

SECOND YR. B. ARCH.
[NEW] - 2003-04.

HISTORY OF ARCHITECTURE AND HUMAN SETTLEMENTS - III

Paper - 100 Marks - 03 Hours

Lecture Periods Per Week - 04

Sessional Work - 50 Marks

Studio Periods per Week - Nil

* OBJECTIVE :- Study of Culture and Architecture of India with broad reference to formative influences and major Architectural contribution in terms of themes in building types planning and urban design of following specific periods and building types and towns.

* ISLAMIC : PATHAN Mosque :- Quat- Ul-Islam, Kbirki Masjid

* IMPERIAL Tomb :- Iltumush, Nubarak Shah, Madras : Hauz Khas.

* PATHAN
PROVINCIAL Mosque :- Jami, Ahmedabad; Jami, Gulbarga Tomb : Said Usman, Gol Shet Shah Suri, Ibrahim Rouza, Civic Architecture : Dada-Haris Well, Adalaj

* MUGHAL Mosque :- Jami, Sikri, Jami, Delhi, Tombs Humayun, Akbar, Itrud-Ud Daulla, Taj- Mahal, Fort Places: Red Fort, Delhi, Fatehpur Sikri, Regay Buildings: Sunhara Makan Birbal House, Panch Mahal, Diwan-I-Khas Jodhabai's Palace, Sikri, Jahangir Mahal Agra, Hindu Palace :- Jahangir Mahal Orchha Palace ut Datia, Town: Jaipur Jaisalmer, Shahjahanabad.

* STRUCTURES - III

Paper :- 100 Marks

Lecture Periods Per Week - 14

Sessional Work - 50 Marks

Studio Periods Per Week - Nil.

(* Sessional Work Marks to include class test of 20 marks and shear force and bending moment diagrams of continuous beams in the form of drawings 15 marks and viva voce at the time of examination 15 marks total - 50 Marks)

OBJECTIVE :- To acquaint students in working out theoretically a stress strain conditions of structural elements.

COURSE OUTLINE :-

1. Deflection in simply supported beams and cantilevers (i) Double integration method (Problems of Full, Uniformly distributed load and point load only).
2. Concept of statically indeterminate structures. Degree of indeterminacy.
3. Propped Cantilevers : Standard Loadings.
4. Fixed and continuous beams. Theorem of three moments (without settlement of supports). Application with Full Uniformly distributed load and point load upto three spans.
5. Moment Distribution Method (without sway).
6. Short and long columns : Euler's formula (without derivation of formula).

* SURVEYING AND LEVELLING :-

Paper :- NIL
Sessional Work :- 50 Marks

Lecture Periods Per week :- 03
Studio Periods Per week :- NIL

*OBJECTIVE :- To acquaint students in the physical survey work of open space and building.

*COURSE OUTLINE :-

1. Introduction to surveying and levelling for building project.
2. Reading information on drawing and maps as prepared by land and records departments.
3. Methods of Surveying - (a) Chain surveying principles and methods .
(b) Chain and compass surveying. (c) Plane table surveying. Merits and demerits of various methods, Errors Plane table surveying. (d) Field work of given property preparation of maps by different methods as mentioned above
(e) Determination of areas of irregular figures by using trapezoidal and Simpson's rule and by planimeter.

The Sessional work consists of following :- (Based on the Field Work)

- i) Chain and cross staff survey of a given area.
 - ii) Chain and compass survey of a given area,
 - iii) Plane table survey of a building.
 - iv) Determination of an area of a given irregular figure by planimeter.
4. Purpose and importance of levelling readings and preparation of contour maps, symbols, bench marks.
 5. Measurements of elevations- levels. Temporary adjustment simple differential recording in level field book. Reduction of levels by collimation planes and rise fall methods Fly levelling, check levelling, profile levelling, cross sectioning, reciprocal levelling. Contours methods of contouring, characteristics and uses of contour maps.

(P.T.O.)

6. Theodolite :- Use of theodolite, least count verniers, temporary and permanent adjustment; measurements of horizons by repetition and reiteration method. Measurement of vertical angles, lining- in prolonging a given line, checking, verification etc.

NOTE :- The Sessional Work consists of following:-

(Based on Field work):-

- i) Profile levelling and cross- sectioning about 90M length,
- ii) Block contouring of a given area (minimum size 60 M X 60 M),
- iii) An exercise on the computations of a height of building / TV tower etc. by using a theodolite.

