

HISTORY OF ARCHITECTURE – I

Course Code	AR 3001
Course Title	HISTORY OF ARCHITECTURE – I
Number of Credits	3 (L: 2, T: 1, P: 0)
Course Category	PC
Prerequisites	NIL

RATIONALE

India has a vast variety of architecture. The evaluation, development and growth of architecture in India play very important role. The student must be acquainted with the history of Indian Architecture. After study of the subject; the students will have a wide scope of development in this field.

SUBJECT LEARNING OUTCOMES (SLOS)

After studying the subject, the student will be able to:

1. Understand the glorious history of ancient construction techniques & aesthetics of ancient Indian temples.
2. Identify construction materials available during that period & their use in Hindu temples.
3. Identify various developmental phases & components of Hindu temples across the country.
4. Compare the formulation & identify the chronological development of various styles of Hindu temple.

CONTENTS**1. Temple Architecture in India :- Emphasis on evolution, siting concept plans, elevation, sections, materials and construction :**

1.1 Dravidian style

- 1.1.1 Pallavas
- 1.1.2 Cholas
- 1.1.3 Pandyas
- 1.1.4 Vijaynagar
- 1.1.5 Madurai

1.2 Indo – Aryan Style

- 2.1.1 Khajuraho
- 2.1.2 Orrissa

1.3 Chalukyan Styles

- 1.3.1 Aihole
- 1.3.2 Badami
- 1.3.3 Pattadakal

REFERENCE BOOKS :

- | | |
|---|----------------|
| 1. Changing ideals of modern Architecture | Peter Collins |
| 2. Modern movement in Architecture | Rovner Benham |
| 3. Towards a new Architecture | Walter Gropius |
| 4. History of Architecture (Indian) | Percy Brown |
| 5. History of Indian and for Eastern Architecture | Rergersam |
| 6. Indian Architecture | Havet |
| 7. History of Architecture | B. Fletcher |
| 8. City in History | Lewis Mumford |

THEORY OF DESIGN

Course Code	AR 3002
Course Title	THEORY OF DESIGN
Number of Credits	3 (L: 2, T: 1, P: 0)
Course Category	PC
Prerequisites	NIL

RATIONALE

Students of Architecture at diploma level are supposed to understand basic principles of theory of design while designing some building. All students should know the balance, light and shadow, shapes, plan, volume, line, Proportions, rhythm, emphasis, contrast, colour and other related elements.

Therefore, the subject of theory of design is very important for students undergoing diploma course in Architecture because it is the basis of Architecture designing.

Teachers while imparting instruction are expected to teach various elements used in building design. Teachers may make use of models and audio- Visual aids to clarify the concepts. Group discussions and seminars may also be organized to discuss various concepts the principals involved in the design. It is recommended that teachers may organize visits to historical buildings, and selected modern building highlighting the concepts of Architecture design.

SUBJECT LEARNING OUTCOMES (SLOS)

After studying the subject, the student will be able to:

1. Analyze & describe the built environment using terminology of basic design principals.
2. Apply basic design principals to create spatial solutions in future courses & projects.

CONTENTS

Definition examples and applications of the following:

1. Primary Elements of Design:

- 1.1 Point
- 1.2 Line
- 1.3 Plane
- 1.4 Volume

2. Design Elements:

- 2.1 Composition:
 - 2.1.1 Shape
 - 2.1.2 Size
 - 2.1.3 Form
 - 2.1.4 Function
- 2.2 Balance :
 - 2.2.1 Symmetry and stability
 - 2.2.2 Formal Balance and Informal Balance
- 2.3 Texture :
 - 2.3.1 Surface Quality
 - 2.3.2 Light and Structure
- 2.4 Pattern
- 2.5 Contrast:
 - 2.5.1 Light and shade

- 2.5.2 Nature and man made
- 2.6 Scale :
 - 2.6.1 Monumental scale
 - 2.6.2 Human scale
 - 2.6.3 Intimate scale
- 2.7 Colour :
 - 2.7.1 Effect of colour
 - 2.7.2 Colour chart
- 2.8 Circulation: - Vertical circulation and Horizontal circulation in public buildings, B.S.I. standard on circulation for residential, commercials and institutional buildings.

