

**SYLLABUS
PRESCRIBED FOR
FIVE YEAR DEGREE COURSE IN
ARCHITECTURE
SEMESTER PATTERN
I & II SEMESTER
SEMESTER : FIRST**

1SA1 BUILDING MATERIALS & CONSTRUCTION-I

Objective : The course will enable the learning in progression , starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: Introduction: General introduction of various components of building and material from foundation to roof. Study of types of soils and its load bearing capacity.

Unit II: Bricks and Clay products: Brief study on manufacturing process of bricks- its properties –suitability- types of bricks – decorative brick work and jail work.

Unit III: Mud as a building material – soil stabilization – use for walling and terracing.

Unit IV: Drawings of different types Brick bonds, end junctions, attached and detached piers, jointing and pointing. Brick foundations for wall and piers. Cavity walls & rat trap bond. DPC and its uses. Plinth filling details. Types of arches in bricks.

Unit V: Stone: Classification of rocks- Building stones – their uses – physical properties – brief study of tests for Stone- deterioration – preservation of stone – various stone finishes – cutting and polishing of granites.

Unit Vi: Drawings of types of masonry – random rubble/Ashlar, etc. - cavity walls- flooring – copings, sills, lintels, corbels, Stone foundation for wall and piers. Types of arches in stones.

NOTE: Sessionals will be in the form of reports, drawings, and models. Construction site visits are essential for practical exposure.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. McKay Building Construction, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.

1SA2 ARCHITECTURAL GRAPHICS-I

Objective: The objective of this course is to understand the graphic fundamentals of Architectural drawing.

Unit I: Introduction to drafting procedure, lines, lettering, Dimensioning, graphic codes and symbols.

Unit II: Construction of Architectural scales (plain scales, diagonal scale, isometric scale). Reduction and enlargement of drawings on different scales.

Unit III: Construction of basic and complex geometrical shapes and curves.

Unit IV: Principles and projection methods of orthographic projection (third angle projection).Orthographic projection of simple, complex solids and hollow object.

Unit V: Projection of straight lines, planes, solids, sections of solids and development of surfaces.

Unit VI: Introduction to Architectural plans, Elevations and Sections.

References:

1. Bhatt N.D. and Panchal V. M. Engineering Drawing,Charotar Publishing House, Gujrat,1996.
2. I. H. Morris, Geometrical Drawing for Art students-Orient Longman, Madras, 1982.

1SA3 HISTORY OF ARCHITECTURE& CULTURE-I

Objective : Art and culture has supplemented architecture in the form of sculptures, paintings, murals art forms and designs. This course will enable the students to have a broad understanding of relationship between art , culture and architecture through various stages of history.

Unit I: Introduction to the course – Old Stone Age – the agricultural revolution – The New stone age- Development of shelter.

Unit II: River valley civilization and cultures – Indus, Tigris,

Euphrates and Nile, its impact, Cultural and religious impact on Egyptian Architecture.

Unit III: Comprehensive survey of Indian and Western sculptures of different periods, thematic study of cultural influence.

Unit IV: Cave painting - Frescos and Murals of Ajanta, Bagh, Badami, Ellora, Hampi, etc; Mythological influence; Techniques and characteristics.

Unit V: Miniature painting – Indian and Islamic miniature paintings; Influence of changing period; Artist, subjects and techniques.

Unit VI: Impressionism/Expressionism/Cubism/Futurism/ Abstract Art. Famous works of contemporary artist, sculptors and muralist of India and abroad.

Sessional work :

Assignments and drawing on the above topics.

References:

- 1 Janson, H. W. History of Art, New York, 1978. .
- 2 Tomory Edith, A History of Fine Arts in India and the west; Orient Longman, 1995.
- 3 Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.

1SA4

COMPUTER GRAPHICS-I

Objective

The prime objective of this course is to introduce the fundamental concepts of computer systems; hardware and software and to develop basic skills in programming, Application of Information Technology tools and technical in Architecture.

Unit I : Introduction to computer

Technology of small computer system, computer terminology operation principles of P.C., introduction to application software, and graphic system, and use of printers, scanner, plotter, File 'management, etc. Introduction to windows and its applications. Introduction to Microsoft, Office, word, excel. Introduction to Internet, using e-mail.

Unit II : Introduction to computer aided 2D drafting

Understanding the use of drawing tools, object editing, drawing objects, filling and setting drawing units, scales, limits that size and dimensioning, texting. Setting up of drawings of various simple architectural objects with complete text and dimensioning.

Unit III : Advance computer aided 2D Drafting

Advance command programming – transparent overlays hatching utilities, assigned colour and line type, use of multiline, style, block, symbol Library manipulation for accurate drawings, incorporating the above said utilities.

