

SYLLABUS CONTENT OF I SEMESTER B.ARCH.

19AT11 ARCHITECTURE DESIGN - I

Contact Periods / week: 9 (3 lecture + 6 Studio)	Continuous Internal Evaluation: 50
Credits: 5	Viva marks: 50

OBJECTIVE:

- To develop the ability to translate abstract principles of design into architectural solutions for simple problems.
- Understanding the relation between form and function

OUTLINE:

Module-I

1. Basic human functions and their implications for space requirements. Minimum and optimum areas for various functions. User's data, movement and circulation diagrams. Spatial interpretations – various activities and their relationship with spaces. Design methodology.

Module-II

2. Functional furniture layout, circulation, lighting and ventilation, for spaces such as living/dining, bedrooms, Architect's office, Doctor's clinic etc.,

Module-III

3. Design of simple building elements such as Gate, Welcome Arch, Memorial, Edifice, Bus Shelter and layout of parks. Imagination & technique of architectural presentation with due importance to design methodology

Module-IV

4. Design of Bungalows. Integration of form and function.

Module-V

5. Rendering techniques learnt in visual arts should be applied for the design submissions

Note- The requirements pertaining to the handicapped or disabled friendly design solutions and elderly people are to be addressed in design and detailing.

Studio project

The portfolio covering the above topics shall be presented for term work/ viva examination including a design submission with Model of a bungalow designed in Architectural Design with landscape of the proposal to be submitted

Reference:

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

19AT12: BUILDING CONSTRUCTION & MATERIALS – I

Contact Periods / week : 6(2 lecture +4Studio)	Continuous Internal Evaluation: 50
Credits : 4	Theory exam (4 hrs duration) marks: 50

Objective:

To give an introduction to building elements and contemporary local construction methods and materials.

Part-A

Module-I

1. Bricks and Tiles - Types, properties and manufacturing methods & uses of bricks for aesthetic & structural purpose
2. Introduction to load bearing construction and framed structure

Module-II

3. Introduction to various building components and their function, various conventions used for drawings plans; sections and elevations
4. Aggregate – sources and types
5. Sand - availability, properties

Module-III

6. Lime – varieties, properties and uses in building
7. Lime Mortar – Preparation and application
8. Concrete Blocks – Types, sizes, qualities and manufacturing process in brief. Hollow and solid stabilized mud blocks.

Module-IV

9. Brick construction – Types of brick masonry, walls and bonds, foundations, buttresses, arches, lintels and coping
10. Foundation - Functions of foundations, types of foundations, simple load bearing foundations in brick and stone.

Module-V

11. Stones – Types, properties quarrying and uses of stone for aesthetic & structural purpose.
12. Stone construction – types of masonry, Stone arches, lintels, copings

Submission

Minimum one plate on each topic, site visits to be arranged by studio teacher, study of material application in the form of portfolio. All the plates on construction and portfolio on material application shall be presented for term work.

Reference:

1. “Building Construction” by W.B.Mackay
2. “Construction Technology” by Chudley
3. “Construction of Building” by Barry

19AT13: GRAPHICS – I

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

OBJECTIVE:

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

Module-I

1. Introduction to the basic principles of drawing, sign conventions (Line types, Materials, Graphical presentation on arch drawings, Landscape, furniture etc.)

Module-II

2. Practice in lettering, lettering used in architectural drawings.
3. Three-dimensional representation, isometric projection of solids.

Module-II

4. Introduction to plane geometry and exercises in lines and angles, construction of triangles, quadrilaterals and regular polygons. Construction of plane curves (ex: ellipse and ovals), arches- typical arch forms (ex: segmental, semicircular, three centered, four centered arches) and methods of drawing them.

Module-IV

5. Orthographic projection (first angle projection).
6. Principles of orthographic projection, projection of points, lines, planes, and solids.

Module-V

7. Measured drawing – Presentation of simple furniture such as table chair, bench & Class room in plan, elevation and section.

Note: 1. Sheets on each of the above topics shall be presented for term work

*2. Sheets on Part C are considered only for term work not for final examination.

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

19AT14 - HISTORY OF ARCHITECTURE - I
(European Architecture)

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

Module-I

- I. Pre historic World- primitive man, shelters, settlements, religious & burial system
Ex - Oval hut, Catal Hyuyk, Henge monuments - Stone Henge, & Passage grave

Module-II

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

Module-III

- III. . Pre-classical – Mycenea & Etruscan
Ex –The Palace, Tiryns
Ex - The temple of Juno sospita, Lanuvium
- IV. 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

Module-IV

- V. 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.

Module-V

6. Renaissance Period –
Ex – Villa Rotunda by Palladio,
Ex- St Peter’s Rome by Michael Angelo & others
Ex- St. Peter’s Piazza by Bernini

Reference:

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

19AT15 - STRUCTURES - I

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

OBJECTIVE :

To give an introduction to the basic principles governing structural systems.