REFERENCE BOOKS:

1. Architecture – Space and Order
2. Design
3. Abstract Concepts of Drawing
4. National Building Code

Francis, D.K.Ching
Philip Rawson
Robert Paterson

SEMESTER SCHEME 2020-21

BUILDING CONSTRUCTION - I

Course Code	AR 3003
Course Title	BUILDING CONSTRUCTION - I
Number of Credits	3 (L: 1, T: 2, P: 0)
Course Category	PC
Prerequisites	NIL

RATIONALE

Architectural design after this conceptual stage under goes working stage, for thorough knowledge of building components and their detailing is essential for a student, therefor of building construction subject is must for any architectural students.

Teachers while imparting instructions are expected to show various components of building under construction, make use of models or other audio – visual to clarity the concepts while preparing drawings. Teacher should lay considerable stress on proportioning, dimensioning, specification writing, and printing and composition of drawing work.

SUBJECT LEARNING OUTCOMES (SLOS)

After studying the subject, the student will be able to:

1. Identify the factors to be considered in construction of buildings and develop the construction practices and techniques.
2. Identify, analyze and implement deep and shallow foundations.
3. Identify and select appropriate openings, DPC, lifts escalators and different staircases

CONTENTS**1. Brick Work and Stone Work:**

- 1.1 Definition and terms
- 1.2 Masonry classification
- 1.3 General principles in brick construction
- 1.4 Bonds in brick masonry
- 1.5 Brick Jallies
- 1.6 Dressings of stone
- 1.7 Stone claddings
- 1.8 Comparison between brick masonry and stone masonry

2. Opening in Walls:

- 2.1 Arches
 - 2.1.1 Technical terms in arch work
 - 2.1.2 Types of arches
 - 2.1.3 Methods of construction (material used) of arch
- 2.2 Lintels
 - 2.2.1 Classification of lintels of different material
 - 2.2.2 Types of lintels

3. Foundations:

- 3.1 Types of foundations (Method of construction and merit, demerits)
 - 3.1.1 Open foundations/ Shallow foundations

- 3.1.2 Raft foundation
- 3.1.3 Deep foundation

4. Damp Proof course:

- 4.1 Source of dampness
- 4.2 Effects of dampness
- 4.3 Techniques and methods of damp prevention
- 4.4 Materials used for damp proofing course (D.P.C.)
- 4.5 Damp proof treatment in buildings

5. Timber Joints:

- 5.1 Difference in carpentry and joinery
- 5.2 Technical terms of joinery
- 5.3 General principles of construction joints
- 5.4 Types of joints
- 5.5 Fastenings- their types, basic objects, important features

6. Wooden Doors and Windows:

- 6.1 General terms and definition of technical terms.
- 6.2 Definition of Doors, Windows and Ventilators and their location.
- 6.3 Type of Doors.
- 6.4 Type of Windows and Ventilators and their functional use

TUTORIALS

- 1. Brick types, Brick bond, jalli and stone masonry.
- 2. Reinforced brickwork
- 3. Drawing of lintels and arches in various materials
- 4. Drawing of spread foundation and application of DPC on spread foundation and basements
- 5. Timber joints
- 6. Wooden Doors
- 7. Wooden Windows and Ventilators

REFERENCE BOOKS:

- | | |
|---|----------------------------|
| 1. Building Construction | B.C. Punmia |
| 2. Building Construction | Sushil kumar |
| 3. Building construction | Arora & Bindra |
| 4. Building construction (Hindi) | Gurcharan Singh |
| 4. Building Construction (Vol. I – V) | W. B. Mackey |
| 5. Best of Architects Working Detail 1and 2 | Colin Boyne & Lanes Wrikhs |

BUILDING MATERIALS

Course Code	AR 3004
Course Title	BUILDING MATERIALS
Number of Credits	2 (L: 1, T: 1, P: 0)
Course Category	PC
Prerequisites	NILL

RATIONALE

Knowledge, of various building material in term of their availability, size, types and uses in the utmost importance for Architecture student (without manufacturing Process). The subject of Construction Materials imparts knowledge of students and enables them to explain different material to the maximum.

SUBJECT LEARNING OUTCOMES (SLOS)

After studying the subject, the student will be able to:

1. Select appropriate materials for construction of buildings.
2. Assess various precautionary measures pertaining to construction materials.
3. Define engineering principles relevant to building materials.