Paper - 50 Marks - 02 Hours
Sessional Work - 50 Marks

Lecture Periods Per Week - 01
Studio Periods Per Week - NIL

OBJECTIVE :- To help student understand the use of surrounding environment as one of the strategic design parameters with respect to human comfort and energy conservation.

***NOTE 1-** Theory and Sessional Work will be performed and marked per student and in the sequential order as prescribed in not more than four sheets.

*** COURSE OUTLINE :-**

1. Introduction to climate as a factor of human shelter comfort and environment and its classification v/s Global, Macro and Micro climate. Preparation of sketches showing earth sun relationship and atmospheric depletion. Understanding of maps showing of ocean currents, wind movement patterns and wind shifts with respect to seasonal changes.
2. Study, measurement and analysis of climatic elements and use of climatic instruments for a building designer. Study and analysis of tropical climates. Preparation of sketches of measuring instruments and evolution of regional dwelling units.
3. Study of heat exchange processes between human body and its surrounding with respect to comfort factors. Study of heat exchange processes between building envelope and its surrounding in static and dynamic conditions methods of calculations and use of technical tables Preparation of bioclimatic chart superimposing the extension of comfort zone with respect to climatic conditions for tropical climate.
4. Design strategies for tropical climates with respect to climatic elements, site landscape planning, orientation, openings, building materials and shading devices. Study of solar control with reference to sun movements and methods of calculating the sizes of vertical and horizontal shading devices with the help of shadow angles and solar protractor.

1 day : 3 hrs.
 100 hrs : 100
 50 : 50

100 hrs : 100
 50 : 50

The services shall be mainly on electrical equipment and building services as a major tool for the designer.

5.1 Building wire and fixtures in all materials - iron/steel, brass/crome plated - latches/handles / bolts / hinges / locks / systems etc. hardware for glass - fixing, windows, partitions - maintenance.

5.2 Electrical fittings and fixtures - types of switches/sockets / wires and cables / casing and conduits / fuses and MCBs - arrangement types, methods of installations for open and concealed types, maintenance and protection.

5.3 Different types of alarm systems - fire / smoke / temperature / overflow / security etc.

5.4 Drainage-Sanitary and water supply- fixtures and specials in different materials, methods and precautions for installations and maintenance- water tanks, septic tanks of different styles and types and materials.

5.5 Refuse chutes - installations and structural requirements. Elevators and escalators- Standard equipment / dimensions / norms and requirements / structural requirements for installations / different makes and specifications.

5.6 Synthetic polymers and MC products, floor coverings / cladding, roofing and ceiling materials / door-window casements / standard sizes and sections - properties, uses, maintenance and limitations.

5.7 Gypsum and plaster boards for partitions / ceilings, method of installations, properties, maintenance and precautions.

5.8 Cold rolled steel sections for doors / windows / and roofing frames.

5.9 Types of glass, method of manufacture of standard glass, coloured / wired / toughened glass, glass for different purposes, properties of each type / method of installation / maintenance / precautions, its aesthetic values in architecture.

5.10 Seasonal work shall comprise of collection of samples / technical brochures / report of market surveys and costs, technical data collection and class tests.

*ARCHITECTURAL - DESIGN - I

Paper - 100 Marks - 06 Hours

Lecture Periods per Week - NIL

Sessional Work - 100 Marks

Studio Periods per Week - 06

OBJECTIVES :- To help students identifying the multiple function single use and multiple use architectural design problems and conceiving and presenting the appropriate solutions based on the related knowledge acquired.

* COURSE OUTLINE :-

1. Study and use of design data i.e. spatial requirements of different activities.
2. Multi functional space - concept, analysis and design .
3. Identifying inter- relationship of functions in a building.
4. Organisation of spaces in a building in terms of their micro climatic and functional requirements.
5. Design of buildings involving multiple functions and use preferably ground storied structure e.g. small residences, panchayat office, kinder garden etc. Minimum two design projects to be executed.

*BUILDING CONSTRUCTION - I

Paper - 3 hours - 100 Marks

Lecture Periods per Week - NIL

Sessional Assessment - 100 Marks

Studio Periods per week - 06

* OBJECTIVES :- To help student understand the basic building elements its functions and roles in relation to construction and design .

* COURSE OUTLINE :-

Introduction to various elements of building from foundation roof. Materials commonly used in building construction. Stone - lime - sand - timber - clay - thatch - bamboo - brick - cement .