Module-I

1. Principles of Statics - Scalars and Vectors. Characteristics and classification of forces. Composition and resolution of forces. Principles of transmissibility of forces. Resultant and equilibrant of coplanar concurrent and non – concurrent force systems.

Module-II

2. Equations of static equilibrium. Free- body diagrams. Equilibrium of coplanar concurrent and non-concurrent force systems.

Module-III

3. Support reactions – types of loading and support conditions and their significance. Concept of statically determinate and indeterminate structures. Determination of support reactions for statically determinate beams and trusses.

Module-IV

4. Friction – Types of friction, laws of dry friction, problems on block, wedge, ladder.
5. Centroid and moment of Inertia – Determination of Centroid of simple lamina (symmetrical and asymmetrical) moment of Inertia and Radius of Gyration of simple cross – sections of beams and columns including built – up sections. Concept of Polar moment of inertia.

Module-V

6. Analysis of Trusses – Definition of perfect, deficient and redundant trusses. Analysis of determinate trusses by method of joints and method of sections.

Reference:

1. Engineering Mechanics – RK Bansal and Sanjay Bansal, Laxmi Publications, New Delhi, Third editions.
2. Engineering Mechanics – Ferdinand L Singer, Harper Collins Publications, Third Edition.

19AT16-Basic Design

Contact Periods / week: 2(2 lecture)	Continuous Internal Evaluation: 50
Credits: 3	VIVA EXAM marks: 50

Objective :

To develop an understanding of principles of design in abstract. To train the eye and hand in architectural perception and to develop a series of compositions eventually terminating in design.

Module-I

1. To develop the design elements like, Line, Shape, Texture, Color,
2. Design principles Like Contrast, Harmony, Rhythm, Proportion & scale, Unity etc.

Module-II

3. Amorphous forms from nature with examples.
4. Different types of spatial organizations of masses- Linear, Centralized, Radial, Clustered & Grid organization.

Module-III

5. Visual analysis of built forms, noted especially for aesthetic delight.
6. Analysis of solid and Void relations

Module-IV

7. Basic Anthropometrics, average measurements of human body, its proportion and their graphic representation application of Anthropometrics for design of simple furniture including circulation and clearance spaces.

Module-V

8. Application of the above design principles for both 2D & 3D compositions with illustrations of buildings from historical & contemporary architecture 3D composition may be given more emphasis.

Exercises on the above topics may be presented for term work and for Viva voce.

Reference Books:

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 Designees & Artists

19AT17 - COMPUTER APPLICATIONS IN ARCHITECTURE - I

Contact Periods / week : 4(4 Practical)	Continuous Internal Evaluation: 50
Credits: 2	Practical marks: 50

Objective:

To develop the awareness & familiarity with Computer Applications in Architecture.

Module-I

1. Introduction to computers.

Module-II

2. Computers as digital media in architecture.

Module-III

3. Brief Introduction to filing, MS Word, Excel Power point presentation (making formats & linking different sheets using formulas) etc.

Module-IV

4. Preparation of 2D drawing in AutoCAD for Plan, elevation and section of simple buildings
 - a) Management of line weight, Layers, etc.
 - b) File management
 - c) Preparation of Professional drawings & printouts.

Module-V

5. Introduction to software such as sketch up for 2D and 3D drawings using above application and software skills

Assignment –

Assignment shall be in the form of print out and cd with the use of above said software

Preparation of Professional simple drawing with detail dimension, lettering, format for different scale

Reference

1. "A primer on computer aided engineering drawing" by VTU

19AT18 – ARCHITECTURAL MODEL MAKING

Contact Periods / week: 3(1 lecture + 2 practical)	Continuous Internal Evaluation: 50
Credits : 2	Viva voce marks: 50

OBJECTIVE:

To train the students in basic skills of model making, carpentry, surface painting & construction forms

Module-I

1. Model making of geometrical objects such as cube, cuboids, pyramid, cone etc leading to a small two room building model with landscaping using mount board, box board etc. (6 weeks)

Module-II

2. Preparing space models using steel wires by soldering, simple welding etc. Use of wax, wire metal, POP for makings spatial forms (3 weeks)

Module-III

3. Carpentry – (3 weeks)
 - a. Demonstration to the use of different types of tools used in carpentry.
 - b. Painting, varnishing and melamine finishes to wooden surface and plywood.
 - c. Demonstration of different types of joints, fixing of veneers/ laminates on different types of timber surfaces i.e., teak and commercial woods viz ply, block boards, particleboards

Module-IV

4. Wall painting with & without luppum by OBD, enamel etc (2 weeks)

Module-V

5. Masonry construction – walls, arches and corbel. Marking of geometrical forms on the ground. (2 weeks)

Assignment: -

1. Preparation of geometrical objects & small building unit with landscaping on a hard base individually
2. Preparation of space models individually
3. Oil Painting, varnishing and melamine finishes to a wood & plywood piece of size A4 size paper
4. Painting to Wall surface of approximately 1 to 2 sqm area each or group work for a part of a wall.
5. Masonry construction as group work

SYLLABUS CONTENT OF II SEMESTER B.ARCH.

