SYLLABUS CONTENT OF I SEMESTER B.ARCH.

18AT11 ARCHITECTURAL DESIGN - I

Contact Periods / week: 9(01 lecture + 6 Studio+2parctical)	CIE (Continuous Internal Evaluation): 50
Credits: 6	SEE (VIVA): 50

Objective:

To develop the ability to translate abstract principles of design into architectural solutions for simple problems

Outline:

- About Architecture education, profession and its relation to other fields, such as engineering, science, mathematics, philosophy, religion etc.
- Understanding local architecture through observation, sketching silhouettes, experiencing the local monuments in terms of space, enclosures and materials.
- Forms and space exercises to understand its various outcomes through organization of forms such as Additive forms, deductive forms, rhythmic, balancing, symmetrical, grid, clustered forms.
- Concepts of volume & scale width to height ratio – various ratios
- Anthropometry – Human body and function relation
- Understanding the relation between human function & space requirement movement & activity placement, spatial interpretation through design of activity rooms. Such as living room, bedroom, dining room, bus stop, watchman kiosk, lawyer's office, doctor's clinic.

Course Outcome:

With the application of basic principles of design, the student will be able to design a mono function space for comfortable use.

Reference:

1. 'Principles of Three-Dimensional Design' by Wucius Wong
2. 'Principles of Two-Dimensional Design' by Wucius Wong
3. 'Principles of Color Composition' by Wucius Wong
4. "Form, Space and Order" by Francis D.K.Ching
5. "Design Fundamentals in Architecture" by Parmar VS
6. Manual of graphic techniques Vol I, II, III by Tom porter &Bob Green Street For Architects Graphic Designers & Artists

18AT12: BUILDING CONSTRUCTION & MATERIALS – I

Contact Periods / week: 5 (2 lecture + 3 Studio)	Continuous Internal Evaluation: 50
Credits: 4	SEE (Theory Exam 4 hrs. duration) marks: 50

Objective:
To understand the diff components of building & basic materials, construction techniques

1. Introduction

Introduction to various components of building, their definition and functions
Introduction to the conventional methods adopted in construction drawing and use of scale
Simple strip foundation brick & stone wall
Simple strip (continuous) foundation in brick for different wall thickness (half, one and 1½ brick thick walls)
Simple strip (continuous) foundation in stone for different soil bearing capacity

2.Bricks & Stone:

Types, properties and manufacturing methods & uses of bricks for aesthetic & structural purpose.
Types, properties, quarrying and uses of stone for aesthetics & structural purpose
Lime: Properties and uses in building

3. Brick Wall

Brick wall- wall construction in English and Flemish Bond in half, one and one& half Brick thick wall. L-joint, T- joint, piers, coping, buttress

4. **Stone & other Walls**

– rubble stone masonry walls – UCRS, CRS, Ashlar
Composite wall – combination of brick and stone wall
Concrete block and light weight concrete aerated block wall

5. Arches & Lintels

- Basic terminology used in arches
- Types of bricks, stone arches & lintels
- Detailed drawing of following brick & stone arches
  a. Flat arch
  b. Semi- circular arch
  c. Segmental Arch
  d. Elliptical arch
  e. Equilateral arch

Studio Work: Sheets on
Components of building
Convention and scale used in construction
Brick wall, stone wall, concrete wall
Foundation in brick and stone
Different type arches in brick and stone

Course outcome:

The course will enable the student to understand the actual execution of buildings on the site, practically and also enable the students to learn detailing of foundation, masonry work & also represent then in the form of drawing

Reference:

"Building Construction" by W.B.Mackay
"Construction Technology" by Chudley
"Construction of Building" by Barry
"Building Constructon" by Rangawala
"Building Constructon" by Punmiya

18AT13: GRAPHICS – I

Contact Periods / week: 5 (2 lecture + 3 Studio)	Continuous Internal Evaluation: 50
Credits: 4	SEE (Theory exam, 4 hrs. duration) marks: 50

OBJECTIVE:

To introduce the students, the fundamental techniques of architectural drawings by practice on drawing board by conventional method.

Module - I

Introduction to the basic principles of drawing, sign conventions & Line types. Lettering used in architectural drawings as per Bureau of Indian standards. Practice in Lettering, its importance & different fonts. Use of standard lettering and styled lettering in Architecture.

Module - II

Graphical presentation on architectural drawings of – Building Materials, Landscape elements, Furniture etc.

Measure Drawing of Simple Furniture's such as simple Table, Chair, Stool.

Module – III

Plane Geometry:

Introduction to Plane geometry: exercises in lines & angles, construction of triangles, quadrilaterals & regular polygons.

Construction of plane curves: Ellipse & Oval & methods of drawing them.

Arches: typical arch forms (ex: segmental, semicircular, three centered, four centered arches) & methods of drawing them.

Module - IV

Orthographic Projection: (first angle projection):

Principles of orthographic projection & projection of -

- points,
- lines,
- planes &
- Solids

in different positions with respect to HP & VP

Module – V

Three-dimensional representation of Solids:

Isometric projection of solids-

- Simple Objects – Cube, Pyramid, Cone, Sphere & Cylinder
- Combination of Simple Objects

Note: Sheets on each of the above topics shall be presented for term work.

COURSE OUTCOME: The Student will be able to visualize the Objects in both 3-D & 2-D form and represent the same in Architectural drawings.

Reference:

1. IS 962 for Architectural graphics standards
2. "Engineering Drawing" by N D Bhat
3. "Geometrical Drawing for Arts Students" By IH Morris
4. "Engineering Drawing Vol., I and II" by KR Gopalkrishna
5. "A primer on computer aided engineering drawing" by VTU
6. Architectural Rendering the techniques of contemporary presentation by Albert o Halse

18AT14 - HISTORY OF ARCHITECTURE - I
(European Architecture)

Contact Periods / week: 4 (1 lecture + 3 Studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Examination, 3 hrs.): 50

Objective:

- To develop the appropriate skills of reading, discussion and writing as well as understanding the physical experience of buildings in order to appreciate the complexity of the influences bearing on architecture, as reflected in the major historical periods.

Critical appreciation of work and synoptic study of architectural characteristic features from the following phases & periods

1. **Prehistoric World**- primitive man, shelters, settlements, religious & burial system
   Ex - Oval hut, Catal Hyuyk, Henge monuments - Stone Henge, & Passage grave

2. **River valley cultures**- Tigris and Euphrates & Nile
   Ex - Ziggurats at UR, Palace of Sargon
   Ex- Pyramid of Cheops, Temple of Khons, Karnak

3. **Pre-classical** – Mycenea & Etruscan
   Ex –The Palace, Tiryns
   Ex - The temple of Juno sospita, Lanuvium
   Classical – Greek & Roman- Study of principles of design, proportion, composition & visual effects
   Ex - Doric, Ionic & Corinthian orders, optical corrections, Temple of Parthenon
   Ex- Tuscan & Composite Orders & Temple of Pantheon, Basilica of Trajan

4. **Ecclesiastical** – Early Christian, Byzantine, Medieval & Gothic Architecture.
   Ex – Basilican Church of St. Peter, Rome
   Ex-- Hagia Sophia at Istanbul.
   Ex- the Cathedral at Pisa,
   Ex- Notre Dame at Paris.

5. **Renaissance Period** –

Ex – Villa Rotunda by Palladio,
Ex- St Peter's Rome by Michael Angelo & Team
Ex- St. Peter's Piazza by Bernini

Course outcome:

Students are able to understand the origin, evolution & principles of Architecture in historical periods.

Reference:

1. "History of Architecture" by Sir Bannister Fletcher
2. Prehistory to post modernism by Marvin & Isabel

18AT15 - Structural Model Study

Contact Periods / week: 3(3 lecture)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Viva voce marks): 50

OBJECTIVE:

To understand the various structural systems of traditional and contemporary buildings. To understand the behavior of the component under load through study models & experimentation.

Outline:

1. Role of structure in Architecture: Stability, Form, Function and Strength.
2. Study of different kind of structural elements.
   Rigid element: Walls, Slabs, Vaults, Domes, Cantilevers, Beams, Arches, Columns, Frames, Trusses, Shells, Space Framer, Geodesic Domes, Folded plates, Cylindrical shells, Ribbed domes, Hyperbolic paraboloid dome.
   Non rigid elements: Cable structure, Pneumatic structures, funicular structure/membrane structure, free forms etc.
3. Structural systems: Different kinds of structural systems made out of either assemblage or aggregation of structural elements or as single unit.
   1. Load bearing structure
   2. Framed structure – RCC, Steel
   3. Arch structure
   4. Shell structure
   5. Folded plate structure
   6. Cable structure
   7. Space frame structure
   8. Geodesic dome structure
   9. Parabolic structure
   10. Cable stayed root structure
   11. Pneumatic structure
   12. Membrane structure
   13. Prestressed structure
   14. Post tensioned structure
4. Function & behavior of elements & structural systems under load. Purposes, advantages & disadvantages of systems.
5. Aesthetics of structure, materials and its appropriateness in different contexts.

Assignments: Making study models, loading them with appropriate weight, analyzing deformation & result and representing the behavior in drawing form.

Course Outcome: The student will be able to recognize different type of structural system used in building & their suitability to different needs in practice

References:

1. Structure – by Daniel Schodek & Martin Bechthold
2. Structure in Architecture – by G G. Schierle
3. Structure in Architecture: The Building of Building – by Mario- G. Salvadori & R. A. Heller

18AT16 - Surveying and Leveling

Contact Periods / week: 3(3 lecture)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Viva): 50

Objective

To develop the knowledge and skill relative to surveying and leveling principles and practice

1. Definition's principles of surveying, objective of surveying instruments used in chain metric chair field book and different symbols used in chaining

Ranging: - ranging of line using ranging rods, construction of perpendicular by 3,4,5 methods and construction of geometrical figures on site

2. Compass Survey: - Definition of beaning, types of bearing prismatic compass and its parts. Different methods of traversing
3. Plane table survey: - Plane table and its accessories advantages & disadvantages, methods of plane table survey

    a. Radiation
    b. Intersection
    c. Traversing
    d. Resection

4. Leveling & Contouring: Definition, technical terms in dumpy level and its parts classification, simple leveling, Differential leveling Temporary adjustments of dumpy level Booking and reduction of levels by HI and Raise and fall method Definition, Characteristics of contours, methods of contouring and uses of contours
5. Theodolite: - Definition, technical terms, temporary adjustment of theodolite. Measurement of horizontal and vertical angles. Total station with its applications

Course outcome:

The students will develop the knowledge and about Surveying and Leveling and to know important of them in the Engineering field. The students will be capable to understand the theory behind the Surveying and Leveling related to Building & sites

Reference

1) Surveying Vol-1, by B.C Punmia
2) Surveying and levelling by S.C Rangwala
3) Surveying and levelling Vol 1 by Kanetkar TP and Kulkarni SV

18AT17 Basic Design

Contact Periods / week: 5 (2 lecture + 3 Studio)	Continuous Internal Evaluation: 50, SEE: 50
Credits: 4	Viva marks: 50

Objective:
To develop an understanding Elements and principles of design in abstract and to train the Mind and hand, for perception and to develop a series of compositions eventually terminating to a design study.

Outline:
To understand the design elements and principles like

- Line:
  2D & 3D exercises on line
- Shape:
  Compositions on regular & irregular shape
- Texture:
  Study of texture from nature, composition on handmade textures and texture from paper cuttings
- Color:
  Color wheel primary, secondary tertiary Quaternary color
  intermediate colors, color harmony
  Aromatic harmony, monochromatic harmony
  Chromatic harmony, complementary colors
  Warm colors harmony, cool colors harmony
  Tints and shades, natural colors
- Volume:
  Exercise on plane manipulated to a form

Design principles like

- Harmony & Contrast: in shape size and color and texture.
- Balance: symmetrical and Asymmetrical balance
- Anomaly: Exercise to attract monotony to relieve monotones, break down regularity
- Radiation: composition on superimposition and radiation- center of radiation, multiple centers
- Concentration:
  Exercise a both negative and positive spaces

Course Outcome:
The student will be capable to think out of the box & achieve beauty through its principals.

Reference:

1. Principles of form & design by Wucius wong
2. Arts and ideas by, Flemming William
3. Foundation of Art and design by, Ar. Pranav Bhatt, Ms. Shanita Goenka

18AT18 Computer Applications in Architecture-I

Contact Periods / week: 2 (2 Practical)	Continuous Internal Evaluation: 50
Credits: 1	SEE (VIVA Exam marks): 50

Objective:

To develop Architecture drafting skills using computer

Outline:

- Role of computer in Architecture, preparation of 2D drawings using digital media use of software such as Auto Cad or Rivet.
- Learning commands
- Line weight scale, forming layers, blocks and references etc.
- Proper filing & organization of drawings

Assignment:

To prepare 2D of simple architectural problem using software.

Course Outcome:

The student will be capable of drafting architectural drawing using computer/ digital media.

Reference:

1. Reference manual of Auto Cad

SYLLABUS CONTENT OF II SEMESTER B.ARCH.

18AT21 ARCHITECTUAL DESIGN - II

Contact Periods / week: 9 (1 lecture+6 studio + 2 Practical)	Continuous Internal Evaluation: 50, SEE: 50
Credits: 6	SEE (Viva marks): 50

Objective:

To understand the grammar of creation of space and form with its variables.

Outline:

- Understanding the relation between space, form, light, colour, skin & structure.
- Circulation / movement as consideration in setting the function
- Influence of above elements on space & form and its further transformation to suit to the function
- Representation of resultant form in Architectural language in two-dimensional drawing. Well known functions such as student's own residence, Doctors, Painters, or Lawyer's residence or weekend form house, Tree house, Boat house may be taken.
- More emphasis to be given to understanding the creation of form & space through models and its further transformation

Assignment:

Assignments consist of evaluation stage wise progress. Concerned faculty is advised to collect assignments stage wise and evaluate.

Course outcome:

Student will be capable of designing a simple house with consideration of variables

Reference:

1. "Time Saver Standards for Architectural Design Data" by John Hanock,
2. "Architectural Graphic Standard" by Ramsay and Sleeper.