* FOUNDATION : -

Strip foundation for load bearing construction using stone and brick masonry upto plinth including plinth formation with coping.

* SUPERSTRUCTURE :-

In brick and stone masonry independently and as composite wall. Spanning of opening e.g. doors, windows, varandah piers. Principles of designed joints in dressed stone e.g. joggle, Dowel etc.

* ANTHROPOMETRICS :-

Paper - NIL

Lecture Periods per week - 03

Sessional Work 50 Marks

Studio Periods Per week - NIL

* OBJECTIVES :- To help student in indentifying the simple architectural design problems and conceiving and presenting the appropriate solutions based on the related knowledge acquired.

* COURSE OUTLING :-

1. Study and use of anthropometric data.
2. Analysis of a space in terms of usable- unusable areas of circulation.
3. Primary structural requirements of such space and solutions for same.
4. Spatial layout of known spaces.
5. Accomodating a function in terms of orientation circulation and structure.
6. Designing of simple structure involving one function. e.g. Bus shelters, Road side furniture; Kiosk / Cabins, entrance gate, single room shelters etc.

Paper - 100 Marks - 03 Hours

Lecture Periods Per Week - Nil

Sessional work - 100 Marks

Studio Periods Per Week - 06

OBJECTIVES :- To acquaint students in three dimensional representation of object in graphics through enhancement of projections to develop understanding about three dimensional graphic language for communication and presentation.

COURSE OUTLINE :-

a) Perspective Drawing :- Historical Background regarding techniques of drawing perspectives. Principles of perspective Drawing. Study of Definitions of picture, Plane, Central Visual Ray, Vanishing Parallel, Eye-level, Height line. Vanishing points Systems and Methods of Perspective Drawing - One Point, Two points, Three points perspectives. Types of perspectives - interior and Exterior perspectives. Application of the above to the Architectural Design Solutions. Sessional work covering all the above aspects in the form of drawings.

Sheet:-

1. Perspectives of parallel, vertical, horizontal, straight polygonal and circular planes.
2. Perspectives of simple solid geometrical forms.
3. Perspectives of composite geometrical forms.
4. Perspectives of Buildings (at least one will be Architectural Design Solution)
5. Perspective presentation techniques.

b) Sociography :- Principles of shades and shadows. Techniques of drawing shades and shadows of lines, planes solids and architectural elements, pencil shading and colouring using transparent and opaque colours. Study of Drawing shadows in Isometric view and perspective. Sessional Work covering all the above in the form of drawings.

The Sessional Work consists of following :-

Sheet :-

1. Shades and shadows of point, line and planes.
2. Shades and shadows of parallel line and planes.
3. Shades and shadows of planes - partly on ground /horizontal plane and partly on vertical plane / elevation.
4. Shades and shadows of solid geometrical objects on vertical, horizontal and partly vertical and partly horizontal planes.
5. Shades and shadow of buildings - on elevation and plan One project shall be related to respective design solution.

* HISTORY OF ARCHITECTURE AND HUMAN SETTLEMENTS - IV

Paper :- 100 Marks - 03 Hrs.

Lecture Periods - 02 per week

Sessional Work :- 50 Marks

Studio Periods - Nil

* OBJECTIVE :- Study of culture and architecture of world of post 19th century. Broad references to formative influences of major architectural and technological contribution in terms of themes in building types, planning and urban design. Stress should be given more on analytical and critical studies and appraisal so as to develop reading and research habits in students.

* COURSE OUTLINE :- Post Renaissance revival period. Industrial Revolution Mass Production, use of steel, reinforced cement concrete, elevators and air conditioning - its effects on architecture. C.I.A.M. and Art nouveau movements. Bauhaus and International style. Post - world war II architecture - Metabolism, structuralism, Post-modernism - present trends specific architects and Examples to be covered : Paston - Crystal palace Louis Sullivan - Peter Behrens and Eric Mendelsohn, Walter Gropius - Bauhaus. Frank Lloyd Wright - Robie House, Falling waters, Guggenheim museum, Mies van der Rohe - Barcelona pavillion, Seagram bldg. Le-Corbusier - Villa Savoye, Unite - de - habitation, Chapel Ronchamp Kenzo Lugi Nervi, Buckminster Fuller, Frei Otto. (Human Settlements, Hausmann Paris Industrial cities. City Beautiful movement. Washington D.C. New Delhi, Garden City movement - Welwyn Neighbourhoods. Chandigarh, Brasilia, Runcorn, Milton Keynes, Daxioidis and Dynapolis.

