

ARCHITECTURE

(DEGREE STANDARD)

SUBJECT CODE: 324

UNIT – I: THEORY OF ARCHITECTURE

- Definition of Architecture, an integration of aesthetics and function
- Elements of Architecture – Form, Space, light, colour, etc.
- Principles of Architecture – Proportion, Scale, balance, rhythm, symmetry, hierarchy, pattern and axis.
- Functional aspects of architecture – site, structure, skin, circulation etc.
- Concepts in Architectural Design
- Understanding the meaning of character & style of buildings with examples
- Design Communication & Graphics

UNIT – II: HISTORY OF ARCHITECTURE & CULTURE

- Egyptian, West Asian, Greek & Roman Architecture – factors influencing the styles, understanding the architectural character with examples
- Buddhist Architecture
- Evolution of Hindu Temple and Architectural contributions of Dravidian, Pallava, Chola, Pandya and Indo-Aryan Periods – Outstanding examples of these periods.
- Development of Indo- Islamic Architecture – Delhi Sultanate, Provincial & Mughal styles
- Modern Architecture – various philosophies & schools of thought in Europe, three generations of modern architects & their contributions
- CIAM, TEAM X, Post Modern Architecture, Deconstruction, High-Tech Architecture, Critical Regionalism
- Architecture of India under Colonial rule
- Post independent architecture of India
- Contemporary World Architecture & Parametric Design

UNIT – III : MATERIALS AND CONSTRUCTION TECHNIQUES

- Properties, characteristics, strengths, manufacturing, components & applications of materials & methods of construction & detailing for the following -
- Stone – Brick & Clay Products – Lime – Cement – Mortar – Timber – Concrete – Ferrous and Non-Ferrous Metals – Glass – Plastics – Asphalt, Sealants & Adhesives – Protective and Decorative Coatings – Surface finishing & flooring materials - Water Proofing and Damps Proofing Materials – Rural Building Materials(Bamboo, Soil, etc.)

UNIT – IV: BUILDING SYSTEMS AND SERVICES – CURRENT DEVELOPMENT & NEW TRENDS

- **Water Supply & Plumbing** – Sources, treatment & distribution systems
Sources of water, Quality of water & treatment methods, water requirements for different building typologies, Distribution of water – Choice of pipe materials, fittings & fixtures, Systems of plumbing in all types of buildings
Types of pumps – Reciprocating, centrifugal, deepwell, submersible automatic pumps, sewerage pump, compressors vacuum pump.
- **Waste water & Sewage Disposal**
Primary & Secondary treatments – Modern types of sewage treatment plants – Sewer line fixtures, traps, manholes & septic tanks.
- **Solid Waste** – collection, treatment, disposal & modern drainage systems – Incinerator, Composting, Vermi composting, Sanitary Land fill, Bio-gas system & modern renewable energy systems, Modern plumbing systems – Selection of pumps & construction of pump rooms.
- **Electrical & Electronic Systems**
Electrical installations in buildings – transformers, switch gears, sub stations
Single/Three phase supply - Types of earthing for safety, Conduits laying, Busway & Bus bars, Main and distribution boards - Types of wires, wiring systems and their choice, Planning electrical wiring for building, Communication & data systems – communication spaces, pathways, cabling systems, voice & data, communication, electronic security systems, computer labs/server rooms, etc.
- **Lighting Design** – Installation & Application in buildings.
- **Air conditioning – Systems & Applications**
Window, Split & Packaged Units, Centralized a/c system – A/c plants, DX system, Chilled water system, Air cooled & water cooled condensers, Air distribution systems – VAV & VRV systems, Cooling towers, Fan coil units, circulation pumps, trenches & ducting – configuration, sizing & space requirements.
- **Vertical Movement systems** – Elevators, Escalators & moving walkways – design criteria & installation.
- **Fire safety** – Fire detection system, Fire alarm system, Fire fighting systems, Dry and wet risers, Automatic Sprinklers, Smoke detectors, NBC guidelines.
- **Acoustics** – Fundamentals, Building design & construction measures for good hearing & sound reinforcement & surface treatment for interiors.