18AT22 - BUILDING CONSTRUCTION & MATERIALS – II

Contact Periods / week: 5 (2 lecture + 3 Studio)	Continuous Internal Evaluation: 50
Credits: 4	SEE (Theory Examination 4 hrs): 50

OBJECTIVE:

To acquaint the students with different types of doors and windows and contemporary construction practices pertaining to roofing System

Module I:

- Doors – Types & joinery details of wooden Doors, i.e., paneled, flush and glazed doors, study of joinery details. -------- (2 Sheets)

Module II:

- Windows – Types & joinery details of wooden windows i.e. paneled, glazed, French window, dormer window, bay window -------- (2 Sheets)
- Ventilator – Glazed, wooden ventilators -------- (1 Sheet)

Module III:

Roofs in timber

- Study of different types of roofs, definition and function of different parts ---- (1 Sheet)
- Simple trusses in timber, construction details, fixing of roofing materials i.e., A. C sheets, G. I sheet poly- carbonate sheet, clay-tiles etc. ---- (2 Sheets)
- Timber flooring – construction detain of timber flooring. ---- (1 Sheet)

Module IV:

Timber staircase.

- Types – Dog -legged, circular staircase with details. ---- (2 Sheets)

Module V:

Cement & Wood

- Types of Cement, their applications, manufacturing process, laboratory and field tests
- Introduction to wood, types & their uses & application in buildings.
- Uses of wood commercial wood in building i.e., plywood block boards, particle boards, veneers and laminates and other types, manufacturing process in brief, their properties and application ---------- (Assignment)

Assignment:

Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course outcome:

Student will be able to design doors, windows, roofs flooring & staircase of timber for any given project with all details pertaining to timber.

Reference:

1. "Building Construction" by W.B. Mackay
2. "Construction Technology" by Chudley
3. "Construction of Building" by Barry
4. "Building Construction" by Rangawala
5. "Building Construction" by Punmiya

18AT23 - GRAPHICS – II

Contact Periods / week: 6 (6studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Examination (4 hrs) marks): 50

OBJECTIVE:

To introduce the students to the fundamental techniques of architectural drawings and to enhance their visualization skills by practice on drawing board by conventional method

OUTLINE:

Module I:

Section of solids of simple geometric objects (like prism, pyramid, cone & cylinder) in different positions & true shapes of sections ---- (3 Sheets)

Module II:

Development of surfaces of simple geometrical objects (of prisms, pyramids, cylinder and cone) ---- (3 Sheets)

Module III:

Inter-penetration of geometric solids of simple geometrical objects (prism with prism, cylinder with cylinder, cone with cylinder, cylinder with prism) ---- (3 Sheets)

Module IV:

Perspective – principles and visual effects of three-dimensional objects

Study of picture plane, station point, vanishing point, eye level, ground level, their variation and their resultant effects.

One point & two-point Perspective drawings of simple geometrical objects (like pyramids, cubes prisms, cylinders, cones and their combinations) & built forms. ---- (5 Sheets)

Module V:

Sociography Study of Shades and shadows

Principles of drawing shade and shadow with source of light is sun.

Sociography for simple geometrical forms on vertical, horizontal and inclined planes

Applications on Simple geometrical objects (like cube, cube with a niche, prisms and pyramids etc. and their combinations) built form & perspective views---- (5 Sheets)

Assignment:

Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course Outcome:

Ability to capable of imagination of the object in 3-dimensional form in different angles shade & shadows.

Reference:

1 "Engineering Drawing" by N D Bhat

2 "Geometrical Drawing for Arts Students" By I H Morris

3 "Engineering Drawing Vol I and II" by KR Gopalkrishna

4. "Perspective" by SH Mullik

18AT24 - HISTORY OF ARCHITECTURE – II
(Indian Architecture)

Contact Periods / week: 4 (1Lectures +3Studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory exam 3 hrs duration): 50

OBJECTIVE:

- To give an introduction to culture & architecture of early civilization
- To provide an understanding of the evolution of Hindu Architecture in India in its various stylistic modes with critical appreciation, characterized by technology, ornamentation, planning practices & influences in general.
- Detail study of one example

OUTLINE:

Module I:

River valley cultures- Indus Valley Civilization
Ex – Layout of Mohenjodaro, House plan, City Citadel (Great bath & Granary)
Pre-Classical- Aryan & Mauryan: - Salient features
Ex – Vedic Village

Module II:

Classical - Buddhist Architecture – Mahayana phase-
Ex: Great Stupa at Sanchi, Chaitya hall at karli & Vihara at Ajanta
Jain Architecture- Salient features
Ex: ChaumukaTemple at Ranakpur

Module III:

Hindu Architecture- Chalukyan
Evolution of Hindu temple - Both Indo Aryan & Dravidian
Ex: Early temples at Udaygiri & Sanchi
Experiments at Badami, Aihole & pattadakal
Ex: Badami Caves. DurgaTemple & Ladkhan temple at Aihole, Virupakshatemple at pattadakal

Module IV:

Dravidian architecture –
Early Dravidian Architecture:
Pallavas – *Ex: Rathas & Shore temple at Mahabalipuram,*
Cholas - *Ex: Brihadeshwar temple at Tanjore*
Pandyan – Gopurams

Later Dravidian Architecture: Vijayanagar – *Ex: VithalaTemple at Hampi*
Madura period – *Ex: MeenakshiTemple at Madurai*

Module V:

Indo-Aryan Architecture: Orissa –*Ex: LingarajaTemple at Bhubaneshwar*
Khajuraho – *Ex: KhandariyaMahadev temple at Khajuraho*
Gujarat – Ex: Temple of Surya at Modhera
Hoysala (Later Chalukyan) Architecture: *Ex: Keshav temple at somnathpur*

Assignment:

Module wise Assignments need to be given after completion of each module and to be evaluated immediately. Includes sketches with plan, elevation & write up.

Course outcome:

Students are able to understand early civilization & religious architecture of India.

References:

1. "Indian Architecture, Buddhist & Hindu Period" by Brown, Percy
2. "Architecture of India-Buddhist & Hindu" by Grover, Satish
3. "History of Architecture in India" by Christopher, Tadgell
4. "Hindu India" by Sterlin, Henri

18AT25 - Mechanics of Structures

Contact Periods / week: 3 (3 Lecturers)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory exam, 3 hrs duration): 50

OBJECTIVE:
To give an introduction to basic principles of mechanics and behavior of bodies under action of external forces

OUTLINE:

Module I:

Introduction to engineering mechanics:

Mechanics classification scalar and vectors. Force and characteristic of forces, forces system and classification Law of parallelogram, law of transmissibility and law of superposition Composition and resolution of forces Resultant and equilibrant Rigid body and deform able body.

Module II:

Resultant of co planar force system Moment of force, couple and characteristic couple Virginian's principle. Resultant of non- concurrent force system. Numerical example on concurrent and non-concurrent force system.

Module III:

Free body diagram Conditions of equilibrium, Lami's theorem Equilibrium of concurrent and non-concurrent force system, Numerical problems

Module IV:

Beams and support reaction:

Types of supports types of loads, types of beams. calculation of support reactions, Numerical problems on beams (only determinate beams) subjected to point load & UDL.

Module V:

Geometric properties and Moment of inertia

Centre of gravity and centroid. Centroid of rectangle, circle, semicircle triangle, quarter circle Location of centroid of plane lamina's. Moment of inertia, radius of gyration parallel axis theorem, perpendicular axis theorem. Calculation of M.I of L section, T section, I section and channel section.

Note: Equal weight age to be given for theory and problems in teaching as well as in paper setting

Assignment:

Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course outcome:

Reference

1. Engineering Mechanics by S. Ramambrubum
2. Engineering Mechanics by S.S Bhavikatti
3. Engineering Mechanics by I.B Prasad
4. Engineering Mechanics by R.K Bansal Laxmi publication, New Delhi
5. Engineering Mechanics by Ferdinand L singer & Hurper Collins Publication

18AT26 –Surveying & Leveling- II

Contact Periods / week: 3 (1 lecture + 2 Practical)	Continuous Internal Evaluation: 50
Credits: 2	SEE (Practical /viva): 50

Objective:

To develop the knowledge and skill of measurement & layout of building at site.

1) Practical to be Conducted involving on chain survey simple unit. Construction of perpendicular by 3,4,5 methods on site and construction of geometrical figures using chain, tape and compass setting out centre line for simple building.
2) Compass survey: Construction of geometrical figures using compass.
3) By using plane table
    a. Radiation method
    b. Intersection method
    c. Resection method
4) Practical on levelling
    a. Simple levelling
    b. Differential, profile levelling
5) Traversing, profile levelling
    Contouring: Block level survey radial method to calculate earth quantity
6) Selting out of Centre line of simple building.
7) Demonstration of total station planimeter

Course Outcome:

student will be capable of executing mark out of buildings & different types of Surveys and other calculation related to it.

Reference:

Surveying Practice – I: Survey & Levelling by:

1) B. C. Punnia
2) Kenitkar
3) Arora

18AT27: VISUAL ARTS

Contact Periods / week: 4(4 Practical)	Continuous Internal Evaluation: 50
Credits: 2	SEE (Practical /viva, Oral & sketching): 50

OBJECTIVE:
To give an artistic orientation to the students to enable the transition from their purely scientific background and to develop fundamental artistic skills for application in architectural drawings.

OUTLINE:
Part A

- Freehand drawings and simple perspective in object drawing and drawing use of various drawing and sketching tools like pencils, ink pens, charcoal pencil etc. drawing, shading etc.
- Exercises in freehand drawing of household furniture, street furniture, human beings and automobiles, trees etc.
- Study of object drawing and nature with light and shade
- Rendering – use of rendering tools and materials like easels, brushes, paper (handmade, drawing sheet), water color etc.

Part B

- Working of art, type of arts – visual, performing, pop etc. appreciation of art form
- Relationship of Architecture with arts like, painting, sculpture, mural, color, fine arts, performing arts, folk art etc.

Assignment: Assignments consist of evaluation stage wise progress. Concerned faculty is advised to collect assignments stage wise and evaluate.

Course Outcome:
It helps the students in transforming the 2D shape into 3D form with the use of different techniques & materials of Art. The student will be capable of relating art with architecture in their projects.

Reference:
Visual Art: A Basic Study by Gajanan Bhagwat, Arvind Desai
Visual Design: A problem solving Approach by Lillian Garrett

18AT28 - Architectural Model Making

Contact Periods / week: 2 (2 Practical)	Continuous Internal Evaluation: 50
Credits: 1	SEE (Practical Examination marks): 50

OBJECTIVE:
To train the students in basic skills of Architectural model making with different scale, material and proportion

OUTLINE:

1. Model making of geometrical objects such as cube, cuboids, pyramid, cone dome, by using wax, box board, thermacol, soap, pop, foam board etc.
2. Preparing space models and tensile forms or membrane structures using steel wires, plastic or wooden sticks, etc. Use of wax, metal wire, fiber, cloth and Plaster of Paris
3. Preparation landscape elements such as trees, shrubs lawns, rocks, water bodies out of different materials –Sponge thermacol, wool, cotton and paper etc.
4. Making forms out of paper through origami, kirigami
5. Model coloring using sprayer, brush or any other aid
6. Block model making and elevations in paper print attached to wall to suitable scale along with landscape
7. Interior model making of 2 to 3 rooms with furniture, wall, flooring, lighting colored and made to detail to suitable scale.

Assignment: Assignments consist of evaluation stage wise progress. Concerned faculty is advised to collect assignments stage wise and evaluate.

Course Outcome:
Skill of model making will be developed in the student.

SYLLABUS CONTENT OF III SEMESTER B. ARCH.

18AT31 ARCHITECTURAL DESIGN – III

Contact Periods / week: 9 (3 L + 6 S)	Continuous Internal Evaluation: 50
Credits: 8	Semester End Evaluation (Viva marks): 50

Objective:

To understand the process of developing architecture with introduction of open spaces in defining built form.

Outline:

1. Understanding the role of covered, semi covered and open space in creation of architecture. Understanding their interrelationship with each other & built form.
2. Understanding the surrounding environment /landscape as an open space and its influence on defining covered, semi covered & open spaces.
3. Understanding the possible functions that can occupy the covered semi covered and open spaces. Influence these on human mind.
4. Impact of open spaces on the Society.

Examples:

Old Age Home, Hill station Resorts, Motels, Nature Cure Centers, Boarding schools etc.

Assignment:

Assignment consists of evaluation stage wise progress. Concerned faculty is advised to collect assignments stage wise and evaluate.

Course outcome:

Student will be able to design a built form with consideration of covered, semi covered & open spaces with amalgamation of landscape.

References:

- Residential Design by Vastu Shilpa Foundation
- Time Saver's Standards
  Works of Louis-I-Khan
- Works of Le-Corbusier
- Works of Geoffrey Bawa

18AT32 – BUILDING CONSTRUCTON & MATERIALS – III

Contact Periods / week: 6 (2 L + 4 S)	Continuous Internal Evaluation: 50
Credits: 5	SEE (Theory exam, 4hours duration): 50

OBJECTIVE:

To introduce various RCC systems

OUTLINE:

Module-1

Concrete: Aggregate (Courses, Types etc.…), Sand (Availability, types etc.),Ingredients, grades of concrete, Admixtures, Properties, Production, Mixing-Proportioning, Transporting, Placing, Compaction, Curing of Concrete, Ready-Mix Concrete, Sampling and Testing.

Concreting under water: Special Concrete (Light-Weight& High-Density Concrete), Uses of Concrete for aesthetic and Structural Purpose.

Module-2

Understand the basic properties of concrete and RCC construction techniques in the building.

Foundations: Study of principles and methods of construction of RCC foundations, types of foundations, reinforcement details – Pad, Strip, Isolated, combined, Raft, Base slab, pile foundations etc.

Module -3

Scaffolding and Formwork: (For RCC Slabs, Beams, Columns), Design and Planning, Materials used and scaffolding methods.

Module-4

RCC Roofs and Frame: Construction and Design, reinforcement details of One way, two ways, RCC pitched roof, Cantilevered slabs, Columns, Beams, Lintels and Construction & design of staircase – RCC.

Module-5

Expansion Joints- Necessary & Location and Detailing, Grouts and Anchors, Repairs and protective coatings, Bonding Agents, Sealants, water/weather proofing Compounds, Tile Adhesives, Tile Joint Fillers, Ferro cement Elements.

Assignment:

Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course outcome:

Students will be able to develop the detailed drawings of RCC elements by visiting site which helps in executing the work at site.

References:

1. "Building Construction" by W.B. Mackay
2. "Construction Technology" by Chudley
3. "Construction of Building" by Barry
4. "Building Construction" by Rangawala
5. "Building Construction" by Punmiya
6. "Building Materials" by S K Duggal.