* STRUCTURE - I *

Paper - 100 Marks - 03 Hours

Sessional Work - 50 Marks

Lecture Periods per Week - 4

Studio Periods per Week - Nil

(* Sessional Work marks to include class test of 20 marks and shear force and bending moment diagrams of continuous beams in the form of drawings 15 marks and viva-voce at the time of examination 15 marks total 50 marks.)

* OBJECTIVE : - To acquaint students in the critical analysis of structure.

* COURSE OUTLINE :-

1. Loads :- Dead, live wind and earthquake .

2. Analysis and Design of simple beams : Timber and Ritched in details.

3. Elements of concrete technology introduction of R.C.C. Materials, proportions, Requirements like curing etc. for strength.

4. Analysis and design of single reinforced R.C.C. sections using mild steel and torsteel bars : R.C.C. Beams - Simply Supported and cantilever, one way and two way simply supported slabs and cantilevered slabs.

5. Analysis and design of masonry walls and pillars.

6. Analysis and design of axially loaded R.C.C. Columns.

7. Analysis and design of Single storeyed load-bearing structure with single span R.C.C. slab, beams, lintels and weather sheds.

* BUILDING SERVICES - I

Paper :- 100 Marks - 03 hrs.

Lecture periods - 04 per week.

Sessional Work :- 50 Marks.

Studio Periods - 11L

OBJECTIVE :- To familiarise students with commonly used methods and equipments for sewage disposal and water supply and working of such systems.

* COURSE OUTLINE :-

(A) WATER SUPPLY :-

1. Introduction to - common sources of water supply for a town and methods and systems used for such supply.
2. Standards and Thumb rule calculations of determining demand of water on population basis.
3. Tapping of Water mains on the street.
4. Storage and Distribution systems in a building.
 - a) Suction tank, overhead water storage tank, community water storage tank.
 - b) Pipes used for distribution - Materials specials joinery, installation, classification.
 - c) Control valves used in the system, their functioning.
 - d) Taps, cocks and other specialised fittings used in a distribution system.

(B) DRAINAGE AND SEWAGE DISPOSAL :-

1. Introduction to dry sanitation and water carriage system.
2. Commonly used sanitary fittings in a water carriage system its working fixing and connections to building drainage system.
3. Materials used in a building drainage systems :
 - a) Pipes their Jointing.
 - b) Traps their installations.
4. Layout of drainage system in a building premises :
 - a) Single pipe and double pipe systems.
 - b) Location of inspection chambers and manholes.
 - c) Connection to municipal sewers.
 - d) Testing of building drainage system.
5. Self cleansing velocity, Thumb rule for gradients to underground drainage system and its relation to diameter of pipe.
6. Thumb rule for calculations of effluent from a building and determining diameter of pipes.
7. Principles and application of ventilating building drainage.

CLIMATOLOGY - 11

Paper - 50 marks - 2 Hrs.
Sessional marks - 50

Lectures - 3 / week
Tutorial - 1 / week

1. Elements of architectural design with climate, using and experimenting with prediction tools and formulating design strategy, climatic predictions through- atmospheric pressure/ wind velocity/ temp. and humidity changes and its effect on sun control devices.
2. Vernacular techniques of shelter design as per various climatic regions (Rural and Urban).
3. Environment factors, air pollution affecting comfort factor, elements of pollution control in built environment, ground cover factor in thermal design control.
4. Landscape elements in thermal design.

Term work shall comprise of analysis of a traditional house for its thermal control factors.

To draft thermal design policy for one of the following- a primary school, vegetable market, a clinic etc.

To draft thermal design policy for the assignment of architectural design of current semester.

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* A C O U S T I C S :-

Paper - N I L

Lecture Periods - 3 per Week

Sessional Work :- 50 Marks

* OBJECTIVE :- Acquainting students to Architectural acoustics its application to built forms.

* COURSE OUTLINE :-

* ARCHITECTURAL ACOUSTICS :-

Introduction, Basic problems and criteria, hearing conditions of enclosed and open spaces, basic terminology.

Sound transmission, absorption and insulation, Reflection and diffusion of sound, Reverberation, Sabines formula, Classification and selection of acoustic materials.

Backgrounds noise, noise reduction coefficient.