19AT21 - ARCHITECTURAL DESIGN - II

Contact Periods / week: 9 (1 lecture+8 studio)	Continuous Internal Evaluation: 50
Credits: 5	Viva marks: 50

OBJECTIVE:

- To expose the students to the grammar of creating architectural space and form, including the study of variables like light ,movement, transformation , scale, structure & skin.

OUTLINE:

1. Understanding the role of physical (terrain, climate, materials etc.) and cultural factors(open, closed , transition spaces) that inform architecture.
2. Functional furniture layout, circulation, lighting and ventilation, for spaces such as residence, Architect's office, Doctor's clinic etc.,
3. Emphases on freeing the expression of the poetic self, rather than on meeting external standards and student development of self explanatory presentations.
4. Formulate the process of testing the various elements of space making learnt earlier in the semester through a project on an actual site.The project example could be :Students House,Guest house Doctor Residence, Lawyer House, farm House, Villa , Container House, Courtyard house, Tree house, Boat House, Etc

Note-

1. case study assignment (done in groups of four to five students per group)
2. project presented in the form of portfolio
3. Emphases on studio work /participation and hand drawings.

Studio project

The portfolio covering the above topics shall be presented for term work/ viva examination including a design submission with Model of a bungalow designed in Architectural Design with landscape of the proposal to be submitted.

Reference:

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

19AT22 - BUILDING CONSTRUCTION & MATERIALS – II

Contact Periods / week: 6 (2 Lecturers + 4 studio)	Continuous Internal Evaluation: 50
Credits: 4	Theory Examination (4 hrs) marks: 50

OBJECTIVE:

To acquaint the students with different types of doors and windows and contemporary construction practices pertaining to roofing for larger spans.

Module-I

1. Timber – Quality of timber used in building, defects, seasoning and preservation of timber, types – Natural, hard and softwood, uses of timber for aesthetic & structural purpose
2. Introduction to types, properties, uses and application of non – ferrous metals and glass.

Module-II

3. Doors – Types of wooden Doors, i.e., paneled, flush and glazed doors, study of joinery details.
4. Doors – Types of Doors other than wood, , study of joinery details.

Module-III

5. Windows – Types of wooden glazed windows, study of joinery details.
6. Windows – Types of Doors other than wood, , study of joinery details.

Module-IV

7. Uses of commercial wood in building i.e., plywood, block boards, particleboards, veneers and laminates and other types. Manufacturing processes in brief, their properties and application.
8. Market survey reports

Module-V

9. Cement - Types of cement, their applications, manufacturing process, laboratory and field tests.
10. Roof – Timber and steel trussed roof, various parts, their purposes and method of construction.
11. Use of AC sheet, GI sheets and aluminum sheets for roofing.

Submission

Minimum one plate on each topic shall be submitted as term work. Site visits to be arranged by studio teachers. Study of material application in the form of portfolio to be submitted.

Reference:

1. “Building Construction” by W.B.Mackay
2. “Construction Technology” by Chudley
3. “Construction of Building” by Barry

19AT23: GRAPHICS – II

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

1. Section of solids, true shapes of sections

MODULE-II

2. Development of surfaces (of prisms, pyramids, cylinder and cone)

MODULE-III

3. Inter-penetration of geometric solids, (prism with prism, cylinder with cylinder, cone with cylinder, cylinder with prism)

MODULE-IV

4. Perspective – principles and visual effects of three dimensional objects
5. Study of picture plane, station point, vanishing point, eye level, ground level, their variation and their resultant effects.

MODULE-V

6. Perspective drawings of simple geometrical objects (like pyramids, cubes prisms, cylinders, cones and their combinations.)

Note: The class work portfolio pertaining to the above topics shall be presented for term work.

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

19AT24 - HISTORY OF ARCHITECTURE - II
(Indian Architecture)

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

MODULE-I

1. River valley cultures- Indus Valley Civilization

Ex – 1) Layout of Mohenjodaro, House plan, City Citadel (Great bath & Granary)

2. Pre Classical- Aryan & Mauryan: - Salient features

Ex – Vedic Village

MODULE-II

3. Classical - Buddhist Architecture – Mahayana phase-

Ex: Great Stupa at Sanchi, Chaitya hall at Karli & Vihara at Ajanta

4. Jain Architecture - Salient features

Ex: Chaumuka Temple at Ranakpur

MODULE-III

1. Hindu Architecture

Evolution of Hindu temple - Both Indo Aryan & Dravidian

Ex: Early temples at Udaygiri & Sanchi,

Experiments at Badami, Aihole & Pattadakal

Ex: Badami Caves. Durga Temple & Ladkhan temple at Aihole, Virupaksh Temple at Pattadakal,