18AT33 GRAPHICS – III

Contact Periods / week: 5 (2 Lecture + 3 Studio)	Continuous Internal Evaluation: 50
Credits: 4	SEE (Term work) marks: 50

Objective:

- To train the students in the techniques of three – dimensional presentation of built form.
- To enhance their visualization skills by practice on drawing board by conventional method

Outline:

Perspective:

1) Drawing of one point Perspective of interiors view of Living Room, Bedroom, Kitchen etc. with Rendering.
2) Drawing of Two-point Perspective of exteriors view of built–form with landscaping etc. by Hand drafting.
3) Perspective drawing of built form. Free hand perspectives

Rendering:

4) Rendering of the perspectives using different media such as
   i. Pencil
   ii. Pen and Ink
   iii. Color Pencils
   iv. Water Color, etc

Digital:

5) Expressing the concept and making compositions in the sheet through software such as flash, Photo-shop, illustrator in design, sketch up etc. using the above to prepare effective drawing.

Assignment: Assignments need to be given after completion of each chapter and to be evaluated immediately.

Course outcome:

Students will be able to make an appealing image of building.

References:

1. Architectural Rendering the techniques of contemporary presentation by Albert o Halse
2. "Perspective" by S. H Mullik
3. "Rendering by Pen and Ink" by Robert W. Gill.

18AT34 HISTORY OF ARCHITECTURE – III
(Islamic & British Architecture)

Contact Periods / week: 4 (2L + 2 S)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory exam, 3hrs duration): 50

Objective:

To provide an understanding of an evolution of Islamic and colonial architecture in India, in their various stylistic modes characterized by technology, ornamentation and planning practices.

Outline:

Module - I

Imperial style – Understanding the evolution & characteristic features of imperial style.
Slave, Khilji, Tughlaq, Sayyid & Lodi Dynasties
Ex: Quwaat-Ul-Islam Mosque, Qutb –Minar, Enlargement of Quwaat-Ul-Islam Mosque by Iltumish, Tomb of Iltumish, Alai Darwaza, Tomb of Ghias-Ud-din Tughlaq, Khirki masjid, Delhi, & Tomb of Feroz shah Tughlaq

Module-II

Provincial Style- Understanding the evolution & characteristic features of provincial style.
Ahmedabad, Bijapur and Deccan (Gulbarga, Bidar & Golconda).
Ex : Jami Masjid-Ahmedabad.
: Jami Masjid-Bijapur, Ibrahim Rauza-Bijapur, GolGumbaz -Bijapur,
: Jami Masjid-Gulbarga, Bidar Fort- Bidar, Golconda fort- Golconda

Module-III

Moghul period- Understanding the evolution & characteristic features of Mughal period.
Monumental buildings built in the regime of Humayun, Akbar, Jehangir, Shahjahan & Aurangazeb.
Ex: Humayun's tomb, Fatehpur Sikri (layout, Jami masjid, Buland Darawaza, Tomb of Salim Chisti, diwan-I- khas), Akbar's Mausoleum, Taj Mahal, Tomb at Aurangabad, Bibi ka Makbara at Aurangabad & Pearl Mosque at Delhi.

Module-IV

Early colonial period: The purpose & stylistic features evolved during colonial period. monumental buildings executed in the regime of East India company up to middle of 19th century
Ex: St Paul's cathedral - Calcutta & Bombay town hall.

Module-V

Later colonial period: Understanding colonial features with regional influence Contribution of Edwin Lutyens and Herbert Baker to the layout and Architecture of New Delhi. Ex: Layout of New Delhi, Rashtrapati Bhavan and Parliament house.

Assignment: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course Outcome:

Students are able to understand the evolution & various styles in Islamic & Colonial arch in India.

References:

1. "History of Architecture in India" by Tadgel, Christopher
2. "Indian architecture –Islamic period 'by Brown Percy.
3. "Indian architecture –Islamic period 'by .Satish Grover
4. "History of Architecture" by Sir Banister Fletcher

18AT35 STRENGTH OF MATERIALS

Contact Periods / week: 3 (3 L)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory exam, 3 hrs duration) marks: 50

Objective:

To understand the behavior and perform the analysis of determinate structures

Outline:

Module-I

Simple stresses and Strains:

- Concept of stress and strain. Types of stresses and strains. Hooke's law, axial deformation in uniform bar. Stress strain behavior of mild steel, High yield strength deformed steel and concrete. Deformation in varying sections. Numerical Problems
- Relationship between Elastic constants. Analysis of Compound bars. Temperature stresses Numerical Problems

Module-II

- **Shear force and Bending moment:** Concept of shear force and bending moment Relationship between shear forces and bending moment. Development of shear force and bending moment diagram for cantilever beam subjected to different loading (Point load, udl, uvl and moment) Numerical problems
  Development of SF &BM diagrams for simply supported and over hanging beams subjected to different loading (Point load, udl, uvl, and moment) Numerical problems.

Module-III

- **Bending stresses in beams:** Theory of simple bending. Equation of pure bending Moment of resistance, Section modulus and flexural rigidity. Numerical Problems.
- **Shear stresses in beams:** Derivation of shear stress formula. Shear stress distribution in rectangular, circular, T-Section and I-Section. Numerical problems

Module-IV

- **Slope and Deflection in beams:** Introduction. Relationship between curvature, Slope & deflection. Determination of slope & deflection in cantilever beam and simply beam subjected to concentrated load &UDL (Integration method). Numerical problems
- **Torsion in shafts:** Introduction. Assumptions in torsion theory. Torsion equation. Polar modulus, Torsional rigidity. Strength of solid and hallow shaft. Power transmitted by shaft. Numerical problems.

Module-V

- **Elastic stability of Columns:** Introduction, Assumptions in Euler's method. Effective length, slenderness ratio, determination of buckling load for column with different boundary conditions by Euler's method. Numerical problems
- Limitations of Euler's method. Derivation of Rankine's formula, Numerical problems.

Assignment: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course Outcome:

Students are able to understand & analyze the determinate structures.

Reference Books:

1." Strength of materials" By Ramamrutham Dhanpat Rai publishing company New Delhli
2." Strength of materials" By S.S. Bhavikatti Vikas publishing House Pvt. Ltd., New Delhli
3." Strength of materials" By M. Chakraborti. S. K Kataria &sons Publication New Delhli
4." Strength of materials" By Thimoshanko & Young East West press Ltd.,New Delhi
5." Strength of materials" By B.C.Punmia & Ashok Jain Laxmi publication pvt Ltd., New Delhli
6." Strength of materials" By Dr R.K Bansal Laxmi publication pvt Ltd., New Delhli

18AT36 – CLIMATOLOGY

Contact Periods / week: 4 (2 L + 2 S)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory exam 3 hrs. duration) marks: 50

Objective:

To develop the knowledge required for understanding the influence of climate on architecture.

Outline:

Module- I

1. Introduction of global climate
2. Elements of Climate, measurement and representation of climate data.
3. Classification of tropical climate major climatic zones of India.

Module- II

1. Thermal comfort, effect of climatic elements on thermal comfort environment. Body's heat exchange with surrounding environment. Thermal comfort indices: Effective temperature, bio-climatic chart etc. Kata thermometer and globe thermometer.
2. Site climate, effect of landscape elements on site/microclimate.

Module - III

1. Thermal performance of building elements effect of thermos- physical properties of building materials and elements on indoor thermal environment. Thermal properties, conductivity, receptivity diffusivity, thermal capacity and time lag and 'U' value. Construction techniques for improving thermal performance of walls and roof. Heat exchange in building and its external environment.

Module- IV

1. Natural ventilation, function of natural ventilation, Design consideration and effects of openings and external fractures on internal air flow.
2. Sun path diagram, shading devices, use of solar chart in climatic design. Types of shading devices procedure of designing shading devices procedure of designing shedding devices.

Module - V

1. Design considerations for building in tropical climates with special reference to hot-dry, warm-humid and composite climates.
2. Energy conservation with respect to hot – dry climate
3. Study of any two examples reflecting the climate considerations in design.

Assignment: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course Outcome:

The student is capable of understanding the interaction between climate & architecture.

References:

1. "Manual of Tropical Housing & Building (Part-II)" Koenigsberger
2. "Housing Climate and Comfort" by Martin Evans
3. "Buildings in the tropics" by Maxwell fry
4. Climate Responsive Architecture "by ArvindKishan, Baker &Szokolay"
5. Solar control & shading devices by Volge & Volge

18AT37 - Communication skills

Contact Periods / week: 2 (2 L)	Continuous Internal Evaluation: 50
Credits: 1	SEE (Viva exam): 50

Objective:
To enable the students to develop skills in effective communication both in written & verbal.

Outline:

Module - I

- **Introduction:** Meaning, Definition, Importance & Purpose of Communication, Process of Communication, Types of Communication, Communication network in an organization, 7c's of communication, Barriers to Communication & Essential of good Communication.
- **Oral Communication:** Meaning, Principles of successful oral communication, barriers to communication. Modes of oral communication – listening as a communication skill, Non-verbal communication. Grapevine Communication – Meaning & Types.

Module - II

- **Effective writing:** Purpose of Writing,Clarity in writing, Principle of Effective writing, writing personal Experiences – Describing a person, situation, memorable events etc.
- **Drafting of Letters:** Writing different types of letters - writing for employment, joining letter, complaints & follows up, Enquiries, representation etc. Official Communication – e-mail & social media.

Module – III

- **Presentation Skills:** What is a Presentation? – Element of Presentation – Designing & delivering Presentation. Public Speaking, Effective Power Point presentation, body language, Non-verbal facial expressions, Eye Contact, audience research, questions from the audience, communication of emotional intelligence, creativity in oral communication. Communication through telephonic, video conference & Skype.

Module - IV

- **Employment Communication Skills:** Writing Curriculum Vitae (CV), Interview – Types of interview, Candidates Preparation, Interviews Preparation, Time Management, Grooming & Just A Minute (JAM). Speaking for better communication – speaking about yourself.

Module - V

- **Interpersonal Communication Skills:** Advantages& Disadvantages of utilizingthe team work, Characteristic of Successful teams, Stages of the development of a team, team roles, challenges in team working, forms of Non- Team behavior.

Assignment: Assignments need to be given after completion of each chapter and to be evaluated immediately.

Course outcome:
The students will be able to communicate effectively using verbal, visual and electronic modes and media.

References:

1. Prasad P, Communication Skills, S. K. Kataria & Sons.
2. Business Communication – K. K. Sinha, Galgotio Publishing Company, New Delhi.
3. Murphy – Effective Business Communication, Mc Graw Hill
4. Mc. Grath- Basic Managerial Skills, New Delhi, Prentice Hall India learning pvt. Ltd.

18AT38 COMPUTER APPLICATIONS IN ARCHITECTURE-II

Contact Periods / week: 3 (1 Lecture + 2 Practical)	Continuous Internal Evaluation: 50
Credits: 2	SEE (PRACTICAL Exam marks): 50

Objective:
To develop required skills in preparation of 3-dimensional model using computers.

Out line:
Module - I
- Introduction to 3Ds Max, Importing 2D drawings
- Study of commands required for preparation of 3D drawings in 3Ds Max

Module - II
- Material application for 3D model
- application of lighting for 3D model

Module - III
- Rendering of required views

Module - IV
- Working with Photoshop on rendered view of 3ds Max.

Module - V
- Google Sketch up

Assignment: -
Preparation of one architectural design project of smaller scale in 3D
Assignment shall include use of 3Ds Max for preparing 3D models
Preparation of final views of 3D rendered with Photoshop

Course Outcome:
Students will be able to give realistic view of the proposed building.

References:

- Catalytic Formations: Architecture and Digital Design, Ali Rahim
- BIM Handbook: A guide to Building Information Modelling for Owners, Managers, Designers, Engineers and Contractors, Chuck Eastman
- Building Information Modeling, Willem Kymmell

SYLLABUS CONTENT OF IV SEMESTER B.ARCH.

18AT41 ARCHITECTURE DESIGN - IV

Contact Periods / week: 9(3 lecture + 6 Studio)	Continuous Internal Evaluation: 50
Credits: 8	SEE (Viva marks): 50

Objective:

To understand the application of climate on Architectural Design.

Outline:

- Understanding & analyzing passive cooling tools and techniques for a given climate.
- Selecting & understanding a given program with respect site context.
- Understanding & Analyzing the program with respect to function & climate.
- Organizing the spaces with respect to function & climate
- Application of passive cooling techniques for micro climate modulation of the site.
- Application of passive cooling techniques to the program. Detailing with usage of advanced techniques & materials

Examples:

Public building such as Taluka Level Govt. Offices, Higher secondary schools, youth hostels etc.

Assignment:

Assignment consists of evaluation stage wise progress. Concerned faculty is advised to collect assignments stage wise and evaluate.

Course Outcome:

The student will be able to do a Climate Responsive Architectural Design for a given Climate.

References:

1. Housing Climate & Comfort by Martin Evans
2. Climate Responsive Architecture by Arvind Kishan Baker & Szokdey
3. "Energy Efficient in India" by Milli Mujumdar

18AT42 BUILDING CONSTRUCTION & MATERIALS – IV

Contact Periods / week: 6 (2 Lecture + 4 studio)	Continuous Internal Evaluation: 50
Credits: 5	SEE (viva marks): 50

Objective:
To acquaint the students with construction practices pertaining to Steel in the form of Building Element.

Outline:

Module-1
Steel: Composition, uses application Properties & Architectural uses of Mild steel, High yield strength steel and Stainless steel for Aesthetical purpose. Rolled steel sections (As per IS Code), Reinforced steel bars- Classifications, Tensile testing of Steel.
Classification of steel, advantages & disadvantages of steel structures.

Module -2
Steel Foundation- Study of principles and methods of construction, connection Detail from Foundation to Super structure.

Module-3
Steel Doors and Windows: Design, Construction, Joinery details of Various Steel windows using Z-Angle, L-Angle etc.…

Module-4
Staircases: Types of Staircases, Requirements of staircase. Construction & design of staircase –Steel, Study of fire escape staircase

Module-5
Steel Roofs- Study of principles and methods of construction of Industrial Steel Roofs with fixing details of various Covering materials for various spans (GI Sheets, Acrylic Sheets, Asbestos Sheets etc…), portal frame.

Note – *Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Submit Study of material & its application in the form of portfolio.*
The entire portfolio on Construction and Materials shall be submitted along with study models.

Assignment:
Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course outcome:
Student will capable of drawing & execution of steel structures

Reference:

1. "Building Construction" by W.B. Mackay
2. "Construction Technology" by Chudley
3. "Construction of Building" by Barry
4. "Building Construction" by Rangawala
5. "Building Construction" by Punmiya
6. "Building Materials" by S K Duggal.

18AT43 BUILDING SERVICES-I

(WATER SUPPLY AND SANITATION)

Contact Periods / week: 3 (3 Lectures)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory exam, 3 hrs duration) marks: 50

Objective:

To impart the knowledge and skills required for understanding the building services of water supply and sanitation and their integration with architectural design.