Sessional work :

Assignments and drawing on the above topics.

References:

1. V.Rajaraman, Principles of Computer Programming – Pretince Hall of India.
2. Byron S. Gottfried, Theory and problems of Programming with C.Schaum's outline series, Mcgraw Hill Publishing Co.
3. Auto CAD reference manual – Autodesk UNC, 1998
4. Auto CAD architectural users guide – Autodesk Inc. 1998
5. Sham Tickoo, Advance Technique in Auto CAD Re.14 – 1977
6. Sham Tickoo, Understanding Auto CAD – 14 (windows) – 1977

1SA5

ENGLISH (COMMUNICATION SKILLS)

Objective

To develop skills in effective communication – both written and verbal. Understanding the differences among seminars. Conferences, convention, congress, debates, extempore speeches, panel discussions etc., Verbal presentations on architectural topics

Unit I : Language and communication:

Spoken English and grammar. Technical composition (e.g., reports, papers essays) writing

Unit II : Public Speaking

Making sequences and framework for presentation, importance of posture, gesture, pronunciation, tone etc. on presentation quality

Unit III : Architectural communications

Presenting simple, complex, architectural concepts and proposal with the help of text, drawings, transparencies, slides, video, photographs, models etc.

Unit IV : Computer aided presentation

Preparing simple and interactive slide shows and presentations using computer software Article review, presentations and seminars

Unit V : Individual and group work on selected theme.

Sessional work :

Assignments, reports and seminars on the above topics.

References

1. Working in English: Teachers Book, Jones Leo
2. Communicative English for Professional Courses, Mudambadithaya G.S
3. English Conversation Practice, Taylor, Grant.

1SA6 ARCHITECTURAL DESIGN -I**Objective**

The objective of the course is to provide an overview of the profession of Architecture and to develop a comprehensive understanding of Design fundamentals.

Introduction to Architecture

A brief summary of Architecture – its various definitions, aspects/dimensions, approaches through different ages and factors affecting architecture of a region.

- 1) Introduction to elements of Design like point, line, plane, solid and void etc. with respect to their expression quality.
- 2) Introduction and Importance of Design principles like Balance, Harmony, Rhythm, Contrast, Symmetry, Scale, Proportions etc. leading to unity in design.
- 3) Creation of two and three- dimensional composition of abstract and architectural nature.
- 4) Introduction to external and internal form concept, their quality, concept of space, relation of space and volume
- 5) Relationship between basic design and Architectural Design, comprehensive understanding of space, form, order and design.

Sessional work :

Assignments and drawing on the above topics. Viva Voce by external examiner at the end of Semester.

Suggested text books:

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals
4. Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

1SA7 BUILDING MATERIALS & CONSTRUCTION STUDIO-I**Sessional work :**

Assignments and drawing on the topics given in subject 1SA1 Building Materials & Construction-I. Viva Voce by external examiner at the end of Semester.

1SA8 ARCHITECTURAL GRAPHICS STUDIO-I**Sessional work :**

Assignments and drawing on the topics given in subject 1SA2 Architectural Graphics-I. Viva Voce by external examiner at the end of Semester.

1SA9 VISUAL ARTS STUDIO - I

Objective : To introduce the develop an understanding of principles of design in abstract and to introduce the student to visual arts.

Unit I : Introduction

The definition of art – the needs and meanings of the work of art – Technical language of the art – Technique of lookinan appreciation of art form.

Unit II : The Techniques of Arts

Drawing – architecture – sculpture – paintings – printing minor arts (glassware, stain glass, lithographic prints, etc.) - Industrial art (Art Nouveau, Bauhaus)

Unit III : Composition – Basic Design:

Chaos to order scale, proportion, proximity, surface tension, balance and rhythm co-ordination skills (eye-mind-hand/perceptual) drawing and painting: drawing with both the hand-lines and geometrical shapes, plants and man made objects. Creative skills Media exploration, ideograms and art lettering.

Unit IV : Basic Design – harmony character, negative and positive space, form – space inter relation, juxtaposition, and a contrast. Co-ordination skills: (Eye-mind-hand/perpetual) drawing and painting: indoor and outdoor sketching, life drawing (Rapid sketching of man in action/motion) creative skills: Sculpture or optics or kinetics.

Sessional work :

Assignments and drawing on the above topics. Viva Voce by external examiner at the end of Semester.