Structure borne and air borne sound, barriers for sound, sound dampening of mechanical equipments e.g. air handling unit, office equipment, elevators etc.

Case studies such as Auditoriums, Cinema halls, broadcasting studios sound reinforcing systems, Amplifiers, Microphones, Loud Speakers.

* ARCHITECTURAL DESIGN - II

Paper - 100 Marks - 09 Hrs.

Lecture Periods per week - Nil

Sessional Work - 100 Marks

Studio Periods per Week - 06

* OBJECTIVE :- To acquaint students to complex relationships of functions in a building and conceiving and presenting the appropriate solution based on the related knowledge acquired.

* COURSE OUTLINE :-

1. Data collection and analysis of site conditions for individual building and campuses with reference to topography, macro and micro climate and landscape.
2. Three dimensional thinking and approach to analysis and solutions for a building using plan and section as tools to design.
3. Analysis of mixed use buildings and vertical circulation of not more than two stories such as Shops and Residences, Apartments, Hostels etc.
4. Importance of Aesthetics in Architecture and Evolution of stylistic design.
5. Introduction to the designing of interior spaces of the above designs using walls, ceilings and circulations as planning elements and use of colour, texture and materials in interior spaces. Minimum two design projects to be executed.

* BUILDING CONSTRUCTION - II

Paper - 100 Marks - 3 Hrs.

Lecture Periods Per Week - Nil

Seasonal Work - 100 Marks

Studio Periods Per Week - 06

* OBJECTIVES :- To make student understand complexities of construction and its relevant usage with emphasis on timber construction.

* COURSE OUTLINE :- Introduction to frame structure with particular reference to timber frame construction.

1. Timber joints for different conditions.
2. Timber floor- construction using single span, double span, composite construction using steel beams and timber joist with exposed timber floors or using other natural stone paving with suitable backing.
3. Balconies or similar projections in timber joists.
4. Timber single flight staircase construction.
5. Timber roofs using lean - to coupled, closed coupled, collar roofs using different covering materials.
6. Concept of timber truss- introduction to king and queen post trusses and its applications.
7. Concept of point load and suitable foundation for point load. Foundations for sloping sites. Timbering and strutting.
8. Brick vaults and domes, concrete lintels, arches and weather sheds.
9. T.W, Panelled, Glazed , Glazed and panelled Window and doors.
10. More about timber flooring. Specialised timber flooring such as dance floors, sports - hall floors.
11. More about timber trusses. Use of steel, wood and concrete to form composite section and use of same in more complex situations. Fixing of A.C. , G.I. Sheets etc.

* PHOTOGRAPHY :-

Paper - NIL
Sessional Work - 50

Lecture Periods per week - NIL
Studio Periods - 03

* OBJECTIVE :- To introduce students to possible specialisation in various fields in Architecture in view of career development avenues available.

* COURSE OUTLINE :-

The following streams/courses shall be available (Course contents only provide the guideling and may be suitably modified.)

1. VISUAL COMMUNICATION :- Introduction to field of visual communication , Media - Signs and signage, print media, banner and hoardings, slides, videos and films, Graphics and Colours scripts writing for films video films, production procedure, Making of a documentary.
2. SET DESIGN :- Introduction to field of set design Materials and Technology of set making, stage / set lighting. Set design for stage/ live performance / films.

* ARCHITECTURAL DRAWING AND GRAPHICS :- IV :

Paper - 100 Marks - 03 Hrs.

Lecture Periods per Week - 03

Sessional Work - 100 Marks.

Studio Periods Per week - 06

*OBJECTIVE :- To acquaint students in three dimensional representation of object in graphics through enhancement of projections . To develop understanding of more knowledge about three dimensional graphic language for communication and presentation.

* COURSE OUTLINE :-

- a) Presentation Drawings :- Composition of drawing (layout on paper) Rendering of perspectives, Plans and Sections using ink, pencil, water colours oil/wax pastels etc.
- b) Photography :- Use of photography for architects. Camera, Film, light exposure techniques. Techniques of recording a building on film. Use of photographs in architectural design and presentation.
- c) Computer aided drawing :- Introduction to computer - Hardware, Software Languages and interfaces. Operating system- Software packages. Graphics on computer - advantages, limitation. Annual use - practicals using simple drafting packages. Introduction to computer aided design.
- d) Perspective and Sociography :- Perspective drawings of Architectural Design solution. Shades and shadows of Architectural Design solutions.