CONTENTS

1. **Stone:**
 - 1.1 Characteristics and identification and quality of good building stone.
 - 1.2 Description of granites, basalt, sand stone, lime stone, marble slate.
2. **Bricks:**
 - 2.1 Classification of bricks (Manufacturing Process not required)
 - 2.2 Composition
3. **Lime:**
 - 3.1 Types of lime
 - 3.2 Uses of lime
4. **Cement:**
 - 4.1 Types of cement
 - 4.2 Properties and uses of cement
5. **Paints:**
 - 5.1 Water based Paints
 - 5.2 Cement Paints, Emulsion, Dry distemper
 - 5.3 Oil paints
 - 5.4 Varnishes, Enamels, Lacquer, and Stucco.
6. **Floor Tiles:**
 - 6.1 Different types of tiles and its classification
 - 6.2 Sizes of tiles
 - 6.3 Uses of tiles
7. **Glass:**
 - 7.1 Types of glass
 - 7.2 Thickness of glass and their uses
8. **Timber:**
 - 8.1 Classification of Timber.
 - 8.2 Defects in Timber.
 - 8.3 Uses of wood products.

REFERENCE BOOKS :

1. Building Materials Sushil Kumar

SURVEYING AND LEVELLING

Course Code	AR 3005
Course Title	SURVEYING AND LEVELLING
Number of Credits	1(L: 1, T: 0, P: 0)
Course Category	PC
Prerequisites	NIL

RATIONALE

The important function of diploma student includes deal with various surveying instruments and their use in field of Architecture, such as chain surveying, levelling, contouring, so it is required to study for Architecture diploma students of surveying and leveling.

SUBJECT LEARNING OUTCOMES (SLOS)

After studying the subject, the student will be able to:

1. Provide knowledge and develop skills of different surveying instruments.
2. Develop ability to solve surveying engineering problems in practice by applying fundamental knowledge of mathematics, science and by using modern surveying engineering techniques, skills and tools.
3. Adopt appropriate survey method for field problem.

CONTENTS

1. Introduction :

- 1.1 Plane Surveying and geodetic surveying
- 1.2 Use of surveying in engineering
- 1.3 Principle of surveying

2. Chain Surveying :

- 2.1 Different types of chains
 - 2.1.1 Metric chain
 - 2.1.3 Engineers chain
 - 2.1.4 Guntour's chain
 - 2.1.5 Revenue chain
- 2.2 Types of tapes
 - 2.2.1 Linen tape
 - 2.2.2 Metallic tape
 - 2.2.3 Invar tape
 - 2.2.4 Steel Bard tape
- 2.3 Ranging rod
- 2.4 Off set rod
- 2.5 Line ranger
- 2.6 Cross staff
- 2.7 Optical square
- 2.8 Arrow
- 2.9 Folding, unfolding of chains
- 2.10 Testing and adjusting of chain
- 2.11 Ranging
 - 2.11.1 Direct ranging
 - 2.11.2 Indirect ranging

- 2.12 Chaining on plane ground
- 2.13 Conventional signs in surveying
- 2.14 Recording in field book
- 2.15 Chaining on sloping ground
- 2.16 Common errors and precautions
- 2.17 Traversing
- 2.18 Fixing and marking stations
- 2.19 Common obstacles in chaining

3. Levelling :

- 3.1 Definitions
- 3.2 Names and function of different parts of
 - 3.2.1 Dumpy level
 - 3.2.2 Tilting level
- 3.3 Temporary adjustment of dumpy and tilting level
- 3.4 Levelling staff
 - 3.4.1 Self reading
 - 3.4.2 Telescopic staff
 - 3.4.3 Target staff
- 3.5 Levelling with dumpy and tilting level
- 3.6 Calculation of R.L.
 - 3.6.1 H.I. method
 - 3.6.2 Rise and fall method
 - 3.6.3 Arithmetic check
- 3.7 Different type of levelling
- 3.8 Effect of curvature and refraction

4. Contours :

- 4.1 Concept
- 4.2 Purpose of contouring
- 4.3 Factor affecting contour interval
- 4.4 Characteristics of contour
- 4.5 Use of contour map
- 4.6 Drawing cross-section from contour maps

5. Plane Table Surveying :

- 5.1 Description and uses of plane table
- 5.2 Advantage of plane table
- 5.3 Centering, levelling and orientation of plane table
- 5.4 Radiation
- 5.5 Intersection
- 5.6 Traversing

REFERENCE BOOKS :

- | | |
|--------------|-------------|
| 1. Surveying | B.C. Punmia |
| 2. Surveying | G.C. Singh |
| 3. Surveying | K.R. Arora |

ARCHITECTURE DESIGN – I LAB

Course Code	AR 3006
Course Title	ARCHITECTURE DESIGN – I LAB
Number of Credits	2 (L: 0, T: 0, P: 4)
Course Category	PC
Prerequisites	NIL

RATIONALE

Large percentage of diploma holders in Architecture find employment with Private Architects and also majority of them go for self employment therefore diploma holder are required to design small residential and public buildings. These course aims at providing practical exercises in designing so as to develop appropriate knowledge and skills in building design.