UNIT – V: HUMAN SETTLEMENTS PLANNING

- Origin of Human settlements In India & the rest of the world – River valley civilizations (Indus Valley, Mesopotamia, Egyptian & Chinese) – Traditional planning principles in India – Vernacular architecture of India – approaches & concepts – Classical & Medieval planning in Europe - Evolution of modern planning concepts – Garden city concept, Neighbourhood concept, Geddesian triad, etc.
- Elements of Human settlements – functions & linkages, Structure & form
- Urban Planning & Renewal – Master planning, Zoning regulations, SEZ, PUD, Urban Renewal Plan, Redevelopment, Rehabilitation & Conservation, JNNURM.
- DCR, CRZ for coastal areas.
- Issues in contemporary Urban planning.

UNIT – VI: URBAN STUDIES – Urban Design, Urban Housing & Conservation

- Urban Design – need, aspects, scope & components of urban space – Historic urban form of Greek, Roman, Mediaeval, Renaissance & Modern & post-modern periods - Indian Urbanism – temple towns, Mughal city form, medieval cities, colonial urbanism, planned capital cities - Theorising & Reading urban space – Imageability & townscape elements, genius loci, collective memory, historic reading of the city & its artefacts by Rossi, social aspects of urban space, gender & class, contribution of Jane Jacobs, William Whyte - Issues of Urban space – URDPFI.
- Housing issues in the Indian Context, Socio-Economic aspects, Housing Standards, Site Planning & Housing Design, Housing Process.
- Conservation – Understanding the need & purpose, definition, Adaptive re-use, International agencies & their role in conservation – Conservation In India – Role of ASI & INTACH – policies & legislations, case studies – craft issues – Conservation practice – listing, documenting, assessing architectural character, structure report & developing guidelines – Urban Conservation – Conservation Planning – TDR, Heritage tourism.

UNIT – VII: ENVIRONMENTAL STUDIES, SITE PLANNING & LANDSCAPE ECOLOGY

- Environment, Ecosystems & bio-diversity – Environmental Pollution, Human population & social issues with relation to the environment – Environmental laws in India.
- Site Planning – Introduction to basic terminologies, Methods of surveying, Instruments & Application, Levelling, Site Drawings, Importance of Site Analysis – On-site & off-site factors, Study of micro climate, Site Diagramming, Site Context, Site planning & Site layout principles.

- Introduction to Landscape Architecture – Elements of Landscape Design – plant material, water & landforms, Garden Design – Japanese, Italian Renaissance & Mughal, Site Planning – Organisation of spaces – circulation, built form and open spaces, site planning and micro climate, site planning for neighbourhood parks, children's play area and campus development – Landscaping of Functional areas – Urban open spaces and principle of urban landscape – Street landscaping, landscape design for waterfront areas and functional areas in urban centers – green roofs and walls.

UNIT – VIII: CLIMATIC DESIGN & ENERGY EFFICIENT ARCHITECTURE

- Climate & Human comfort, Solar Control, Heat flow through materials & building envelope design, Air movement patterns through natural & built forms, Design strategies for different climate types.
- Energy Efficiency – Importance & Significance, Passive Heating & Cooling techniques, case studies, day Lighting & Natural ventilation, Use of Renewable energy systems – Current & future trends.

UNIT – IX: CONSTRUCTION TECHNOLOGY & PROJECT MANAGEMENT

- Construction systems & Practice – Construction methods & equipments, Construction Technology for High-rise buildings, Construction management.
- Project Management – Introduction, Project programming & Critical path method, Cost model analysis, Programming evaluation review technique – PERT network – Computerized Project Management.

UNIT – X: PROFESSIONAL ETHICS & TOOLS FOR PRACTICE

- Architectural profession – Code of conduct & ethics, role of COA & IIA – Architect's Services, Scale of fees, Architectural Competitions - Tender & Contracts – Legal aspects – Important Legislations & current trends.
- Specification – necessity, importance, types & classification – Specification writing - Estimation (Approximate & detailed) – Current trends.
- Drawing & visualization tools – image editing, 2D & 3D modelling, 3D visualization – Photoshop – AutoCad 2000 - Revit - 3D MAX - Sketch up