MODULE-IV

Dravidian architecture –

Early Dravidian Architecture: Pallavas – *Ex: Rathas & Shore temple at Mahabalipuram,*

Cholas – *Ex: Brihadishwar temple at Tanjore*

Pandyan – Gopurams

Later Dravidian Architecture : Vijayanagar – *Ex: Vithala Temple at Hampi*

Madura period – *Ex: Meenakshi Temple at Madurai*

MODULE-V

Indo-Aryan Architecture: Orissa – *Ex: Lingaraja Temple at Bhubaneswar*

Khajuraho – *Ex: Khandariya Mahadev temple at Khajuraho*

Gujarat – *Ex: Temple of Surya at Modhera*

Hoysala (Later Chalukyan) Architecture: *Ex: Keshav temple at Somnathpur*

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 Stierlin, Henri

19AT25 - STRUCTURES II

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

OBJECTIVE :

To give an introduction to the basic principles governing structural systems and structural behavior of materials

Module - I

Simple Stresses and Strains – Concept of Deformable Bodies, Types of Stress (compressive, tensile, bending, shear) and strain (axial, shear, volumetric). Simple problems. Modulus of Elasticity.

Module - II

Typical stress-strain behavior of steel and concrete. Elastic Constants – Elastic constants, Rigidity Modulus, Poisson's Ratio, Bulk Modulus and Shear Modulus. Relations Modulus of Elasticity and Modulus of Rigidity. Application to uniform section.

Module - III

Bending Moment and Shear Force Diagrams – Concept of Shear force and Bending moment. BMD and SFD for statically determinate beams subjected to combinations of concentrated and uniformly distributed load. Relationship among Load, Shear force and Bending Moment.

Module - IV

Bending and Shear Stresses in Beams – Theory of simple Bending with assumptions. Flexure formula. Bending stresses. Distribution of stress in symmetrical sections. Strength of a section, Flitched Beams.

Module - V

Shear Stresses in Beams: Equation for shear stress distribution across a section. Shear stress distribution for simple sections.

Text book:

1. "Strength of Material – RK Bansal, Laxmi Publications, New Delhi, Third Edition
2. S.S Bhavikatti: Strength of Material

Reference book

1. "Application Mechanics and Strength of Materials" IB Prasad
2. S.S Ramamurtham -Strength of Material

19AT26 - SURVEYING & LEVELING

Contact Periods / week: 4 (2 Lectures + 2 Practical)	Continuous Internal Evaluation: 100
Credits: 3	Theory exam (3 hrs duration) marks: 50 Practical exam marks : 50

Objective:

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

Module - I

Introduction: Definitions, principles of surveying, objects of surveying. Instruments used in chaining, metric chain, field book and different symbols used in chaining.

Ranging: ranging of line using ranging rods, Construction of perpendicular by 3, 4, 5 method and construction of Geometrical figures on site.

Module - II

Compass Survey: Definition, prismatic compass and its parts. Different methods of setting out, representation, plotting, triangulation survey.

Module - III

Plane table Survey: Plan table and its accessories. Methods of plane table survey

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

Module – IV

LEVELLING: Definition, technical terms in dumpy level and its parts. Classification, simple leveling and differential leveling. Temporary adjustments of dumpy level. Booking and reduction of levels by Hi / Rise and fall method

Contouring: Characteristics of contours, methods of contouring and uses of contours

Module - V

Theodolite: Definition, technical terms, temporary adjustments of Theodolite. Measuring horizontal and vertical angles.

Total station: total station and its applications`

Text Books:

1. B.C. Punmia, "Surveying Vol.1", Laxmi Publications pvt. Ltd., New Delhi – 2009.
2. Kanetkar T P and S V Kulkarni , Surveying and Leveling Part I, Pune VidyarthiGrihaPrakashan, 1988
3. "Surveying and Leveling" by S C Rangwala

Reference Books:

1. S.K. Duggal, "Surveying Vol.1", Tata McGraw Hill Publishing Co. Ltd. New Delhi.2009.
2. K.R. Arora, "Surveying Vol. 1" Standard Book House, New Delhi. – 2010
3. R Subramanian, Surveying and Leveling, Second edition, Oxford University Press, New Delhi

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

Objective :

To develop skills required for preparation of two-dimensional drawings with the use of computer as a digital media for architectural design drawings.

Out line:

1. Importing 2D drawings
2. Preparation of 3D drawing in Auto-CAD
3. Application of materials to 3D object
4. Arrangement of light points for 3D object

Assignment: -

Assignment shall be preparation 3D model of simple building with material and lighting.