Outline:

Study of these services shall be exclusively for a simple (such as residence) to three storied building only (such as apartments, commercial complexes, public buildings etc). Use of NBC

MODULE-I

Introduction to Water supply &Assessment of water requirements

Sources and collection: - Sources of supply & Bore wells.

MODULE-II

Distribution: Distribution systems, Pipes – laying and jointing, Water pipes – materials (GI, PVC, CPVC/ UPVC pipes, introduction to Copper plumbing), Pipe Accessories, Storage tanks & Pumps.

MODULE-III

Water conservation: Rain water Harvesting, Recharging, Recycling and reuse application in planning water supply systems &Brief study of Provision water for firefighting – fire hydrants.

With reference to National Building code – Part - IX

MODULE-IV

Introduction to Sanitation and Drainage

Collection and conveyance of Refuse: Drainage in building, Sewers, Traps, Sanitary Fittings, Sewer Accessories

MODULE-V

Disposal and Treatment for larger project: Sewage Treatment, Septic Tanks, Waste and Storm Water Drainage System

Solid waste management: Types of Garbage, disposal & management – landfills & treatment

Site visits:

Site visits to be arranged to Water treatment plant, Sewage treatment plant, multistoried apartments for studying Water Supply and Sanitary arrangements.

Assignments:

- Detail layout plans and sections showing details of Water supply & Plumbing system and underground drainage system to be submitted showing location of all fittings and fixtures in a two-bed room house.
- Detailed sections of toilets and bathrooms showings fittings and appliances
- Line diagram of water supply and sanitation for a 3 storied Hostel building
- Calculation of water demand for a small settlement
- Design of Overhead water tank and underground water sump

Course Outcome:

Student will be able to understand & depict water supply & sanitation in architectural drawing

References:

1. NBC
2. "Sanitary Engineering – (Vol I and II)" by RS Deshpande
3. "Water Supply and Sanitary Engineering" by S Birdii
4. "Water Supply and Sanitary Engineering" by Charanjit S Shah (Arch. Handbook series)
5. "Relevant IS Codes of India"
6. Water Supply and Sanitary Engineering" by S.C. Rangwala

18AT44 HISTORY OF ARCHITECTURE – IV
(Modern Architecture)

Contact Periods / week: 4 (2 Lectures+2 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory exam 3 hrs duration) marks: 50

Objective:
To provide an understanding of evolution of Modern Architecture and High Modernism in India and Abroad.

Outline:

Module-1

Impact of Industrial Revolution on Architecture: The social, Economic and political changes, affected, requirements of the society, new materials and technological development. Birth of various movements such as Chicago school, Bauhaus, De stijl movement, Art Nouveau etc.
Study of examples:

1. Crystal palace at London
2. Wain Wright building by Adler and Sullivan
3. Bauhaus school at Dessau by Walter Gropius,
4. Paris Metro Station entrance, Antoni Goudi's works
5. Schroder House by Rietveld

Module-2

Study of the works of masters:

1. Le Corbusier – Villa Savoy and Ron Champ Cathedral
2. F.L. Wright – Falling Water House and Johnson Wax Tower
3. Mies van der Rohe - Farnsworth House and Seagram building
4. Kenzo Tange – National Gymnasium for Tokyo Olympiad, Kagawa Prefectural Center
5. Louis-I-kahn – Richard Medical Research Building, Philadelphia, First Unitarian Church and School

Module-3

Study of other architects who contributed to development of modernism:

1. Eero Saarinen – Trans world Air Line Terminal
2. Paul Rudolph - Architecture School at Yale University.
3. Richard Mier – Smith House,
4. Geoffrey Bawa- Architects own office,
5. Alvar Aalto- Community Hall at Sanit Salo

Module-4

Modern architecture in India:
Study of the works and philosophy of various architects.

1. Le-Corbusier - Capitol complex at Chandigarh
2. Louis-I-khan – IIM Ahmedabad
3. P. Kanvinde –Nehru science center Delhi, Mehsana dudh sagar
4. B.V Doshi – IIM,Bangalore and Sanghat Ahmedabad
5. Charles Correa – KanchanJunga apartments at Bombay, Cida – de – Goa

Module-5

1. Uttam. C. Jain - Kota Engineering College Jodhpur university, meditation hall at Mount Abu
2. Raj Rewal – Asiad games village at Delhi, hall of nations at Pragati Maidan, New Delhi.
3. J. A Stein – IIC at New Delhi, International Kashmir center at Kashmir
4. Laurie Baker – Center for Development studies Thiruvananthapuram, St. John's cathedral Thiruvalla.
5. Chistopher Benninger- two works
6. Nari Gandhi's works at lonavala

Assignment: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course Outcome:
Student will be able to understand the evolution of modern architecture & relate it to the present context.

References:

1. "Modern architecture –A Critical history" By Frampton Kenneth
2. "A History of Architecture" by Fletcher Bannister
3. "Pre-History to Post Modernism" by Marvin &Isabell.
4. "Modern architecture in India "by Bahga and Bahga&Bahga
5. Contemporary Indian Architecture-After the Masters – Vikram Bhatt and Peter Scriver

18AT45 STRUCTURAL ANALYSIS

Contact Periods / week: 3 (3 lecture)	Continuous Internal Evaluation: 50
Credits: 3	SEE (3 hrs exam, Theory marks): 50

Objective:

To understand the behavior of structures and carry out the analysis of different structures.

Module-I

1. Structural systems: Forms of structures, Equilibrium conditions, compatibility conditions, Determinate and Indeterminate structures, Static & Kinematic Indeterminacy, linear and non-linear structures.

2. Deflection in beams by moment area method: Moment area theorems, Determination of slope and deflection in cantilever beams, subjected to point loads and UDL by Moment area method. Determination of slope and deflection in simply supported beam subjected to point load and UDL by moment area method. Numerical problems

Module-II

3. Analysis of propped beams: Introduction of propped beams**,** Analysis of propped beam subjected to point load and UDL only. Numerical Problems

4. Analysis of fixed beams: Introduction of fixed beams, analysis of fixed beams subjected to point load & UDL only. Numerical problems

Module-III

5. Slope deflection method: Introduction, derivation of slope deflection equations, analysis of continuous beam by slope deflection method subjected to point loads and UDL only. Numerical problems (Kinematic Indeterminacy ≤ 2)

6. Analysis of Non sway frames: Analysis of non-sway frames by slope deflection method subjected to point load and UDL Only. Numerical problems. (Kinematic Indeterminacy ≤ 2).

Module-IV

7. Moment distribution method: Introduction, carry over theorem, Stiffness distribution theorem. Analysis of continuous beams by moment distribution method subjected to point load and UDL Only. Numerical problems on sinkins and without sinkins of supports.

Module-V

8. Analysis of Arches: Types of arch, behaviour of arch,Analysis of three hinged arch (parabolic and circular arch) with supports at same levels only. Numerical problems.

9. Analysis of cables: Cable and types of cables, application of cable in structures, analysis of cables under UDL and point loads (with supports of same level only). Determination of length of cable. Numerical problems.

Assignment: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course Outcome:

Students are able to perform analysis of different structures.

Reference Books:

1. " By Ramamrutham Dhanpat Rai publishing company New Delhli
2. "Basic structural analysis" by C.S. Reddy Tata mcgraw Hill,New Delhi
3. "Strength of materials and Theory of structures" by B.C Punmia & R.K Jain vol I & Vol II Laxmi publication New Delhi
4. "Analysis of structures" by Thandav Murthy Oxford university of Press

18AT46 – WORKING DRAWING - I

Contact Periods / week: 4(2 L + 2 S)	Continuous Internal Evaluation: 50
Credits: 3	SEE (viva marks): 50

Objective:
To enable students to learn the techniques of preparing working drawings which are used for construction of buildings for both load bearing and frame structures.

Outline:

Module I:

- Load bearing structure: Centre line drawing, masonry drawings, foundation plans, floor plans showing details of walls & opening, lintel level plans & their details. Doors & window & Grill detail drawings with schedule of openings.

Module II:

- Site plans, permission / approval drawings
- Structural drawings: Lintels, roofs
- Detailing: Staircase, kitchen, toilet and flooring details.

Module III:

- Conventional methods of Architectural Drafting– lettering, dimensioning lines, Drafting conventions, Title blocks, office standards, representation of different materials in section. Graphic symbols

Module IV:

- Framed structure: foundation drawing & section, Colum Centre line drawing, plinth beams drawing, wall drawing wall drawing with thickness & openings, Beam & Slab drawings

Module V:

- Structural drawing of footing, column, lintel & chajja, plinth beam and roof beams & slabs.

Assignment:

1. The above drawings need to be prepared for one design project like residence, School, cafeteria etc. handled in an earlier Architectural design studio for a load bearing structure
2. One set of drawings need to be prepared on computer for one design project for multistoried framed structure

This entire term work to be produced for viva examination

Out Come:

Student will be capable of producing a relisting drawing ready to execution.

References:

1. Metric Architectural Construction, Drafting and Design fundamentals by William J Hornhung
2. Working Drawings Hand Book by Keith Styles
3. General Architectural Drawing by William E Wyatt

18AT47 - Housing

Contact Periods / week: 4 (2 L + 2 S)	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3hrs. duration) marks: 50

Objective:

To understand the development of housing sector in India Context with various factors defining its architecture.

Outline:

Module – I

Definition of Housing & House. Problems of housing in India context, housing & its relationship with town & neighborhood, housing typology.

Module – II

Housing standards, derivation, approval of existing standards & design criteria for different Socio economic group.

Module – III

National housing policy, housing programme at national and local level. Role of public & private institutions (Like HUDCO, LIC, National Housing Bank, Housing Boards, Housing Infrastructure Boards etc.) in solving the housing problems. National Urban and Rural Housing and Habitat Policies.

Module - IV

Site planning selection of site for housing, mass housing, Housing Density and impact on Cities, slums, squatter settlements problems & possibilities, -CPTED (crime prevention through environmental design) concept in housing- Defensible Spaces, Idea of Neighborhood (by Clarence Stein and Perry), Introduction to RERA (Real Estate Regulatory Authority).

Module – V

Study of some of the examples of houses with cost effective, socially interactive, safe and Architecturally unique Design solutions for a housing problem at local and National level.

Assignment: Module wise Assignments need to be given after completion of each module and to be evaluated immediately.

Course Outcome:

The student will be able to understand the various factors that define Indian housing sector & design Approach.

References:

1. Housing & Urbanization – Charles Correa
2. Housing & Economic Development in Indian county: Challenges & opportunity – By Robinleichenko
3. Housing/ national portal of India.
4. Urban Development & Housing in India – 1947 to 2007 – By Rishimuni Dived

18AT48–MEASURED DRAWING & DOCUMENTATION

Contact Periods: 2(3 P)	Continuous Internal Evaluation: 50
Credits: 1	SEE (viva voce): 50

Objective:
To learn the skills of documentation of building

Outline:
The students are expected to learn the skills required for documentation of buildings with its

- historical background & its importance
- reading a building with its context
- architectural style & influences
- materials and construction techniques
- converting a 3D model to 2D on paper

Assignment:
The assignment may be given as group work (4 to 5 students per group). The students have to submit a report on the measured drawing. The reports are to be assessed by the departments for Continuous Internal Evaluation.

Course outcome:
Students will be able to comprehend an existing building with its origin, style, evolution & importance with respect to present context.

References:

1. Mughal architecture & garden by George Michell
2. Traditional Architecture (House form of Islamic Community of Boharas in Gujarat) by Madhavi Desai
3. The Courtyard Wada of Maharashtra by Rupa Raje Gupta
4. Odisha – an architectural Odyssey by Soumyendu Shankar Ray, Kajri Misra

SYLLABUS CONTENTS OF V SEMESTER B.ARCH.

18AT51 – Architectural Design – V

Contact Periods / week: 12 (3 Lectures + 9 studio)	Continuous Internal Evaluation: 50
Credits: 9	Viva exam: 50

Objective:

To understand the process of **HOUSING** with Consideration of role of open spaces, social & community needs, safety factors, economic factors converting into Design.

Outline:

- Understanding the differences of organic & planned communities through examples.
- Understanding the role of various layers in formation of a community & its architecture – architectural expressions.
- Social: Type of Community living style, rituals, customs & festivals, safety etc. resulting into a typical architectural expression of in a region/place
- Economic factors: Usage of open spaces, common spaces, sharing of services & amenities, cost effectiveness in construction & technology leading to architectural solution.
- Climatic & environmental factors: Integration of built & open spaces to modulate the micro climate of living areas, public & private together, measures adapted to mitigate the environmental degradation possible through housing.
- Learning of the above through a problem solving not exceeding to 2000 sqm of site area.
- Critical appraised of housing of various category and geographic locations may be taken to understand the factors of influence on outcome.
- Various elements of the neighborhood may be analyzed critically to understand the hierarchy in
    - Road network-
    - Open spaces-
    - Public & private spaces
    - Interactive spaces

  creation of feel belongingness while addressing to issues of order, safety, community needs and integration to surroundings.
- Examples to be dealt may be low rise group housing, pertaing to certain community or gated community.

Assignment:

One major project & one minor project in the form of time problem need to be dealt.

Outcome:

Students shall be able to design a group housing that caters to the demands & also integrates well in a context.

References:

1. "Mane" – A KHB – Publication.
2. Time savers on Housing.

18AT52BUILDINGCONSTRUCTION&MATERIALS-V

ContactPeriods/week:6(3Lecture+ 3studio)	ContinuousInternalEvaluation:50
Credits: 5	SEE(VivaExamination)marks:50

Objective:

ToacquaintthestudentswithadvancedconstructionTechniquespertainingtoTimber,Glass,Aluminum,Pre-fabricated/Pre-castFormsintheformofBuildingElement.

Module-1

-

TypesofPartitions:Timber,Glass,Aluminum,Sliding/FoldingPartition,Acoustical(Sound Proof)Partition.

Module -2

-Types&DetailedfixingofCurtainWalls, glass spider wall, glass facade & Aluminium Composite panel.

-Types&DetailedfixingofFalseCeiling. -GypsumCeiling,MetalCeiling.

Module-3

- Pre/PostTensioningroof,FlatRoofs & swimming pools construction details.

Module-4

- ***Steel:***ConstructionTechniquesandDetailingofRolling Shutter, Steel Collapsible gate and Solid Steel Collapsible gate.

Module-5

a) Wall – Pre-cast Concrete wall, Pre-panelized load Bearing metal studs, Movable Parturitions, Curtain Wall, Shear Wall.
b) Roof- UPVC material (Synthetic Resin Sheet), Aluminum Insulated Metal roof
c) Advanced concrete **–** such as self-compacting concrete, high performance concrete, concrete with increased fire resistance and sprayed concrete, Light Transmitting Concrete (Litracon), Porous Concrete, Organic Concrete.

