	<i>Pipe fitting - bends, elbows, sockets, tees, unions etc.</i>	<i>Book 2, Ch.3</i>
<b>Unit-IV Safety Services and Management</b>		
23	<i>Introduction of safety services &amp; management, fire classification</i>	<i>Book 2, Ch.5</i>
24	<i>Portable fire extinguishers</i>	<i>Book 1, Ch.5</i>
25	<i>Pumps and primers, Breathing apparatus</i>	<i>Book 1, Ch.5</i>
26	<i>Electrical fire hazards</i>	<i>Book 2, Ch.5</i>
27	<i>Requirements of Fire Resisting building as per IS and NBC2005</i>	<i>Book 1, Ch.5</i>
28	<i>Fire Fighting Installations for Horizontal Exit, Fire Lifts</i>	<i>Book 2, Ch.5</i>
29	<i>External Stairs</i>	<i>Book 1, Ch.5</i>
30	<i>Characteristic of fire Resisting Materials</i>	<i>Book 1, Ch.5</i>
<b>Unit-V Electrical Services and Distribution</b>		
31	<i>Introduction to Electrical services in the building</i>	<i>Book 2, Ch.8</i>
32	<i>Symbols for electrical installations and accessories of wiring</i>	<i>Book 1, Ch.8</i>
33	<i>Systems of wiring</i>	<i>Book 2, Ch.8</i>
34	<i>Types of insulation</i>	<i>Book 1, Ch.8</i>
35	<i>Electrical layout for a residential building</i>	<i>Book 2, Ch.9</i>
36	<i>Electrical layout for a commercial building</i>	<i>Book 2, Ch.9</i>

#### ADDITIONAL WEB RESOURCES

1	<a href="https://www.designingbuildings.co.uk/wiki/Building_services">https://www.designingbuildings.co.uk/wiki/Building_services</a>
2	<a href="https://www.designingbuildings.co.uk/wiki/Building_services_for_residential_and_commercial_development">https://www.designingbuildings.co.uk/wiki/Building_services_for_residential_and_commercial_development</a>

#### GRADING AND ASSESSMENT

- **Sessional Test:** 20 marks
- **Assignment:** 20 marks
- **Attendance:** 10 marks
- **Final Examination:** 100 marks

#### COURSE POLICIES

- **Attendance:** Minimum 75% attendance is mandatory to appear in the final examination of the course.
- **Academic Integrity:** MIET's academic integrity policies apply. Plagiarism will not be tolerated.
- **Late Submissions:** Assignments and projects must be submitted by the specified timelines.

#### FACULTY INFORMATION

- **Office Hours**  
Monday (12:55 PM - 1:45 PM)  
Friday (12:55 PM - 1:45 PM)  
**Contact Information**  
[niranjana.as@mietjammu.in](mailto:niranjana.as@mietjammu.in)