Assignment shall be in the form of print out and CD with the use of above said software

Reference

1. “A primer on computer aided engineering drawing” by VTU

19AT28: VISUAL ARTS

Contact Periods / week: 3 (1 lecture + 2 Practical)	Continuous Internal Evaluation: 50
Credits: 2	Practical /viva (Oral & sketching) marks: 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 and to provide appreciation and understanding of various types of arts

OUTLINE:

1. Freehand drawings – Use of various drawing and sketching tools like pencils, ink pens, charcoal pencil etc. drawing, shading etc.
2. Drawing various textures, patterns and finishing materials used in buildings, pavements indoor and outdoor etc.
3. Exercises in free drawing of household furniture, street furniture, human beings, cars and automobiles, trees etc.
4. Principles of drawing perspective with analogies
5. Rendering – Use of Rendering tools and materials like easels, brushes, paper (handmade, drawing sheet), water color etc.,
6. Work of Art, Types of art – Visual, performing, pop etc.- Appreciation of art form
7. Relationship of Architecture with arts like, painting, sculpture, mural, color, fine arts, performing arts, folk art etc.

Reference:

- 1.“Rendering with pen and Ink “ by Robert Gill
- 2.Architectural rendering
- 3.Humanities through the Arts” by F. David Martin and Lee A Jacobus

SYLLABUS CONTENT OF III SEMESTER B.ARCH.

19AT31 ARCHITECTURAL DESIGN - III

Contact Periods / week: 9 (1 Lecture + 8 Studio)	Continuous Internal Evaluation: 50
Credits: 5	Viva marks: 50

OBJECTIVE

1. To expose the students to the grammar of creating architectural space and form
2. To study individual variables like light, movement, transformation, scale, structure and skin in the formation and evolution of architectural form.
3. To explore the relationship between human feelings and architectural form

OUTLINE:

1. In the earlier part of the studio, projects shall be restricted to walls, floors, roof planes, openings, and structural elements. Functional assignment to spaces shall be avoided to restrict the dimensions of investigation. Projects shall be attempted with the help of models and sketches.
2. Space making projects may be tied to the context, but objective shall be illustrating the variables like color, material, texture and scale in evolving the necessary conditions for the prescribed activity. Final project shall be formulated as a process of testing the various elements of space making, learnt earlier in the semester.

Ex: Nursery School, Primary Health Centre, Post Office, Bank Branch, Guest House, Restaurant etc.
The design shall be sensitive to the needs of disabled, aged people and children.

STUDIO PROJECT SUBMISSION -OUT COME

One minor exercise on first chapter and One Major Project on second chapter be presented in the form of a portfolio and two time problems (as test problems) to be submitted with the following

- Data collection, case studies and literature surveys
- Design proposal including study model and perspective view

19AT32 – BUILDING CONSTRUCTION & MATERIALS – III

Contact Periods / week: 6 (2 Lecture + 4 Studio)	Continuous Internal Evaluation: 50
Credits: 4	Theory exam (4hours) marks: 50

OBJECTIVE:

To acquaint the students with construction practices pertaining to RCC & steel elements.

Module-I

1. Study of principles and methods of construction of RCC & steel foundations and columns, types of foundations – isolated, combined, Raft, Base slab, Grillage, pile foundations.

Module-II

2. Concrete Ingredients, grades of concrete, admixture, properties of concrete, production of concrete, mix, proportioning, mixing, transporting, placing, compaction, curing of concrete and ready mix concrete, sampling and testing of concrete.

Module-III

3. Types of Staircases. Requirements of staircase. Construction & design of staircase – Masonry, RCC, Steel, timber, Composite. Study of fire escape staircase.

Module-IV

4. Concreting under water, special concretes like light weight and high density concrete. Construction joints, expansion joints, finish in concrete, chemical admixture. Uses of concrete for aesthetic & structural purpose.

Module-V

5. Properties and architectural uses of mild steel and stainless steel for aesthetic & structural purpose
6. Design & planning of form work in timber, steel

Assignment

Minimum one plate on each construction topic shall be done. Site visits to be arranged by studio teachers. Study of material application to be submitted in the form of portfolio. The entire portfolio on construction and materials shall be presented for term work valuation and making study models and seminars

Reference:

1. “Construction Technology” by Chudley
2. “Building Materials” by DuggalSK
3. concrete technology – nevelli
4. concrete technology by mahajan.

19AT33 GRAPHICS - III

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

Module-I

Perspective:

1. Perspective drawing of built form. Free hand perspectives
2. Drawing of one point & two point Perspective of interiors of Hotel Lounge, Restaurant, Shopping Mall etc., and exteriors of built-form with landscaping etc. by Hand drafting
Rendering of the perspectives using different media such as
 - i. Pencil
 - ii. Pen and Ink
 - iii. Color Pencils
 - iv. Water Color, etc.,

Module-II

Sciography:

2. Study of Shades and shadows
3. Principles of drawing shade and shadow with source of light being sun. Usage of sciography in presentation
4. Sciography for simple geometrical forms on vertical, horizontal and inclined planes

Module-II

5. Applications on built form as represented in plans and elevations
6. Simple geometrical objects like cube, cube with a niche, prisms and pyramids etc.,

Module-IV

7. Overlapping and interpenetration of objects,

Module-V

8. Buildings, Monuments, Furniture etc.,

Submission

Drawing done involving all above contents through architectural drafting

Reference

D. K. Chings

(Islamic & British Architecture)

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

OUTLINE:

Module-I

Coming of Islam - 11th century AD

1. **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

2. **Provincial style**-Ahmedabad, Bijapur and Deccan (Gulbarga, Bidar & Golconda).