Note–

Minimumoneplateoneachconstructiontopic.Sitevisitstobearrangedbystudioteachers.Studyofmaterialapplicationsintheformofportfolio. TheentireportfolioonConstructionandMaterialsshallbesubmittedalongwithstudymodels.

Course outcome**:**

Studentwillcapableofdrawing&executionofvariousRCCmembers.

Reference.

1.BureauofIndianStandard–CodeBooks.
2.BuildingMaterial&TechnologyPromotioncouncil(BMPTC)Web
3.CentralBuildingResearchInstitute(CBRI)Webreference.
4.BuildingConstruction byW.B. Mackay
5.ConstructionTechnologybyChudley
6.ConstructionofBuilding byBarry
7.BuildingConstruction byRangawala
8.BuildingConstruction byPunmiya

18AT53 Building Services II
(Electricity & illumination)

Contact Periods / week: 3(3 Lecture)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Examination/ 3 Hrs) marks: 50

Objective:
The course aims at exposing the students of architecture to the areas of electrical installations and illumination in buildings along with energy conservation aspects.

Module I
BASICS OF ELECTRICITY:
Understanding operating voltage, current, electric power and electrical energy. Different types of Conductors, Cables, Selection criteria, Ohm's law.
Domestic Electrical Appliances: Brief description of appliances commonly used in domestic installations -electric water heaters and air conditioners etc.

Module II
Load Calculation: Procedure to calculate approximate connected load. Idea of Connected demand, fixed charge, energy charges and tariffs.
Machines: Introduction to alternation & transforms
Power distribution system: Overhead, underground, their advantages and disadvantages.
Solar PV Power generation: Concept, Different modes of operation. Terminology.

Module III
ELECTRICAL WIRING:
Electrical symbols; Installations from meter board to individual point
Electrical Wiring Systems: Wiring in domestic and commercial buildings, Different Types of wiring, Lay out practice, control panels, electrical working plans
Protection:
Working and benefits of Fuse, MCB and ELCB. Lightning Conductors and
Earthing: Purpose, Types, materials and fixing arrangements.

Module IV
ILLUMINATION
General Principles: Nature of light, definition, units of light, definitions of flux, solid angles, luminous intensity and brightness.
Production of Light: Brief description, characteristics, incandescent lamp, sodium vapour lamp, mercury vapour lamp, fluorescent lamp, neon lamp, characteristics of reflectors LED, CFL.

Module V
Laws: Laws of illumination, inverse square law, Lambert's Cosine law. Illuminance levels required for various tasks.
Light Flux Method: Calculation of number of lamps required for achieving a particular level of illumination.
Energy Conservation Opportunities in Lighting: Lighting upgrade technologies, Energy management in lighting by control devices.

Reference:

01. Electrical wiring, Estimating &Costing, – S L Uppal, S. Chand Publications New Delhi
02. Light Right: A practicing engineer's manual on energy efficient lighting. - Editors: MK Halpeth, T. Senthil Kumar, G. Harikumar, TERI Publication, New Delhi
03. Fundamentals of Electrical Engineering- BL Theraja, S. Chand Publications, New Delhi.
04. PV Power System basics- Waman Kuber, NCPRE IIT Bombay, Short Course

18AT54 – History of Architecture –V

Contact Periods / week: 4 (2 Lecture + 2 studio)	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3 hrs duration) marks: 50

Objective:
To provide an understanding and appreciation of contemporary trends in architecture in India and other parts of the world.

Out line:
Impact of various thoughts and globalization on architecture in India and abroad in terms of ideas and directions through the works of outstanding architects with one or two examples of each (India & rest of the World).

MODULE I

The modernist legacy

- The European rationalism
- High tech architecture movement.

MODULE II

- Minimalism
- Classical revival

MODULE III

- Post modernism
- De constructivism
- Contemporary vernacular

MODULE IV

- Ecological architecture
- New expressionists.
- Populist architecture

MODULE V

- New moderns
- Responsive Architecture

Assignment:
Assignment should be in the form of sketches & explanation.

Course outcome:
Students are able to understand contemporary trends in architecture in India and other parts of the world.

Reference:

1. Marvin Trachtenberg, Architecture from Pre-history to Post-modernism.
2. James Steele, Architecture Today.
3. Understanding post modernism –
4. Complexity & contradiction in Architecture – Robert Venturi

18AT55-Design of RCC Structures

Contact periods/weekly 04 hrs. (2 Lecture + 2 studio)	Continuous Internal Evaluation-50 Marks
Credits-03	Theory-50 marks (3 hrs.)

Objective:
To develop the necessary skills in design of RCC structures (with ref to IS 456-2000 by Limit state method)

Module-I

1) Introduction-Relevance of RCC in architectural practice, advantages & disadvantages over other conventional methods, steel for RCC-plain & twisted bars. Concrete Grade, basic concept of mix design (IS method) (04hrs)
2) Working stress method- introduction, assumptions, calculation of MR for singly reinforced beams. Numerical problems (Only analysis problems) (04hrs)

Module-II

3) Limit state method-Introduction, necessity & philosophy. Characteristic strength & loads, design strength & design load. Design of singly reinforced beam. Concept of bond strength. Numerical problems 05hrs)

4) Design of doubly reinforced beam. Numerical problems (04 hrs.)

Module-III

5) Design of T- Beam- Introduction, Design of T-beams. Numerical problems (04hrs)

6) Design of Column-Introduction, Design of columns by LSM (axial load & uniaxial bending) (05hrs)

Module-IV

7) Design of Slab- Introduction, types of slabs, design of one-way slab (Simply supported, Continuous & Cantilever slab by LSM) (04hrs)

8) Design of Slab- Design of two-way slab. (Simply supported & Continuous) (04hrs)

Module-V

9) Design of footing- Introduction, Design of footing (axially loaded only). (04hr)
10) Design of staircase- Introduction, design of dog legged staircase (04hr)

Outcome: Students will be able to understand the concept of limit state method of design and capable of designing the RCC Structural elements.

References:

1. A. K. Jain "Limit State method of Design" Nemchand & Bro's, Roorkee
2. N Krishnaraju "Design of Reinforced Concrete structures" CBS Publishers
3. Shah & Karve "Limit state theory & design of Reinforced structures" structures publication Pune.
4. Park & Paulay "Reinforced Concrete" John wiley & son's
5. P. Purushothaman "Reinforced Concrete structural elements" Tata Mcgraw- Hill Publishers, New Dehli.
6. BIS code – IS 456-2000

18AT56 LANDSCAPE DESIGN.

Contact Periods / week: 4 (2 Lectures+ 2 studios)	Continuous Internal Evaluation: 50
Credits: 3	Viva marks: 50

Objective:

To introduce students to the discipline of landscape architecture. and to develop basic skills required in handling simple landscape design projects

Outline:

1. Introduction to Landscape Architecture,
2. Role of Landscape in architecture, natural and manmade landscape, urban and rural landscape
3. Landscape elements – land forms, water bodies vegetation, climate, landscape furniture – their application in design
4. Study of Landscape materials and plant materials of surrounding region
5. Landscape Design principles.
6. Graphic design in Landscape
7. Introduction to site planning: site study, site analysis, requirement analysis, synthesis and final site plan.
8. Introduction to historical gardens like Mughal, Chinese, Japanese, Indian etc
9. Study and analysis of contemporary landscape designs with two or three examples.
10. Study of landscape of courtyards, roads, pathways, urban spaces, gardens, parking areas etc.

Assignment:

Application of landscape design principles to any two examples such as landscaping for residences, gardens, courtyards, urban space office complex etc

Ref: -

1. Landscape architecture by J.O. Simonds
2. The landscape we see –Garrett Eckbo
3. Introduction to landscape architecture by Michael Laurie.
4. Time Saver Standards for Landscape architecture

18AT57 STUDY TOUR & MEASURED DRAWING & DOCUMENTATION

Contact Periods: 3 (2 Lectures+ 1 studios)	Continuous Internal Evaluation: 50
Credits: 3	Term Work: 50

Objective:

- To expose students to Historical, Vernacular and Contemporary architecture.
- Learn the skill required for documentation of a building.

Outline:

Students are expected to observe the Architectural features of selected buildings and interrelate with the surroundings. In Measure Drawing & Documentation the students are expected to learn the skill required for measuring & documentation.
Measure Drawing & Documentation & Study tour is to be undertaken during the course period as directed by concerned staff & Department suitably.

1. The selection of a noted building may be Historical, Vernacular & Contemporary for Measured Drawing & Documentation is as decided by the department.
2. The students are asked to visit places as a part of study tour & the particular places to be selected will be decided by the concerned staff & Department suitably.

Assignment:

The assignment may be given as group work (4 to 5 students per group). The students have to submit a report on the measured drawing & study tour separately. The reports are to be assessed by the departments for Continuous Internal Evaluation.

Outcome:

Students will be able to relate their study with the observation.

SYLLABUS CONTENTS OF VI SEMESTER B.ARCH.

18AT61 - ARCHITECTURAL DESIGN – VI

Contact Periods / week: 12 (2 Lectures + 9 studio)	Continuous Internal Evaluation: 50
Credits: 9	Viva exam: 50

Objective:
To understand the Role of **SERVICE** in design and architecture as an **ENVELOPE** in the design of service based public buildings

Outline:

- Use of Services & their technology as precursor to the process of design.
- Efficiency to the performance of the building based on services.
- Architecture acting as an evelope in generating the form accommodating symbolic, thematic abstracts for image building.
- To understand the process of design to accomplish the above factors simultaneously.
- Integration of services, structural system, functions & utities is required.

A service based, technology dependentant program such as hospital, transport terminals,IT building, Auditorium, complex, shopping malls, industry may be chosen to address the issues mentioned earlier.

Assignment:

One major project & one minor project in the form of time problem need to be dealt.

Outcome:

Student will be able to integrate, service with functions to generate Architecture.

References:

- Time Saver standard for Architectural Design.

18AT62BUILDINGCONSTRUCTION&MATERIALS-VI

ContactPeriods/week:6(2Lecture+4studio)	ContinuousInternalEvaluation:50
Credits: 5	SEE(VivaExamination)marks:50

Objective:

Toacquaintthestudentswithadvancedconstruction&TechniquespertainingPre-EngineeredBuilding,SiteDevelopmentandMulti-StoryBasementStructure.

Module-1

- ConceptinPre-EngineeredBuildingStructures,Advantages/Disadvantages,VariousStandardFramingSystems,BracingSystems,VariousMembers/Componentterminology,Cladding&RoofingSystemsDetail.

Module -2

- ***Pre-FabricatedStructure***,RoofFraming,andSidewallFramingDetail,OpeningDetail,Connectiondetails,RoofingDetails, CanopyDetailetc.

Module-3

-

ConstructionTechniquesandDetailingofLiftWellfora4storiedStructurewithPlan,LiftwellSection, andLMRDetail & MRL.

-ConstructionTechniquesandDetailingofBankVaultsincludingVentilation System,SecuritySystem,ReinforcementDetailetc...

Module-4

- Multi-LevelBasementConstructionTechniquesandDetailingwrtStructuralSystem,LightingSystem,Ventilation,RainwaterDisposalSystemsandMethods.

Module-5

Insulation materials – Thermal and sound insulation materials: ICF(recycled EPS/ cement, wood/cement.) , fiberglass.

Glass – its manufacturing in its various types like Solar Control Glass, Thermal Insulating Glazing, Low Reflective Glazing, Self Cleaning Glazing, Sound Reducing Glazing, Photovoltaic Glazing

Fiber reinforced composite materials and products, ATC, GLT etc.

Advanced flooring materials- Kinetic Footfall Flooring, Cement /Epoxy Resin Flooring.

Note–

Minimumoneplateoneachconstructiontopic.Sitevisitstobearrangedbystudioteachers.Studyofmaterialapplicationsintheformofportfolio.

TheentireportfolioonConstructionandMaterialsshallbesubmittedalongwithstudymodels.

Courseoutcome:

Studentwillcapableofdrawing&executionofvariousTechniquesandDetailinginvolvedinthePre-EngineeredBuilding,SiteDevelopmentandMulti-StoryBasementStructure.

Reference:

1.VariousPrefabcorporationwebsites.

2.CentralBuildingResearchInstituteWebMaterial.

3.BuildingConstruction byW.B.Mackay

4.ConstructionTechnologybyChudley

5.ConstructionofBuilding byBarry

6.BuildingConstruction byRangawala

7.BuildingConstruction byPunmiya

18AT63 – BUILDING SERVICES-III

Contact Periods / week: 3 (3 Lecture)	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3 hrs. duration) marks: 50

Objective:
To develop the knowledge and skills required for understanding the mechanical services in building and their integration with architectural design as directed by NBC Norms.

Module 1:
Air-conditioning

Definitions advantages and disadvantages. Types of air conditioning systems, summer and winter air conditioning, calculation of air conditioning loads. Air distribution system, ducts and ducts systems. Air outlets, air conditioning, methods and equipment's. Residential and commercial air conditioning, energy conservation techniques, introduction to the concept of 'Clean Room', preparation of air conditioning layouts.

Module2:
Elevators (Lifts)

Brief History – types of elevators like traction elevators, gearless traction elevators, geared traction elevators, hydraulic elevators, double-deck elevators, passenger lift, hospital lift, goods lift, Service lift or dumb waiters. Civil dimensions of hospital lift, goods lift, passenger lift, and service lift, definitions and components, lift location in building i.e., grouping of lift in building as per the NBC Norm. Service requirement – Quantity of service and quality of service, passengers handling capacity.

Module 3:
Escalators & Conveyors.

Definition need and components of escalators. Types of Escalators (Vertical/ horizontal. Location in buildings. Escalator V/s Elevators. Capacity, size, space and speed of escalators. Relationship of staircases with lifts and their location in plan. **Conveyors:** horizontal belt conveyors, horizontal moving walk way – Mechanical safety systems and automatic control.

Module 4:
Fire Safety.

Types of fire, causes of fire, fire safety in buildings planning stage, classification of building classification of fire zones, brief description of combustible and non-combustible materials in case of fire, fire rating, and fire escape routes and staircase design (NBC Code), active fire control using portable extinguishers, basic concepts in fixed firefighting installations, automatic fire detection and smoke alarm systems, Wet riser, down composer, comparative analysis. Rules for fire protection and firefighting requirements for high-rise buildings in India. Fire hydrants, yard hydrants, fire sump- placement, design. Passive and active fire precautions – site planning and fire brigade access, Concept of Refuge Area in a high-Rise Building.

