



School of Planning and Architecture: Vijayawada

(An institution of National Importance under the Ministry of Education, Govt. of India)
Survey No.4/4, ITI Road, Vijayawada-520008, Andhra Pradesh, India

Department of Architecture

Course: **ARC313; Building Services - II**

Instructors: Ar. Karthik Chadalavada

Class: IIIrd Yr B. Arch V Sem A.Y. 2026-27

Internal Assessment: 50

External Theory Exam: 50

Total Marks: 100

Credits: 3

Contact Periods/ week: 03 periods.(55 min each)

Time Table:

Objective: To develop the understanding of important Services in buildings, definitions and terms used, functioning and their applications in building.

Out Line of the Course: Fundamental Electrical Concepts, Electrical Systems in Built-Environment, Air Conditioning, Fire Safety in Buildings & Building Automation.

LECTURE PLAN

WEEK	DATE	TOPIC OF CLASS LECTURE & DISCUSSION	TOPIC OF ASSIGNMENTS / REMARKS
1	Week-1	INTRODUCTION TO SERVICES Importance of the subject for Architecture course Expectations and Learning outcomes Different types of Services in a building	Lecture
2	Week-2	UNIT-3 ; AIR CONDITIONING Introduction to Air conditioning Working of Air conditioning, Refrigeration cycle	Lecture and Material Museum Lab visit for studying the split airconditioner and its parts
3	Week-3	UNIT-3 ; AIR CONDITIONING Systems of Air conditioning: Unit, split, package etc, Air conditioning systems - Decentralized	Lecture and Case study of SPAV Campus to study HVAC Machinery, AHU Rooms, Chiller plant & Cooling Tower
4	Week-4	UNIT-3 ; AIR CONDITIONING Air conditioning systems - Semi centralized & Centralized system	Lecture
5	Week-5	UNIT-3 ; AIR CONDITIONING Air conditioning systems - Centralized system, Ducting & airconditioning layout, fittings & fixtures.	Internal Assessment -1 CASE STUDY/DESKTOP STUDY ON DIFFERENT TYPES OF AIRCONDITIONING SYSTEMS AVAILABLE IN THE MARKET
6	Week-6	UNIT-1 FUNDEMENTAL ELECTRICAL CONCEPTS Introduction, Fundemental principles of Electricity, Voltage, amperage, wattage, Generation & distribution of power.	Lecture
7	Week-7	UNIT-1 FUNDEMENTAL ELECTRICAL CONCEPTS LT & HT lines, Electricity conductors, Indian Electricity Act. Introduction to Unit-2	Lecture
8	Week-8	UNIT-2 ; ELECTRICAL SYSTEMS IN BUILT-ENVIRONMENT Electricity distribution in buildings, Service wires, meter boards, Circuits, Switch boards.	Lecture Material Museum Lab visit for studying different Electrical systems, wires etc
9	Week-9	UNIT-2 ; ELECTRICAL SYSTEMS IN BUILT-ENVIRONMENT	Lecture

	Week-9	Electrical safety devices in buildings, MCBs, Earthing	Lecture
10	Week-10	UNIT-2 ; ELECTRICAL SYSTEMS IN BUILT-ENVIRONMENT Introduction of Electric layouts.	Mid-semester examination/Assignment
11	Week-11	UNIT-4 ; FIRE SAFETY IN BUILDINGS Introduction to Fire, Causes of fire & Spread of fire, fire fighting, protection & fire resistance, equipment & methods	Lecture
12	Week-12	UNIT-4 ; FIRE SAFETY IN BUILDINGS Code of fire safety, fire regulations, fire insurance, combustability of materials, Structural elements, planning & design of fire escape routes & elements.	Lecture
13	Week-13	UNIT-4 ; FIRE SAFETY IN BUILDINGS Fire protection requirments, sprinklers, smoke derectors, fire dampers, fire doors & water curtains etc.	Lecture and Case study of SPAV Campus to study Fire Services like ducts, fire tanks, sprinklers and related equipment
14	Week-14	UNIT-5 ; BUILDING AUTOMATION Concept and application of Automation Systems in buildings. Design issues related to building automation and its effect on functional efficiency.	Lecture
15	Week-15	UNIT-5 ; BUILDING AUTOMATION Components of building automation systems integrating HVAC, electrical, lighting, security, fire-fighting, communication etc. Current trend and innovation in building automation systems;	Lecture
16	Week-16	UNIT-5 ; BUILDING AUTOMATION Knowledge base and decision support systems and building automation and management system; Application of expert system in building automation.	Lecture
17	Week-17	CLASS TEST/PRESENTATIONS	Internal Assessment -3 To Design an Electrical Layout for 2 BHK House or alternative in CAD in the Template circulated with Furniture Layout, Dimensions and Details

S. No.	Stages of Evaluation	Weightage
1	First stage: Assessment	15
2	Mid Semester Examination	20
3	Third stage: Assessment	15
	Total	50

Outcomes: Students completing the course will be able to comrehend the Electrical Concepts, HVAC and automation in the building thoroughly and integrate the learning into architectural design.

Reference Books:

1. Abnws, F. and Others. Electrical Engineering Hand Book.
2. Bovay, H. E. (1981). Handbook of Mechanical & Electrical systems for Buildings. McGraw-Hill Higher Education.
3. Bureau of Indian Standards. (2005). Code of Practice for Electrical Wiring Installations IS-732.
4. Electrical Wiring & Contracting (Vol.1 to Vol.4).
5. Sawhney, G. S. (2006). Fundamentals of Mechanical Engineering: Thermodynamics, Mechanics and Strength of Materials. New Delhi : Prentice Hall of India.
6. Taylor, E. O. and Rao, V. V. L. (1971). Utilisation of Electric Energy in SI units. Bombay : Orient Longman.
7. Willim, J. McG. (1971). Mechanical & Electrical Equipment for Buildings.
8. National Building Code (NBC-2016)

Course Instructors:

sd/-
(Karthik Chadalavada)

Head of Department :

sd/-
(Prof. Dr. Amitava Sarkar)