References :

1. Jax Themier, B.W., “How to paint and draw”, Thames and Hudson, 1985
2. Gill, R.W., “Rendering with Pen and Ink”, Thames and Hudson, 1985
3. “Principles of three Dimensional Design” by Wucious Wong
4. “Principles of Two Dimensional Design” by Wucious Wong

SEMESTER SECOND

2SA1

BUILDING MATERIALS & CONSTRUCTION-II

Objective

The course will enable the learning in progression, starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: Timber and allied products

Timber – Physical properties and uses – Defects, Conversion, Seasoning, decay and preservations of timber –

Unit II: Fire retardant treatment, anti-termite treatment. Industrial timbers – plywood, blockboard, particle board, fibre boards. Manufacture and uses – current developments.

Unit III: Timber doors and windows

Drawings of timber joinery for windows, doors, ventilators. Types of timber doors such as ledged, braced and battened, panel, glazed, flush doors.

Unit IV: Types of windows such as Fixed, side and top hung, pivoted, louvered, ventilators and fanlights

Unit V:

Timber partitions, paneling, wall paneling. Timber staircases – Designed staircase

Unit VI: Timber trusses – lean to – close couple – Kingpost – Queenpost – Trusses.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. W.B. McKay Building Construction, vol. 1,2,3, Longmans, U.K.1981.
3. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
4. R.Chudleu, 'Building Construction Handbook', British Library Cataloguing in Publication, Data, London, 1990
5. S.C.Rangwala, Engineering Materials, Charotar Pub.House, Anand, 1997

2SA2

ARCHITECTURAL GRAPHICS - II

Objective

The objective of this course is to understand the isometric view, perspective view and Sciography

Unit I: Measure drawings

Measured drawing of simple objects (like furniture, entrance gates, etc) and building components (like columns, cornice, door, window, etc.)

Unit II: Introduction to architectural presentations techniques, isometric and oblique three dimensional views, conical projections, perspectives, one point and two point.

Unit III: Perspective

Introduction to basic terms, principles, types and techniques of perspective drawing: realistic expression of ideas.

Unit IV:

Two point perspective of simple objects. (drafted and free hand) presentation of interior and exterior views in one point perspective. (drafted and free hand).

Unit V: Sciography

- Introduction of basic principles of sciography and it's application to the field of architecture
- Sciography of two dimensional objects in plan and elevation

Unit VI:

Sciography of three dimensional objects in plan and elevation and views. (isometric, Axonometric and Perspective)
Sciography of simple building elements.

Reference:

1. Bhatt N.D. and Panchal V. M. Engineering Drawing, Charotar Publishing House, Gujrat, 1996.
2. Claude Batley, Indian Architecture, D.B. Taraporevale Sons and Co. Ltd., Bombay.
3. John M. Holmes, Applied Perspective, Sir Isaac, Pitman and Sons Ltd., London 1954
4. Robert W. Gill, Basic Perspective, Thames and Hudson, London, 1974

2SA3**HISTORY OF ARCHITECTURE - II****Objective**

History of Architecture exposes the student to evolution of different architectural solutions through historical periods to understand the building materials, construction techniques, planning and designing features.

Unit I: Ancient India

Indus Valley Civilization – culture and pattern of settlement. Impact of Aryan culture – Vedic village and the rudimentary forms of bamboo and wood. Wooden construction under the Mauryan rule.

Unit II: Buddhist Architecture

Hinayana and Mahayana Buddhism – Interaction of Hellenic & Indian Ideas in Northern India – Architectural Production during Ashoka's rule – Ashokan Pillar, Sarnath, Rock cut caves at Barabar, Sanchi Stupa. Salient features of a Chaitya hall and Vihara, Rock cut architecture in the western and Eastern Ghats – Karli, viharas at Nasik, Rani gumpha, Udaigiri. Takti bhai, Gandhara.

Unit III: Hindu Architecture

Evolution of Hindu Temple – Early shrines of the Gupta and Chalukyan periods – Tigawa Temple, Ladh Khan and Durga Temple, Aihol, Papanatha and Virupaksha Temples, Pattadakal.

Unit IV: Dravidian Architecture

Dravidian culture – Rock cut productions under Pallavas – Shore Temple, Mahabalipuram – Dravidian Order – Brihadeeswara Temple, Tanjore – Evolution and form of Gopuram – Complexity in temple plan due to complexity in Ritual – Minakshi Temple, Madurai.

Unit V: Indo Aryan style

Salient features of an Indo Aryan Temple – Lingaraja Temple, Bhuvaneshwar – Sun temple, Konarak, Kunds and Vavs – Sabali Kund Vav – Adalaj – surya kund, Modhera.

Sessional work :

Assignments and drawing on the above topics.

References

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
2. Percy Brown, Indian Architecture (Buddhist and Hindu Period), Taraporevala and Sons, Bombay, 1983
3. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
4. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

2SA4**THEORY OF ARCHITECTURE-I****Objective**

This course deals with the theory of architectural design as should be understood for professional practice. The principles covered are those pertaining primarily to visual and aesthetic aspects of architecture. Comparisons with nature and other forms of visual art are intended to be understood through study of examples.