Module 5:
Building Management Services **(Contemporary Building Services): Intelligent Buildings: BMS Basic Concept & use. Building management /automation systems: principles, working & integration in building design. IT Services: Communication systems, CCTV.**

Assignment

- Air conditioning layout for a small residence and only study of AC layout in a large shopping complex and office complex
- Study of existing layout of firefighting system in a large / multi storied building
- Lift & Escalators –study & design of hospital lifts, Capsule lifts- finishes & precaution
- Study of existing layout of firefighting system in a large /multistoried building

Course outcome:

Student will capable of understanding various types of Services involved in the Building Design.

Reference:

"Principles of Refrigeration" by Roy J Dosat
"Air Conditioning and refrigeration data Hand Book" by Manohar Prasad
"Refrigeration and Air Conditioning" by Don Kundwar
*NBC part …

18AT64-BUILDING ACOUSTICS.

Contact periods/weekly 04 hrs(2 Lecture & 2 Studio)	Continuous Internal Evaluation-50 Marks
Credits-03	Viva-50 marks

Objective:
To acquaint the student with the general Guiding principles and procedures on which Acoustical Designing is based and applications of such principles in Architectural cases.

Module-1

Introduction and Scope of acoustics, Nature and properties of sound,Physics of sound - Sound propagation basic terminology – frequency, pitch tone, sound pressure, sound intensity, decibel scale, loudness, threshold of audibility and pain, masking, sound distance – inverse square law.

Module-2

Behavior of sound in enclosed spaces – reflection of sound, nature of reflection from plane, convex and concave surfaces, sound diffraction, absorption of sound, sound absorption coefficient, reverberation, reverberation time calculation, use of Sabine's formulae.

Module-3

Study of Types of Acoustical Materials such as ***Sound Absorbers*** (Acoustical Foam, White Printable Acoustical Panel, Fabric wrapped panels, Wall Acoustical Coverings, Ceiling Tile, Baffles & Banners.), ***Sound Diffusers*** such as (Quadra Pyramids Diffusers, Pyramid Diffuser, Double duty Diffuser, Quadratic Diffuser) etc…Absorption coefficient of indigenous acoustical materials, method of setting out of raked seating.
Design: Site selection, shape, volume, treatment for interior surface, basic principles in designing open air theatres, cinemas, broadcasting studios, concert halls, class rooms, lecture halls, theatres – Auditorium.

Module-4

Introduction to environmental noise control, noise and its classification, outdoor and indoor noise, airborne noise and structure borne/impact noise, community and industrial noise. Transmission of noise and transmission loss. Maximum acceptable noise levels. Means of noise control and sound insulation. Constructional measures of noise control and sound insulation.

Module-5

Acoustical Design Site selection, noise survey, room zoning and shape. Sources of industrial noise – impact, friction, reciprocation, air turbulence and other noise. Methods of reduction by enclosures and barriers, sources of outdoor noise – air traffic, rail traffic, road traffic planning and design against outdoor noise for air traffic, road traffic and rail traffic.
Forms. Application of latest Audio system available in market such as amplifiers, loud speakers, sound boxes etc..

Assignment
Sketching of Acoustical Fixing Details of Various Materials used in Walls, Ceilings and Flooring.

Course outcome:
Student will capable of understanding various Materials and Standards involved in Acoustical Design of any Structure.

Reference:
"Environmental Acoustic" by Leslie L Doelle
"Acoustical Designing in Architecture" by Knudson, Vern
"Acoustics: Noise and building" by Parich Peter,
Architectural Acoustics" by David Egan.

18AT65-Desgin of Steel Structures

Contact periods/weekly 04 hrs (2 Lectures+ 2 studios)	Continuous Internal Evaluation-50 Marks
Credits-03	Theory-50 marks(3 hrs)

Objective:

To develop the necessary skills in design of steel structures (with ref to IS 800-2007 by Limit state method)

Module-I

1) Introduction-Advantages & disadvantages of steel structures, different structural steel forms, types of loads and load combinations. (04hrs)

2) Bolted connections-Introduction, advantages & disadvantages, types of bolts, design of simple bolted connections (Numerical Problem),Concept of eccentric connections. (05hrs)

Module-II

1) Welded connections-Introduction, advantages & disadvantages, types of welds, design of simple welded connections. (04hrs)

2) Tension members- Introduction, design of tension members. (04hrs)

Module-III

5) Compression members-Introduction, design of columns and design of angle strut members. (05hrs)

6) Design of lateral system -introduction to column lacing & battening. Design of column lacing (single&double)(04hrs)

Module-IV

7) Design of Column base- Introduction, design of slab base. Numerical problems (04hrs)

8) Design of Column base- Introduction, design of Gusseted base. Numerical problems (04hrs)

Module-V

9) Design of beams- Introduction & design of laterally restrained beams. Numerical problems (04hrs)

10) Fire protection- Introduction, provision for fire protection of steel structures. (04hrs)

Course outcome: Students will be able to understand the concept of limit state method of design and capable of designing of steel structural elements.

References:

1. N Subramanaian "Design of Steel structures" Oxford Publication
2. S K Duggal "Limit state Design of steel structures: Tata Mc. Graw Hill.
3. S S. Bhavikatti " Design of steel structures" I K. International Publishing House Pvt. Ltd. New Delhi
4. BIS code – IS 800-2007.

18AT66WORKING DRAWING-II

Contact Periods / Week 4 (2 Lectures+ 2 studios	Continuous Internal Evaluation: 50
Credits: 3	SEE VIVA marks: 50

Objectives:

To enable the students to learn the techniques of preparing working drawings which are used for Services within the building.

Outline Content:

Water Supply & Sanitation:

- Plan showing Plumbing and Sanitation in building with Inspection Chamber connecting to the Septic Tank and then connecting to Main Sewer Line

Electrical with Furniture Layout:

- Plan showing Electrical fixtures and control Point(Distribution Point, Switch Board Sockets, Earthing Location

Lift and Escalators:

- Plan showing Lift location in building and its civil dimensions and vertical sections of the lift with machine room location

Air Conditioning:

- Plan showing layout of the A/C ducts, Diffusers with Air Handling Units (AHU)

Fire Escape Layout Plan:

- Plan Showing location of fire extinguishers, firefighting equipment's and location of Fire Escape staircase(Permission Drawing)

Assignment :-The above drawings are to be prepared for each content on Auto-Cad.

Outcome :- Students will be capable of preparing the working drawing for execution the Services part on the site and it will also help the students working during Professional Training

Elective – I

18AT671 Vernacular Architecture

Contact Periods / week: 3 (3 Lecture)	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3 hrs duration) marks: 50

Objective:

To provide an understanding of Vernacular Architecture of India & its formation with the contributing factors.

Outline:

MODULE I

- Vernacular Architecture - definitions, importance & scope.
- Vernacular Architecture of India in general.

MODULE II

Study of Vernacular Architecture of various climatic zones of India in context to:

- Environmental aspects
- Cultural aspects

MODULE III

Study of Vernacular Architecture of various climatic zones of India in context to:

- Planning aspects &
- Energy conservation aspects

MODULE IV

- Sustainability in Vernacular Architecture
- Application of Vernacular Architecture in present situation with works of eminent Contemporary Architects.

MODULE V

- Study of Vernacular features of one village considering all the aspects mentioned above with analysis, identification of prominent features.

ASSIGNMENT:

The assignment may be given as group work (4 to 5 students per group). The students have to submit a Case study & documentation report of house forms belonging to a particular climatic zone.

Outcome:

Students are able to understand the Vernacular Architecture of India, its importance & implications in present context.

Reference:

1. Paul Oliver (Ed), Encyclopedia of Vernacular Architecture of the world, vol 1,2,3
2. Fletcher Bannister, History of Architecture.
3. Rappoport Amos, House form & culture.
4. Rappoport Amos, History & Precedent of Environmental Design.
5. Bernard Rudofsky, Architecture without architects.

18AT672 - SUSTAINABLE ARCHITECTURE.

Contact Periods / week: 3 (3Lecture)	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3hrs. duration) marks: 50

OBJECTIVE: To introduce the student to the discipline of sustainable architecture. Learning various methods of sustainable architecture, which could be adopted in architectural design with respect to the local climate and region.

MODULE-1

1. Introduction to Sustainable Architecture. Present scenario of Environment. Architect's role in regarding environmental degradation. Needs & advantages of sustainable architecture.

MODULE-2

PLANNING/CLIMATE

1. Sustainability in planning: Various aspects of sustainability in site planning .Site Planning techniques - efficient space utilization, minimum exposed hard surfaces, usage of landscape elements for various needs of site etc.

2. Climate: Various means of passive techniques in buildings with respect to different climatic zones of India.

MODULE-3

MATERIAL/CONSTRUCTION TECHNIQUE

1. Materials: Selection of materials based on environmental qualities, Use of local materials, recyclable and reusable materials and low energy embodied materials, etc.
2. Construction techniques: Various methods of constructions that are considered to be sustainable.
3. Role of Vernacular architectural & techniques (Hot dry Climate)
4. Post Completion maintenance

MODULE-4

SERVICES

1. Sewerage: Sewerage system and its disposal, treatment methods within the site.
2. Electricity: Nature lighting/ventilation Ways and means of reduction in electricity consumption. Use of solar energy wind mill & Biomass for lighting of building, road, parks and garden, water pumping etc.
3. Water: Rainwater harvesting, recycling and reuse of water, recharging of water table, methods of water treatment within the site, ways and means of reducing consumption of water.
4. Waste management: Segregation at Source, Recycling & reuse of waste produced within the site. Concepts like Biogas and biomass plant, Vermiculture etc.

MODULE-5

RULES AND REGULATION

1. Role of LEED India and TERI GRIHA in certification process for Sustainability.

Assignment

Critical Appraisal of any Sustainable building in India.

References:

1. Energy-efficient buildings in India by MiliMuzumdar
2. Climate responsive architecture by ArvindKrishan and team
3. Tropical architecture by C P Kukreja
4. Housing, climate and comfort by Evan Martin
5. Design with climate by Victor Olgey
6. Green is Red- COA Publication
8. Solar Architecture

SYLLABUS CONTENTS OF VII SEMESTER B.ARCH.

18AT71Architectural Design –VII

Contact Periods / week: 12(3 Lecture + 9 studio)	Continuous Internal Evaluation: 50
Credits: 9	SEE (Viva Examination) marks: 50

Objective:

Integrating & converting institutional goals into architectural goals.

Finding an architectural language that depicts the institutional goals in the form of a built environment.

Outline:

- Understanding the aims & objectives of institutions.
- Finding a parallel aims & objectives of architecture that can cater to the achievement of goals of institutions.
- Converting architectural goals into physical form that can convey the institution's message and Cater to functions that can give scape to the achievement of institutions goals.
- Integrating open, semi open built form with construction technology of materials, services historical background & technical knowledge to create specific language of architecture and become very specific to particular institution.

The program to exercise the above objective can be technology dealing with large Educational institutions, Hospitals of 500 bed or medium scale University. Large scale Housing, interstate Bus terminal, Research labs, Exhibitions & Stadium complex.

References:

1. Designing for modern India- Mapin Design Studio- Mapin Publishing.
2. Social Housing- Architecture & Design – Carles Broto
3. Kinetic Architecture – Design for Active Envelopes- Russell fort Meyer, Charles D Linn
4. Community Centre Design- Santiago Gonzales Garcia
5. Stadium buildings - Martin Wimmer

18AT72 ADVANCED CONSTRUCTION & TECHNIQUE

Contact Periods / week: 6(2 Lecture + 4 studio)	Continuous Internal Evaluation: 50
Credits: 5	SEE (Viva Examination) marks: 50

Objective:
To acquaint the students with advanced construction & Techniques detailing pertaining to Contemporary structural Forms, Elements used in various Large-Scale Projects.

Module – 1
Introduction to various Construction detailing of any One of structure such as:
Stadium/ Auditorium/ Multiplex /Airport etc.

Module -2
a) Detail study of tensile structures
b) Study of Energy Efficient construction techniques.

Module-3
Introduction to various types of Earth Quake Resistance structural details such as:
isolation, Jacketing, Wooden buildings & many other common techniques of the building

Module -4
Concept & Detailing of Multilevel Parking by conventional method
using standard norms bye-Laws & including building services etc.

Module-5
Study of Advanced building materials & their properties, applications,
Advantages & Disadvantages along withinstallationprocess
E.g. –Self heating concrete, liquid granite etc.

Course outcome:
Student will capable of understanding & Drawing various Connection Details.

Reference:
1. "Building Construction" by W.B.Mackay
2. "Construction Technology" by Chudley
3. "Construction of Building" by Barry
4. "Building Materials" by S K Duggal.
5. BMTPC Website.
6. CSIR-CBRI , Roorkee Website.

18AT73-Building Estimation & Costing

Contact Periods / week: 4(2 Lecture + 2 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs duration) marks: 50

Objective:
To develop the necessary skills for writing specification and preparation of estimation for types of buildings and developmental work.

Module-I

1) Introduction: Importance of estimation, types of estimates and modes of measurements.
2) Specification: Introduction, Importance & types of specification, detailed specifications of Building items.

Module-II

3) Rate analysis: Introduction, Factors affecting rate analysis, Preparation of rate analysis of building items.
4) Study of PWD system, local schedule of rates, measurement book, muster roll, running account bill, Interim and final certificates. Tender and tender notice.

Module-III

5) Preparation of detailed estimate and abstract of single storey load bearing building.

6) Estimation of RCC elements-Beam, slab & column with footing.

Module-IV

7) Preparation of detailed Estimate of RCC framed building (Single storey only)
8) Preparation of detailed estimate and abstract of sloped roof with roof covering material as Mangalore tiles, AC sheet, GI sheet supported on Steel or wooden truss.

Module-V

9) Preparation of detailed estimate and abstract of water supply works (masonry tank resting on ground) and water supply pipe network in building.
10)Preparation of detailed estimate and abstract of sanitary works (man hole & septic tank only.

Tutorial: Introduction and application of software's used in building estimation like Build–Quant and MS-Excel
Student activity: To conduct market survey and to collect information on building Materials along with rates

Course outcome: Students will be able to develop skills for writing specification & capable of preparing rate analysis of items and detailed Estimation of different works.

Reference:

1. B. N. Datta "Estimating & Costing" UBS publishers Distributor Pvt. Ltd
2. G. S Birde " Text book of Estimating & Costing" Dhanpat Rai & Son's, New Delhi
3. S.C Rangwala "Estimating & specification" Charotar Publishers
4. Mahajan "Estimating & Costing"
5. B. S. Patil contracts & Estimates" university press
6. P. L. Basin "Quantity Surveying" S. chand New Delhi.