Teachers are expected to show various types of designs of small to medium residential building to develop an appreciation of different designs. Teachers should also motivate student to maintain their sketchbook in which they draw line and sketch of different architectural styles.

SUBJECT LEARNING OUTCOMES (SLOS)

After studying the subject, the student will be able to:

1. Understand & use the theory & develop concepts to use methods of planning.
2. Arrange areas, furniture and material choice in a justified manner.
3. Learn by solving small design problems with drawing sets.

CONTENTS

1. Form Composition :

- 1.1 Composition of three dimensional geometrical forms
- 1.2 Composition with relation to Plan, Elevation & Section.

2. Study Of Anthropometric and Design Standards:

- 2.1 Anthropometric study of human figures.
- 2.2 Minimum standard areas in a living unit and furniture dimensions.
- 2.3 Circulations and furniture layout in drawing room, dining, bedroom, kitchen, toilet etc

3. Design of a Residence.

- 3.1 Application of anthropometry in design of simple living and working spaces through study of furniture and clearances in space.
All Studies to be made through Plans :
- 3.2 Assembly of group of such units under one roof and keeping the circulation space minimum and with respect to orientation.
All Studies to be made through Plans, elevations & sections :
- 3.3 Design of Three bedroom detached residence:
 - 2.3.1 Plans
 - 2.3.2 Sections
 - 2.3.3 Elevations

REFERENCE BOOKS :

1. National Building code of India 1983
2. Neufert Architect Data. M.G. Shah
3. Building Drawing Kale and Patki
4. Time Saver Standards (Building Type)
5. Architectural Magazines published time to time

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SEMESTER SCHEME 2020-21

GRAPHICAL PRESENTATION - I LAB

Course Code	AR 3007
Course Title	GRAPHICAL PRESENTATION - I LAB
Number of Credits	2 (L: 0, T: 0, P: 4)
Course Category	PC
Prerequisites	NIL

RATIONALE

Graphical Presentation forms a core subject for developing the presentation skill graphically. During the course the students must develop the skill of rendering in various mediums i.e. pencil, colors etc.

The student must be skillful in free hand sketching.

SUBJECT LEARNING OUTCOMES (SLOS)

After studying the subject, the student will be able to:

1. Acquaint with the principals of graphical techniques to represent object in projection drawings.
2. Understand the color concepts, color schemes & represent in art form presentation.
3. Sketch events & places by watching & memorizing with various representative mediums.

CONTENTS

1. Introduction to drawing equipments and drafting standards used for graphical presentation.
2. Effect of lines by intensity variation and different mediums i.e. pen ink etc.
3. Methods of subdivision of lines
4. Isometric & Axonometric View of simple geometrical forms
 - 4.1 Cube
 - 4.2 Cylinder
 - 4.3 Cone
 - 4.4 Pyramid.
 - 4.5 Prism
5. Isometric view of complex geometrical forms
6. Introduction of free hand sketching as a regular exercise of landscape, trees, street views etc (A regular record of free hand sketching in the sketch book is to be maintained by the students)
7. **Free hand sketching: Free hand sketching of simple three dimensional geometrical objects, buildings & Landscape:**
 - 7.1 Free hand sketching of Cube
 - 7.2 Free hand sketching of Cone
 - 7.3 Free hand sketching of Prism
 - 7.4 Free hand sketching of Cylinder
 - 7.5 Free hand sketching of Sphere
 - 7.6 Free hand sketching of Building
 - 7.7 Free hand sketching of landscape
8. **Coloring and Rendering: - Definition and perception of colour and colour materials:**
 - 9.1 Hue, value and intensity scale
 - 9.2 Colour wheel
 - 9.3 Warm and cool colour