Unit I : Introduction to Architecture

Definition of architecture – elements of architecture backed by need and followed by fulfillment of need.

Unit II : Scope of Architectural Design

Architectural design – An analysis – Integration of aesthetic and function.

Unit III : Architectural space and Mass

Mass and Space, Visual and Emotional effects of geometric forms and their derivatives – the sphere, the cube, the pyramid, the cylinder and cone.

Unit IV : Aesthetic components of Design

Proportion, scale, balance, rhythm, symmetry, hierarchy, pattern and axis with building examples.

Unit V : Application of colour in architecture

Effect of colour in architecture – colour symbolism.

Sessional work :

Assignments and drawing on the above topics.

References:

1. Paul Alan Johnson – The Theory of Architecture – Concepts and themes, Van Nostrand Reinhold Co., New York, 1994
2. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Private Ltd., New Delhi, 1973
3. Francis D.K.Ching, Architecture – Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979
4. Helm Marie Evans and Caria David Dunneshil, an initiation to design, Macmillan Publishing Co.Inc., New York, 1982.

2SA5**MECHANICS OF STRUCTURE - I****Objective**

The course covers the simple types of structural elements followed by determination of forces and stresses in the elements.

Unit I: Concurrent and non-concurrent coplanar forces, moment, conditions of equilibrium.

Unit II: Statically determinant plane frames, determination of forces in members of pin-jointed frames by analytical and graphical methods, wind forces on frames.

Unit III: Stress, strain, hook's law, lateral strain, Poisson's ratio, young's modulus, modulus of rigidity, bulk modulus and their relationships.

Unit IV: Shear force and bending moment diagrams for strained beams subjected to concentrated and distributed loadings.

Unit V: Centroid and moment of inertia of plain areas, parallel axis theorem, moment of inertia, principal axis

Unit VI: Bending stresses and deflection in simply supported beams and cantilever beams.

Sessional work :

Assignments and tutorials on the above topics.

References

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990

2SA6**ARCHITECTURAL DESIGN - II****Objective**

The prime objective of this course is to introduce architectural design as a process and as a final product; to understand fundamentals of space, form and order through basic perception of architectural skills.

Basic Exercises

1. Study of anthropometrics and their relationship with the dimensioning of objects of daily use viz. furniture, fixtures equipments vehicles, etc; determining space for activities, such as, living, dining, sleeping, conveniences, etc.
2. Measured drawing of a sample small building, such as a small house or office, etc.
3. Simple circulation/flow diagrams for a small house or a small school or hostel or an office to understand the functional interrelationships of various spaces in building.
4. Three dimensional organization of a variety of forms to create built forms and importance of shades and shadows in the entire composition. Layout of repetitive units within a site to create interesting and functional compositions.

5. Design exercise (Two Nos.) of very small space structures or buildings such as, compound wall, gate, milk booth, vendor stall, guard room, cycle stand, bus stop. Etc.

Sessional work;

Assignments and drawing on the above topics. Viva Voce by external examiner at the end of Semester.

Suggested text books:

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals
4. Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

2SA7 BUILDING MATERIALS & CONSTRUCTION STUDIO-II

Sessional work :

Assignments and drawing on the topics given in the subject 2SA1 Building Materials & Construction-II
Viva Voce by external examiner at the end of Semester.

2SA8 ARCHITECTURAL GRAPHICS STUDIO-II

Sessional work :

Assignments and drawing on the topics given in the subject 2SA2 ARCHITECTURAL GRAPHICS -II.
Viva Voce by external examiner at the end of Semester.

2SA9 MODELLING WORKSHOP - I

Objective

The prime purpose of this course is to guide the students on model making and general principles of use of basic materials for constructional purposes for developing art skills.

Unit I: Use of clay, Plaster of Paris, metal scrap, Jute fiber etc. for study of forms.

Unit II: Development of surfaces of simple and composite forms using paper, thermocole, wire

Unit III: Materials and tools to be used in model making (cardboard, Wax, plaster of paris, plaster, acrylic, sheets and similar materials, wood, plastics, etc)

Unit IV: Models in appropriate materials for understanding joinery in wooden construction and bonds in masonry based on the programme of building, construction

Sessional work :

Assignments and drawing on the above topics. Viva Voce by external examiner at the end of Semester.

References

1. Wenninger (Magrus.J.) Spherical Models, Cambridge University Press, 1979
2. John W. Mills, The Technique of Sculpture, B.T.Batsford Ltd., New York Reinhold Publishing Corpn., London, 1966