18AT74 -Interior Design

Contact Periods / week: 4(2 Lecture + 2 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Viva Examination) marks: 50

Objective: To bring the awareness of interior design as creative field which needs to go along with design as an integrated element as also a standalone application

Outline:

Designing the interior spaces using user - activity analysis and anthropometrics, effect of enclosure, fenestration, color and light on perception of interior spaces. Application of scale, proportion to enhance the quality of interior space, psychological effects of space.

Principles and Elements of interior design

Introduction to Style in interior design and current trends.

Sustainable Interior Design - Design for comfort - Natural light and ventilation to achieve thermal comfort. Reuse and recycle material lead to sustainable approach. Elements of indoor plants and interior landscape

Furniture design: Role of furniture, ergonomic factor of furniture design and Materials study

Services and Treatments

Lighting, Fire safety, Air-conditioning, smart control system, security.

Surface treatment: Study of different surfaces in interior, false ceiling, walls, floors, drapery upholstery, furnishings etc.

Market survey- Study of different materials used in interior design.

Assignment:

The class work shall include two interior projects (one major and one minor) to be handled with complete design, detailed furniture layout, reflected false ceiling, all four interior wall elevations, sections with materials specification, and their application.

Study and submission of portfolio related to individual aspect like furniture design, special lighting, air conditioning, acoustics, upholstery and others.

The project shall relate to Make - Over Residential, Commercial, Educational or Interior of other public spaces of smaller scale.

Course outcome:

Students are able to understand the various aspects of Interior Design and various materials and their application in the interior.

References:

"Human Dimension and Space" by Panerojulious and Zelink Martin "Design of Interior Environment" by Alexander and Mercourt

“Interior design Standard" by Prof: M S Kasu

18AT75 -Professional Practice – I

Contact Periods / week: 3(3 Lecture)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs. duration) marks: 50

Objective:

1. To understand the responsibilities & liabilities of the Profession.
2. To understand the process of Contract management.

Outline:

MODULE-I

Professional: Idea of profession and essential difference among profession, trade and business. Professional of architecture, its essential tenets, duties and liabilities, (client, contractor, statutory bodies). Types and extent of services offered by architects, scale of fees, stage of payment, and contract between client and architect. Code of professional Conduct, Architects Act of 1972.Role of Council of Architecture and the Indian of institute architecture in the functioning of the Profession.

MODULE-II

Practice: Types of Architectural firms, proprietorship, partnership, associate ship, and private limited concerns. Advantages and disadvantages of each type of firms. Various means of building client base and gaining projects. Architectural competitions.
Guidelines of COA, procedure of conduct of such competitions.
Administration and basic accounting procedures. Taxes and implications of service tax. Implication of GATS on the profession in India, GST.

Building Industry: General overview of the industry. Various participants and dimensions of building industry. Finance, statutory controls. Construction procedures, enforcement issues related to building industry and the role of architect, employer and contractor.

MODULE-III

Tender: Procedure of calling for tender, documents necessary for tendering process. Tender document and its content. Types of tenders, suitability of different types to various categories of projects. Advantages and disadvantages of each type of tender. Tender notices, opening scrutiny, process of selection and award.

Architect's role in tender process. Essential characteristics of Tender Notice. Earnest Money Deposit, Security Deposit. Retention amount, Mobilization amount and Bonus & Penalty Clauses.

Various issues arising out of tendering process and the role of an architect I maintaining the objectivity in the process. E-tendering.

MODULE-IV

Contract: General Principles, Types of contract, definitions of various terms used in the contract document, contents and sections dealing with various aspects of contract management. Conditions and scope of Contract and the role of an architect in ensuring a positive completion of a contract. Architect's role in the contract and vested authority.
Contract Management: Overview of procedure in contract management with a focus on Architect's role.

MODULE-V

Issues of Contract: 1) Termination of contract ii) Certificate of value and Quality, iii) Virtual completion and final completion, iv) Defects liability period, v) Latent and patent defects, vi) Liquidated and un-liquidated damages, vii) extension of time, delays and penalty, viii) Non tendered items, extras, extra work, additional works, variations rate analysis and architect's role in certificate of variations ix) Prime cost, provisional sum, x) Types of insurance necessary during contract including fire insurance for safeguarding client's interest. xi) Handing over procedure by contractor- as built drawings

Reference:

1) "Professional Practice for Architects & Engineers" by Roshan Namavathi
2) Legal and Contractual Procedures for Architects" by Bob Greenstreet
3) AJ Legal Handbook
4) "Professional Practice" by KG Krishnamurthy and SV Ravindra

18AT76 -Physical Planning

Contact Periods / week: 3(3 Lecture)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs duration) marks: 50

Objective:
To Introduce and Understand the Basic Principles, Theories, Tools, and Techniques with respect to Urban and Regional Planning Policies.

Outline: -

Module1:
Urbanization, industrialization & urban growth, definitions & inter relationship trends in Urbanization in India since independence, world urbanization trends.

Human settlements:
Urban settlements and rural settlements, differences, origins, evolution and growth of settlements, characteristics, Relation between urban and rural settlements, planning efforts of cities and towns of various historical periods like Egyptian, Greek, Roman, Medieval, Renaissance, Neo-classical. Cities of Indus valley and Vedic period, cities of Moghul period and British period, typical Indo Aryan cities, typical Dravidian temple city. (To be dealt in brief)

Module2: Planning Theories:
Theories by Ebenezer Howard, Patrick Geddes, Soria Y Mata, Dioxides, Le Corbusier, Clarence Stein, Clarence Arthur Perry, Hilberseimer present in India & Abroad – their relevance to Indian conditions.

Module3: Components of a settlement
Activity pattern and land use, traffic and road network, density of
Population and population distribution. Central business district of a city, other business districts,
Urban nodes, rest of the city, fringe area and suburbs. Growth and aging of various parts of the city.
Particularly the CBD the problems caused due to this including slums, internal spatial structure of Cities – concentric zone theory, sector theory, multiple nuclei concept and work-home concept.

Module 4: Planning Tools & Techniques –
Study and analysis of existing settlements, methodology of conducting diagnostic surveys and studies, land use survey, density survey, FSI survey, traffic surveys, presentation of data.

Analytical Methods:

- Classification of Regions, delineations of various regions.
- Threshold Analysis, input output analysis, SWOT analysis.
- Methods of population forecasts & projections.
- Lorenz Curie, Ginny Ratio, theils Index, Ratios – Urban- rural, Urban Concentration & Metropolitan Concentration.

Planning Standards:

- Spatial standards, performance standards & bench Marks URDPFI guidelines, zoning regulations & development controls.

Module 5:Regional Planning:
Relation among various settlements & pattern. Definition of a region, various types of regions, Basic principles of regional planning.

COURSE OUTCOME:
Student to understand & analyze the basic principles of planning for its professional implication in future.

References:

1) Simon Eisner, Arthur Galion & Stanley Eisner, Urban Pattern, VNR, New York, 1993
2) Clara Greed, Introducing Town Planning, Longman, Scientific and Technical, Harlow, 1973
3) Lynch Kevin (1981), "A Theory of Good City form" Cambridge Publication, London

18AT771 -Earthquake Resistant Architecture (Elective – II)

Contact Periods / week: 04 (01 Lecture + 03 studio)	Continuous Internal Evaluation: 50
Credits: 2	SEE (Viva Examination) marks: 50

Objective: -

To provide detail knowledge of causes & effects of earthquake with various earthquake with various Earthquake resistance techniques in Building.

Outline: -

Module-1

1) Building safety from natural hazardsintroduction
2) Elementary Seismology:-
   i) causes of earthquake ii) Seismic waves iii) Plate tectonics iv) earthquake occurrence in the world v) hazard map of India & states vi) Faults vii) Seismology viii) Seismologicalinstruments
3) Theory ofvibration
   i) Natural period ii) Resonance iii) SDOF & MDOF undamped & damped flexibility of long & short periodstructures

Module-2

1) Performance of Ground & Buildings in past earthquakes Behavior of various type ofbuilding

Behavior of structures during earthquake

i) Plan Asymmetry ii) Soft story iii) Pounding iv) Torsion pancaking

2) Site planning, building form and Architectural design concept for earthquakeresistance.

i) Historical experience ii) Site selection & development iii) Building forms & Architectural design concept for earthquake resistance (A) Seismic effects related to building configuration (B) Plan and verticalirregulation. Redundancy and setbacks

Building forms: - horizontal, height scale, proportion symmetry

Module-3

1) Introduction to Japan Earthquake Resistance structures.
2) Earthquake Resistant construction details of (A) Foundations, soil stabilization, retaining wall, Floors & roofs, openings (B) Vertical projection parapets overhead tanks (C) Horizontal projection: - Boundary wall staircase, seismicjoints

Reasons for poor construction local practices: -

Module-4

1) Seismic designprinciples

i) Concept of seismicdesign

ii) Basic terminology

iii) Strength stiffness period, center of mass center of rigidity torsion design eccentricity damping, ductility

2) Earthquake resistant design &detailing

1) Types of construction

Structural detailing, innovation & selection of appropriate materials Reference to code provisions for the building IS1893-2002 IS4326-1993 Earthquake Resistance measures in masonry structures

Seismic detailing provisions masonry & wood building (IS 4326, IS 13828) seismic design & ductile detailing of RCC structures

i) Beam reinforcement ii) Column & joint detailing IS1893-2002, IS13920-1993, IS456-2000, IS800-2004 Brief about special reinforcing & connection details

Module-5

Vulnerability Assessment & seismic strengthening of existing buildings

1) Vulnerability Assessment of buildings seismic strengthening

i) Repair ii) Restoration iii) Seismic strengthening materials injecting, jacketing retrofitting base isolation &

Types of damper's Methodologies for seismic retrofitting redundancy

Assignment

Providing detailed sketches of a complete Earthquake resistant measures taken in a small building. (Load Bearing & Frame Structureseparately).

References: -

- National programmer for capacity building of Architects inEarthquake
- Indian society of earthquake technology rookie, manual of EQRNon-engineered
- Bachmann, Hugh seismic conceptual design of buildings, Basic principle for engineersArchitects.

18AT772 -Architectural Conservation (Elective – II)

Contact Periods / week: 04 (01 Lecture + 03 studio)	Continuous Internal Evaluation: 50
Credits: 2	SEE (Viva Examination) marks: 50

Objective: Understanding ethics & Value of Architecture conservation & various methods to conserve cultural heritage in relation to the contextual factors.

Outline:

- **Introduction:** Definition and need of conservation, fundamentals of architectural conservation, Issues and threats to heritage monuments (Tangible and Intangible)
- **Present day context:** Brief study of conservation status in India and role of architects in conservation program. Different bodies involved in conservation and related policies.
- **Issues and threats to Heritage:** Natural and manmade causes. Study of damages caused to the structural elements.
- **Design intent:** Approach towards conservation methods, different philosophies and possibilities and levels of intervention. Understanding historical background and architectural styles.
- **Structural Conservation:** Techniques and materials: -
    1. Stabilization, repair, and strengthening.
    2. Retrofitting.
    3. Strengthening of structural elements
    4. Conventional and advanced materials relating to the regional context.

- **Adaptive re-use** of conserved buildings.

Assignment: The assignment may be given as a group work. The students have to submit the report on the conservation project of the particular Heritage place or monument.

Course Outcome:

Students will be able to understand the importance and conservation of the monument for the further use in today's context by creating an inter relation with the surroundings.

References:

1. An introduction to conservation by Feil don B. M. UNESCO Paris
2. Conservation of Building by I. H. Harvey.
3. A critical bibliography of Building Conservation by Smith I. H.

SYLLABUS CONTENTS OF VIII SEMESTER B.ARCH.

18AT81 -Architectural Design –VIII

Contact Periods / week: 12 (03 Lecture + 09 studio)	Continuous Internal Evaluation: 50
Credits: 10	SEE (Viva Examination) marks: 50

Objective: -

Importance and influence of an Architectural unit at urban context and Vice Versa.

Outline:

- Reading, learning & documenting an Urban Context.
- Understanding the differences between Urban design and Urban development in the form of organic and planned community.
- To understand the grammar of built environment.
- Role of a built environment or architecture at Urban level – impacts & influence of surrounding Urban on architecture
- Role of Urban context on a built environment, its influence & impacts.
- Developing the program of the proposal with respect to the Urban Context.
- Developing a built environment that can fit well in to the surroundings.

The program needs to deal with large architectural complexes such as large malls with theater, shopping & office complex or large industry with all amenities & staff quarters or Sports or Bus terminal, IT campus. The study needs to be executed w.r.t a city & surrounding and as per the guidelines mentioned in outline.

References

1. Design for Sustainability – Stuart walker & Jacques Giard
2. The Architecture of Hasmukh C Patil- Selected Projects 1963-2003 – Catherine Desai Bimal Patel
3. When Culture meets Architecture – Design Media Publishing limited.
4. Factories & office buildings- Carles Broto
5. Wonders of world Architecture- Neil Parkyn.

18AT82 -Urban Design

Contact Periods / week: 04 (02 Lecture + 02 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Viva Examination) marks: 50

OBJECTIVES:

- To understand the scope and nature of urban design as a discipline
- To introduce the component of a city and their interdependencies
- To learn to interpret the city in different ways and layers.
- Outcome focusing on a small project

MODULE-I
INTRODUCTION TO URBAN DESIGN
Components of urban space and their interdependencies –need for urban design – Scope and objectives of urban design as a discipline. Learning new tools and techniques of mapping.

MODULE-II
Behavioral /Perceptual approach: City as visual experience walking, observing, documenting/recording and interpreting city/ and its elements such as neighborhood, street, block, building, architectural elements.
Theories works of Gordon Cullen, Kevin Lynch.

MODULE-III
Social cultural Approach: study of social and cultural layer that influence urban design and architecture. Theories / approach by Jane Jacob, Kevin Lynch Morphological approach: Study of Urban fabric.

MODULE-IV
Functional and Temporal approach: formal and informal urban environment and readability differences. Approach by Kevin lynch through good city form, critical study by Charles Correa & Indian example such as Connaught place, church gate, Ballard estate, Gate way of India etc.

MODULE-V
URBAN DESIGN PROJECT FRAMEWORK
Once the overall vision and Objective for the place has been formulated and development objective are listed, each individual design will zoom in to their respective area of intervention for:

- Project identification
- Study of Project from view point
- Identification of issues
- Formulation of Design programme
- Formulation of Vision and Objectives
- Development strategy
- Design Development
- Policy and development framework
- Bench mark study and presentation by each group
- Draft Proposal.

18AT83 –Pre-Architectural Design Thesis

Contact Periods / week: 04 (02 Lecture + 02 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Viva Examination) marks: 50

Objective:
In depth study of a building type and area of interest selected for Architectural design thesis in 8th semester as a database.