9. Introduction to:

- 10.1 Mural
- 10.2 Collage
- 10.3 Sculpture
- 10.4 Painting

PRACTICALS

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|-----|--|----------|
| 1. | Line drawing in pencil showing intensity variations | 1 sheet |
| 2. | Line drawing in ink showing intensity variations | 1 sheet |
| 3. | Subdivision of lines | 1 sheet |
| 4. | Isometric view of simple geometrical forms | 1 sheets |
| 5. | Axonometric view of simple geometrical forms | 1 sheets |
| 6. | Isometric view of complex geometrical forms | 2 sheets |
| 7. | Free hand drawing of three-dimensional geometrical objects.
viz. cube, cone, prism , cylinder | 1 sheets |
| 8. | Free hand sketching of complex geometrical forms | 1 sheets |
| 9. | Exercise on mural design | 1 sheet |
| 10. | Exercise on collage design | 1 sheet |
| 11. | Free hand sketching in sketchbook - Minimum three sketches per week.
(The students are required to maintain a sketchbook) | |

REFERENCE BOOKS :

- | | | |
|----|----------------------------|------------------|
| 1. | Rendering with pen and ink | |
| 2. | Architectural rendering | Albert Halse |
| 3. | Graphic Arts. | Earm A dennis. |
| 4. | Engineering drawing | Gurucharan Singh |

SURVEYING AND LEVELLING LAB

Course Code	AR 3008
Course Title	SURVEYING AND LEVELLING LAB
Number of Credits	2 (L: 0, T: 0, P: 4)
Course Category	PC
Prerequisites	NILL

RATIONALE

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After studying the subject, the student will be able to:

1. Provide knowledge and develop skills of different surveying instruments.
2. Develop ability to solve surveying engineering problems in practice by applying fundamental knowledge of mathematics, science and by using modern surveying engineering techniques, skills and tools.
3. Adopt appropriate survey method for field problem.

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 - 2.1.4 Revenue chain
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 - 2.2.1 Linen tape
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- 2.4 Off set rod
- 2.5 Line ranger
- 2.6 Cross staff
- 2.7 Optical square
- 2.8 Arrow
- 2.9 Folding, unfolding of chains
- 2.10 Testing and adjusting of chain
- 2.11 Ranging
 - 2.11.1 Direct ranging

- 2.11.2 Indirect ranging
 - 2.12 Chaining on plane ground
 - 2.13 Conventional signs in surveying
 - 2.14 Recording in field book
 - 2.15 Chaining on sloping ground
 - 2.16 Common errors and precautions
 - 2.17 Traversing
 - 2.18 Fixing and marking stations
 - 2.19 Common obstacles in chaining
- 3. LEVELLING :**
- 3.1 Definitions
 - 3.2 Names and function of different parts of
 - 3.2.1 Dumpy level
 - 3.2.2 Tilting level
 - 3.3 Temporary adjustment of dumpy and tilting level
 - 3.4 Levelling staff
 - 3.4.1 Self reading
 - 3.4.2 Telescopic staff
 - 3.4.3 Target staff
 - 3.5 Levelling with dumpy and tilting level
 - 3.6 Calculation of R.L.
 - 3.6.1 H.I. method
 - 3.6.2 Rise and fall method
 - 3.6.3 Arithmetic check
 - 3.7 Different type of levelling
 - 3.8 Effect of curvature and refraction
- 4. Contours :**
- 4.1 Concept
 - 4.2 Purpose of contouring
 - 4.3 Factor affecting contour interval
 - 4.4 Characteristics of contour
 - 4.5 Use of contour map
 - 4.6 Drawing cross- section from contour maps
- 5. Plane Table Surveying :**
- 5.1 Description and uses of plane table
 - 5.2 Advantage of plane table
 - 5.3 Centering, levelling and orientation of plane table
 - 5.4 Radiation
 - 5.5 Intersection
 - 5.6 Traversing

PRACTICALS

1. Study of different chain and tape
2. Chain surveying of small areas
3. Exercise on simple and differential levelling
4. Preparation of a plan of an area by plane table

5. Drawing of x-section of given contour maps
6. Preparation of a contoured plan with the level

REFERENCE BOOKS :

- | | |
|--------------|-------------|
| 1. Surveying | B.C. Punmia |
| 2. Surveying | G.C. Singh |
| 3. Surveying | K.R. Arora |

SEMESTER SCHEME 2020-21