EX: Jami Masjid-Ahmedabad.

: Jami Masjid-Bijapur, Ibrahim Rauza-Bijapur, Gol Gumbaz -Bijapur,

: Jami Masjid-Gulbarga, Bidar Fort- Bidar, Golconda fort- Golconda

Module-III

3. **Moghul period**-monumental building in the regime of Humayun, Akbar, Jehangir, Shahjahan & Aurangzeb.

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, Bibika Makbara at Aurangabad & Pearl Mosque at Delhi.

Module-IV

Arrival of British :

4. **Early 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

5. **Later colonial period:** – Contribution of Edwin Lutyens and Herbert Baker to the layout and Architecture of New Delhi. Ex: Layout of New Delhi, Rashtrapathi Bhavan and Parliament house.

Reference:

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

19AT35 – STRUCTURES – III

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

Objective:

To give an insight into the structural behavior of columns and beams

Module-II

1. Structural member and their Analysis. Column action and column Analysis. Beam action beam analysis cantilever beam, Column, beam column, Truss, Truss beam action.

Module-II

2. Arch comparison of Arch and analysis, cables, Column and Struts.

Module-III

3. Effective length, critical load, slenderness ratio, Euler's equation for different end conditions. Rankine's formula.

Module-IV

4. Slope deflections of cantilever, simply supported and overhang beam conditions. Moment area method for simple case of loading

Module-V

5. Material testing to be conducted in the Laboratory – (Testing Materials such as brick, Wood, Concrete & Steel)

Note: The teacher is also expected to expound the structural concepts introduced in non – mathematical terms with examples and application in architectural design.

Material testing to be conducted in the Laboratory – (Testing Materials such as brick, Wood, Concrete & Steel)

Reference:

1. “Strength of Materials” by S.S. Bhavikatti
2. “Strength of Materials” by Basavarajaiah BS and Mahadevappa

19AT36 BUILDING SERVICES-I

(WATER SUPPLY AND SANITATION)

Contact Periods / week: 3 (3 Lectures)	Continuous Internal Evaluation: 50
Credits: 3	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

I. **Water supply**

1. Introduction
2. Assessment of water requirements

II. **Sources and collection**

3. Sources of supply
4. Bore wells

Module-II

III. **Purification**

5. Treatment
6. Water treatment in swimming pools

IV. **Distribution**

7. Distribution systems
8. Pipes – laying and jointing
9. Water pipes – materials(GI, PVC, CPVC/ UPVC pipes, introduction to Copper plumbing)
10. Pipe Accessories
11. Storage tanks
12. Pumps

Module-III

V. **Water conservation**

1. Rain water Harvesting
2. Recharging
3. Recycling and reuse application in planning water supply systems (Urban& rural)

Module-IV

VI. Sanitation and Drainage

13. Introduction

Collection and conveyance of Refuse

14. Drainage in building

15. Sewers

16. Traps

17. Sanitary Fittings

18. Sewer Accessories

Module-V

VII. Disposal and Treatment for urban and rural context

19. Sewage Treatment

20. Septic Tanks

21. Waste and Storm Water Drainage System

22. Rural sanitation

Solid waste management

1. Types of Garbage,
2. disposal & management – landfills& treatment

Site visits

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 showing 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
- Design of Manholes

Reference:

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

19AT37 COMPUTER APPLICATIONS IN ARCHITECTURE - III

Contact Periods / week: 4 (4 Practical)	Continuous Internal Evaluation: 50
Credits: 2	Practical Examination marks: 50

Objective :

To develop required skills in preparation 3 dimensional drawing using computers.

Out line:

Module-I

1. Introduction to 3Dsmax , Importing 2D drawings

Module-II

2. Study of commands required for preparation of 3D drawings in 3DsMax

Module-III

3. Material application and lighting for 3D model

Module-IV

4. Rendering of required views

Module-V

5. Working with Photoshop on rendered view of 3ds Max.

Assignment: -

Preparation of one architectural design project of smaller scale in 3D

Assignment shall include use of 3DsMax for preparing 3D models

Preparation of final views of 3D rendered with Photoshop

19AT38 – MEASURE DRAWING & DOCUMENTATION

Contact Periods: 2(2 studio)	Continuous Internal Evaluation: 50
Credits: 1	Viva: 50

Objective:

To expose students to Historical, Vernacular and Contemporary architecture.