Outline:

The work involves identification and research of an area of interest and specific building type with certain issue which becomes the basis of design (Ex: Thermal comfort, Low cost, Sustainable, Construction technology, cultural context etc.), which in turn becomes a basis for architectural Design dealt in next semester.

- **Finalizing the topic**: Identifying the area of interest and specific type of building. Introduction of the topic and issues and its inter-relation. Finalization of the topic and issue.

- **Pre-project**: The pre-project stage should end with a conclusion drawn from literature study, historical study, data collection cultural, contextual study and models of architectural approaches to such projects.

- **Desktop case studies**: Identification of case studies at national and international level. Detail study and inferences should be drawn out of case studies.

- Prefinalization of the requirements, design guidelines in relation to the topic.

- Issue study and the desktop case study of the issue in detail.

- Site selection and justification with framing the design guidelines as a part of final requirement.

Submission:
The study shall be submitted in the form of a report and seminar should be conducted for each student. The study shall be carried under the guidance of staff.

18AT84 -Construction Management

Contact Periods / week: 04 (02 Lecture + 02 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs. duration) marks: 50

Objective:
To provide an insight into Management of Building/Construction projects involving management of Time, Cost, manpower, machinery, Quality and Safety.

Module -1
Introduction to Management & Construction Organization
Definition, principles of management and Need of Construction management, role of Project or Construction Managers in the building industry. Various construction resources.
Organization, types of organization, study of organizational structures suitable for building and construction projects, the roles of the various members of a typical construction organization, ethics in construction industry.

Module -2
Feasibility Analysis, Construction Phases & Management Techniques. Feasibility Analysis, Construction Phases (planning, scheduling andcontrolling)
Use of Management techniques – WBS, Bar Chart, Mile Stone Chart, LOB, Network, Networking using PERT.

Module -3
Critical path method and Project's cost Analysis using CPM.
Introduction to CPM, Difference between CPM and PERT, EST and LST, Activity times, Floats, criticality and critical activity, Networking using CPM, Direct cost and indirect cost, optimization of cost through network construction.

Module -4
Quality and Site safety management
Definition of Quality, Inspection, Quality control and Quality Assurance, Quality Audit, ISO Standards. Introduction to site safety, Principles of safety, importance of site safety, causes of Accidents, Safety Measures, Safety and health management system.

Module -5
Construction Equipment
The role of equipment /Machinery in construction industry, factors affecting selection of construction machinery, standard versus special equipment, understanding of the various issues involved in owning, operating and maintaining of construction equipment, economic life of a equipment. Brief description of earth moving (tractors, excavators, dragline, trenching equipment, etc,) transporting (various types of trucks), spreading and compacting (motor graders and various types of rollers) and concreting equipment (including concrete mixers, transporting and pumpingequipment)

Note – Use of software (MSP and Primavera) to be encouraged although the same is not for the examination purposes.

Outcome of Course
Students will be able to understand role of construction organization, Feasibility of project and various management techniques, quality and safety in construction site, Construction equipment's.

Reference:

1) 'Construction Planning, Equipment and Methods' by RLPurifoy
2) 'Project Management for Architects' by S PMukopadhyay
3) 'PERT and CPM' by L SSrinath.

18AT85 -Professional Practice – II

Contact Periods / week: 03 (02 Lecture)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs. duration) marks: 50

Objective:

1. To understand the Professional responsibilities within the ambit of laws of the land, building codes, contract, documents and ethics.
2. To gain insight into valuation, arbitration and building by laws.

Module -1

Site Supervision & Contract Administration: Site visits, site meeting, Co-Ordination with various agencies, essential site records, site instructions, clerk of works and site office. Bill checking quality auditing, handover procedure and final certification. Disputes in contract and architect's role in resolving such disputes. Case studies from practice highlighting disputes in contract and methods adopted to solve such disputes.

Module -2

Valuation: Definitions and architect's role in preparation of valuation reports and certification. Physical and Economic life of building, introduction to valuation, essential characteristics, classification and purpose of classification. Method of valuation standard rent and cost of construction.

Module -3

Arbitration: Arbitration and conciliation act 1996, modes of settlement of disputes, arbitrator, umpire, order of reference, selection of arbitrators, power and duties of arbitrators, arbitration award and implementation of award.

Module -4

Byelaws and Easements: Building byelaws, National Building Code, floor area ratio, floor space index, floating FAR, Zoning regulations, Easements, various easement rights, architect's role in protecting easements rights.

Module -5

Dilapidation & Laws related to Property and Land: Definition and Causes of Dilapidation, Preparation of Dilapidation reports. Land tenure, types of land holdings, land registration, easement rights, covenants, trespass and nuisance etc.

Course outcome.

Students will be able to understand site supervision, different laws related to buildings and other important aspects such as valuation, arbitration, dilapidation and easement rights.

Reference:

1) 'Professional Practice for Architects & Engineers' by Roshan Namavathi
2) 'Legal and Contractual Procedure for Architects' by Bob Greenstreet
3) AJ Legal Handbook
4) 'Professional Practice' by KG Krishnamurthy and SV Ravindra

18AT86 -Planning Studio

Contact Periods / week: 05 (02 Lecture + 03 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs. duration) marks: 50

OBJECTIVE:
To develop skills for carrying out surveys, analysis, presentation with respect to existing areas in order to redevelop/Design

OUTLINE:
Idea of town planning Acts, slum redevelop Act, KMC ACT 1976 definition.
Urban Renewal – causes and consequences of urban blight and obsolescence – slums Heritage Structure and shanties. Ways and means of Urban Renewal, methods of conducting surveys, analysis and settlements.

TOOLS AND TECHNIQUES.

- Preparation of questionnaires (primary and secondary survey)
- Types of surveys- methodology of conducting diagnostic surveys and studies, land use surveys, socio-economic survey, density survey, FSI survey, traffic surveys and presentation of data.
- Identification of Issues like; Housing, Social Infrastructure, Physical Infrastructure, Traffic and Transportation, Environmental and management issues.
- Findings of issues through analysis and giving proposal of project.
- Introduction to GIS (Geographical information system).

PROJECT WORK

- Residential or commercial or industrial or mixed land use.
- Alternatively, the studio may involve the study and analysis of blighted heritage zones, religious cores that has suffered obsolescence.
- Physical and socio – economic surveys of blighted area – analysis of findings – presentation through maps and charts and model of the proposal along with a report (which includes existing and proposal maps, analysis i.e., statistics, charts, visuals Etc. implementation stages, general out lay of money and developmental bye-laws.

NOTE.

- Preparation of Proposal based on findings.
- The study shall be conducted by groups of 4 to 5 students only and proposal to be submitted by the group

Reference;

1) "The Urban Pattern: City Planning and Design" by Gallion and Eisner
2) "Urban Planning" by Chapin
3) Regional Planning by Rame- Gowda
4) MANE by HUDCO
5) Revati and Kamat works
6) Aranya Housing

18AT871- Energy Efficient Building Design (Open Elective)

Contact Periods / week: 04 (02 Lecture + 02 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs. duration) marks: 50

Objective:

To familiarize the students with simple and passive design consideration, use of natural ventilation in building design and to make the students aware of the future trends in creating sustainable built environment.

Outline:

- Significance of energy efficiency in the contemporary context. Alternative means of energy, use of energy in a built environment, use of energy at site level, impact of built structure on microclimate.
- Simple passive design considerations involving site conditions, building orientation, Plan form, building envelope and materials, sources of energy.
- Solar Energy- Wind energy, tidal energy etc. Measures to mitigate the electricity consumption.
- Ways and means of mitigating use of energy, Passive Solar techniques (For hot-dry and warm humid region)
- Construction and techniques: Use of alternative material, various levels of usage in building, use of latest technologies.

Assignment:

The assignment may be given as a group work (2 to 3 students per group) . The students have to submit a report on the work of a project with energy efficiency.

Outcome:

The students will be able to understand different energy efficient techniques in creating a sustainable environment.

18AT872- Application of Total Station Survey (Open Elective)

Contact Periods / week: 04 (02 Lecture + 02 studio)	Continuous Internal Evaluation: 50
Credits: 3	SEE (Theory Exam 3 hrs. duration) marks: 50

Objective: - To develop the knowledge and skill relative to Total station survey and practice

Introduction and basic principle of total station
Classification of total station
functions of a total station-Angle measurement, Distance measurement-ordinate measurement, data processing
Software applications
Sources of errors in total station- Calibration, horizontal Collimation (Line of sight error), Tilting axis error, compensator index error
Applications of total station survey

REFERENCES:

1)A course material on surveying II by Mr. S. Elaiyarasu, Dept of civil Engineering, Sasurie college of Engineering, Vijaya Mangalam

HKE's

PDA College of Engineering, Gulbarga

Dept. of Architecture

SCHEME OF TEACHING AND EXAMINATION OF B. ARCHITECTURE

Scheme of Syllabus for B. Architecture Course

SYLLABUS CONTENTS OF IX SEMESTER B. ARCH.

18AT91- Professional Training

Contact Periods: 16 ½ weeks (100 days)	Continuous Internal Evaluation: 50
Credits: 18	Viva marks: 50

Objective:

To provide exposure to the various dimensions of architectural practice.

Outline :

Each student of Ninth / tenth sem. B. Arch shall undergo a practical training during the 1st term and 2nd term of the final year (second stage of B. Arch Course), which shall be of minimum 16½ weeks in each semester as per the instructions given by the Head of the department from time to time and as per regulations AR 6.6 of B. Arch

Attendance shall be **100%** during the training period, i.e., he/she shall complete total minimum 100 working days in 9th sem training excluding Sundays, holidays and leaves etc. in the architect's firm. The trainees shall regularly send the fortnightly report duly signed by the Chief of their respective firms, in the prescribed format only as per the instructions to the candidates given below every fortnightly

The students during the training must work in accordance with the discipline of the organization. Any complaint regarding the indiscipline and irregularity shall be viewed seriously. The type of work a student should expose himself shall be

- To assist the senior Architect in Design process including conceptualization, circulation etc.
- Assist in preparation of working drawings including study of the materials, constructional details and understanding application of the same on site.
- Preparation of permission drawings for Govt. authorities including thorough knowledge of local building by-laws etc., and area analysis considering by-laws.
- Preparation of Architectural models, computer applications in design and drafting, filing system in respect of documents, drawing, ammonia prints, preparation of tender documents
- Site visits etc., with due importance to the practical handling of materials, stacking etc. and problems evolved on site and their solutions. Study of taking measurements and recording etc.
- In depth study of any new advanced typed of building material highlighting its properties, uses, applications, merits and demerits, cost factor etc.
- Critical appraisal of any one public building designed preferably in the office.
- Architects bio-data including all the projects done and executed by him, his design philosophy and concept, awards, competitions won, etc., through photographs, plans, sections, elevations and write up.

Submission (at the end of 9th semester)

- Certificate of completion of training and log book containing the record of the work done during training and confidential report
- All drawings done in the office certified by the senior architect in the firm, photographs of site visited
    - Submit in the following Heads: 1. Working drawing, 2. Presentation drawings, 3. Site visits, 4. Photographs of models 5. Estimation of steel and wood (optional)
- Samples of building Materials, Hard and soft copy of the report.
- Critical appreciation of the public building designed preferably in the office
- Hard and soft copy of the general profile of the office containing the brief history, design philosophy, works executed - past and current, the resume of the chief architect with photograph etc.

SYLLABUS CONTENT OF X SEMESTER B. ARCH.

18AT101 – ARCHITECTURE DESIGN PROJECT (Thesis)

Contact Periods / week: 32 studios (08 Lectures+ 24 studios)	Continuous Internal Evaluation: 100
Credits: 16	Viva: 100

Objective:

1. To demonstrate an ability to comprehend the nature of architectural problem and create a brief which sets the framework for design.
2. To demonstrate an advanced level design ability to convert the brief set forth earlier into a speculative proposition of design.
3. To articulate and delineate the propositions of design into an architectural solution addressing all the dimensions.

Outline:

Architectural Design projects can be of any scale and size (in terms of built area) as long as the required rigor and depth is demonstrated by the student to merit consideration as a final project. Very large campus projects can be avoided as the work tends to be repetitive and more often ends with a large number of Structure but with minimal variations and content. It is expected that all type of projects (study or design) would end with a design solution; in fact all projects (study or design) would end with a design solution; in fact all projects should be grounded in some kind of critical enquiry. The maximum weightage for study will be 25% in the case of a Study + Design can be reduced in a specific case, but such a project should demonstrate clarity in terms of research design. The following stages have been identified as a generic model of the studio. The stages can be fine-tuned depending on the resources. It is expected that this project will be run as a studio with individual guidance under a project coordinator and assisted by several guides.

1. **Early Review –**There shall be a review to clarify the conceptual statement and synthesizing the analysis carried out by student and the assumptions of the student. Students shall present a clearly articulated response to context, program and users; Conceptual framework and preliminary architectural scheme shall be the end products of this stage.
2. **Mid Review –** this review shall aim at fairly clear drawings of the entire scheme with reference to the objectives practiced in all earlier semesters and give a clear understanding of the project proposal. The preliminary report in typed or computer printed form shall be presented to discuss the program, site – analysis, literature review, case studies, design criteria, concept and detailed design.
3. **Final Review -** Final review should consist of all the works, which would be presented at the viva. Mode of presentation shall be drawings draw to proper scale supported by a on screen digital presentation. Number of sheets shall be limited to maximum of 15 to 20 of A0 size plus three to five case study sheets. Study Models shall be presented

Note: -

1) The requirements pertaining to the handicapped and elderly people and children are to be addressed in design and detailing.

2) At the time of Viva examination, the student shall show to the jurors the portfolio containing the evolution of his/her design from the beginning to the final output. All the drawings and reports shall be certified by the Head of the Department as bonafide work carried out by the student during the semester.

Final Submission

The final output shall include a report, all drawings study models, and a presentation model. The hard and soft copy of report shall discuss the program, site-analysis, literature review, case studies, design criteria, concept and detailed design. Three copies of the reports & a digital presentation in CD shall be submitted along with competed set of drawings and models at least 4 days before the viva exam.

Digital presentation shall be sent to the external examiner by the department well before viva examination

Note :There shall be 3 examiners such as 1 internal examiner & 2 externals, preferably one from professional one from academic background

18AT102 - SEMINAR

Contact Periods/ Week :4 (4Lecture)	Continuous Internal Evaluation: 50
Credits: 2	Term Work: 50

Objective:

To make a self-study in specialized area of architecture to reinforcing the study of Architectural Design project.

Outline:

The areas or issues selected in Pre- Architectural Design project will be dealt in detail leading to design guidelines with respect to the project selected.

Submission:

The student is supposed to make a report and present seminar as part of assignment.