Outline:

Measure Drawing & Documentation & Study tour is to be undertaken during the course period as directed by concerned staff & department suitably.

- I. The selection of a noted building for measured drawing & Documentation is as decided by the department.
- II. The selection of the places to be visited for a study tour to the Department & concerned staff.

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.

SYLLABUS CONTENT OF IV SEMESTER B.ARCH.

19AT41- ARCHITECTURAL DESIGN - IV

Contact Periods / week : 9(1 Lecture + 8 studio)	Continuous assessment marks: 50
Credits: 5	Viva: 50

Objective:

1. To understand the meaning to cultural and physical context of built environment and techniques of reading such contexts considering the philosophy of reputed architects
2. To isolate the various factors of the context which influence the design of built environment.
3. To understand the nature of place making as an architectural goal

Outline:

Studio project shall be based on case studies literature survey and analysis leading to form generation and realization of the objective

Studio Project

The studio project shall include various problems of level such as School, Hotel, Motel, children's' library, Recreation Club, Museum, Polyclinic, and Nursing home etc.

The design shall be sensitive to the needs of disabled, aged people and children.

Submission

One major project and one minor problem and two time problems

- Data collection, case study and literature survey
- Design proposal including study model and perspective view

19AT42: BUILDING CONSTRUCTION & MATERIALS – IV

Contact Periods / week : 6(2 lecture +4Studio)	Continuous Internal Evaluation: 50
Credits : 4	Theory exam (4 hrs duration) marks: 50

OBJECTIVE:

To acquaint the students with construction practices pertaining to RCC floors, roofs and flooring with different materials and plastering

OUTLINE:

MODULE-I

Study of principles and methods of construction of slabs including form-work techniques and reinforcement details for RCC Construction.

1. RCC- one way, two way slabs,cantilever slabs,sloping RCC roof,

MODULE-II

2. retaining walls, vaults, domes, Madras terrace roof,

MODULE-III

3. Jack arch roof, Hollow clay blocks roofing techniques (filler slab)

Paints, distemper's, emulsions & cement base paints. Constituents of oil paints, characteristics of good paints, types of paints and process of painting different surfaces.

MODULE-IV

Varnishes: Types of varnish, methods of applying varnish and fresh polish and melamine finish.

Grouts and anchors, repairs and protective coatings, bonding agents, sealants and water proofing and weather proofing compounds, tile adhesives, tile joint fillers.

MODULE-V

Shoring & underpinning, Expansion joints – Necessity, location and detailing, Ferro cement elements

Note – Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. Study of material applications in the form of portfolio.

The entire portfolio on Construction and Materials shall be submitted along with study models.

Reference:

1. “Construction Technology” by Chudley
2. “Building Materials” by DuggalSK
3. “Concrete technology – nevelli
4. “Concrete technology by mahajan.
5. “Building Construction” by W.B. Mackay
6. “Construction of Buildings” by Barry

19AT43 - CLIMATOLOGY

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

OBJECTIVE :

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

Module-I

1. Introduction – Elements of climate, measurement and representations of climate data. Classifications of tropical climates, Major climatic Zones of India.
2. Thermal comfort: Effect of climatic elements on thermal comfort environment. Body's heat exchange with surrounding environment. Thermal comfort indices viz., Effective temperature, bio – climatic chart etc., Kata Thermometer and Globe Thermometer.

Module-II

3. Site Climate: Effect of landscape elements on site / microclimate.
4. Site Climate: Effect of landscape elements on site / macroclimate.
5. Thermal performance of building elements: effect of thermo – physical properties of building materials and elements on indoor thermal environment.

Module-III

6. Thermal properties. Conductivity, receptivity diffusivity, thermal capacity and time lag and 'U' value, Construction techniques for improving thermal performance of walls and roofs.
7. Natural ventilation: functions of natural ventilation, Design consideration and effects of openings and external features on internal airflow.

Module-IV

8. Day lighting: Advantages and limitations, components of Day light factor, Shading devices – Sun – Path diagram, use of solar charts in climatic design.
9. Types of shading devices. Procedure of designing shading devices.

Module-V

10. Design considerations for buildings in tropical climates with special reference to hot – dry, warm – humid and composite climates.
11. Energy conservation with respect to hot - dry climate

Reference:

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"

19AT44 - HISTORY OF ARCHITECTURE – IV
(Indian Architecture)

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

Objective:

To provide an understanding of evolution of modern architecture and high modernism in India and abroad.

MODULE-I

Outline:

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 styles and movements such as Beaux art, Chicago school, Bauhaus, De stijl movement, Art Nouveau etc.

Study of examples:

5. Crystalpalace at London
6. Wain Wright building by Adler and Sullivan
7. Bauhaus school at Dessau by Walter Gropius,
8. Paris Metro Station entrance,
9. Schroder House by Rietveld

MODULE-II

Study of the works of masters:

1. Antony Gaudi- Casamila and Sagrada Familia
2. Le car busier – Villa Savoy and Ron Champ Cathedral
3. F.L.Wright – Falling Water House and Johnson Wax Tower
4. Mies van der Rohe - Farnsworth House and Seagram building
5. Kenzo Tange – National Gymnasium for Tokyo Olympiad , Kagawa Prefectural center
6. Louis- I khan – Richard Medical Research Building, Philadelphia and First Unitarian Church And School

MODULE-III

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

MODULE-IV

Modern architecture in India:

Study of the works and philosophy of Foreign architects.

1. Le-Corbusier - Capitol complex at Chandigarh
2. Louis-I-khan – IIM Ahmedabad
3. J. A Stein – IIC at New Delhi, International Kashmir center at Kashmir
4. Roger Anger – works at Auroville , Pondicherry

MODULE-V

Study of the works and philosophy of Indian architects.

1. A.P.Kanvinde – Nehru science center Delhi
2. BVDoshi – IIM, Bangalore and Sanghat Ahmedabad
3. Charles Correa – Kanchan Junga apartments at Bombay
4. Uttam . c .Jain - Kota Engineering College , Jodhpur university,
5. Raj Rewal – Asiad village at Delhi, Pavilion at Pragati Maidan New Delhi.
6. Laurie Baker – Center for Development studies Thiruvananthapuram, St. John's cathedral Thiruvalla.

Reference:

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

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

Objective:

To give an insight into the structural behavior of portal frames.

Outline:

MODULE 1

Propped beam: Analysis of propped beam development shear force and BMD numerical examples on simple loading case (Point load & UDL) - (7hrs)

Fixed beams: Behavior of fixed beam. Analysis of fixed beam subjected to point load and uniformly distributed load development of SF, BM and elastic curve with numerical examples (7hrs)

MODULE 2

Torsion Theory: Assumptions, torsion equation, strength of solid & hollow shaft numerical examples. - (7hrs)

MODULE 3

Clapeyron's three moment method: Clapeyron's theorem derivation of Clapeyron's three moment equation. Numerical examples on simple loading cases. - (6hrs)

MODULE 4

Moment distribution method: Stiffness, carry over theorem, distribution theorem. Analysis of continuous beams by moment distribution method.

MODULE 5

Analysis of portal frames: - single bay single story with non-sway by moment distribution method. - (8hrs)

Reference:

“Structural Analysis” By SS Bhavikatti

“Theory of Structure” by Vazirani and Ratwani

Theory of structures by S. Samamrutham

“Structural Analysis” by C S. Reddy

19AT46 - BUILDING SERVICE-II (ELECTRICITY & ILLUMINATION)

Contact Periods / week: 3(3 Lectures)	Continuous Internal Evaluation: 50
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Objective:

To introduce students to electrical services and illumination and to sensitize them with respect to their integration into Architectural Design.

MODULE-I

1. Importance of electrical services in building, introduction to commonly used terminology.
2. **Supply and distribution of electricity to buildings** – transformer alternator (introductory part), low tension panels, generators and overhead versus underground distribution systems, panel boards etc.,

MODULE-II

3. **Internal supply and distribution** – brief description of various types of wiring, conduit, PVC casing and capping wiring systems; House wiring- wire thickness, color codes usages, Distribution of power to various appliances.
4. Estimation for electrification and load estimation

MODULE-III

5. **UPS & Inverters:** Necessity & precautions, Online and & Offline uninterrupted power supplies, Types of batteries used.
6. Earthing, Protective devices – fuses, MCB, ELCB, lightening arrestor
7. Introduction to power and lighting circuits (Not to be asked in the exam)

MODULE-IV

8. **Quality and quantity of light;**
9. Methods of lighting ambient, task and accent lighting
10. Systems of luminaries: direct, indirect etc.,

MODULE-V

11. **Various types of electrical lamps** – incandescent, fluorescent / CFL, HID's, neon lamps and their lighting characteristics.
12. **Indian Electricity Rules** – Relevant codes of Practice
13. Design considerations for different types of occupancies and task lighting

Submission:

Preparation of a lighting and electrical scheme showing electrical fixtures using terminology & load distribution diagram.

- For small residential building and
- For a small industrial work area, classroom, etc

Reference:

- 1) Special electrical engineers working with architects to be invited
- 2) “Electrical Technology” by H Cotton,
- 3) “Electrical Wiring Estimating & Costing” by S. L. Uppal.(Khanna Publications, New Delhi)
- 4) Light right – TERI Manual
- 5) “Basic Electrical Engg. By Anwari
- 6) NBC Part VII

19AT47 COMPUTER APPLICATIONS IN ARCHITECTURE – IV

Objective :

Learning other software's used for preparation architectural drawings.

To equip the students with different skills for preparation of professional Presentation drawings

Out line:

1. Introduction to Revit
2. Study of different commands of Revit for preparation of Architectural drawings
3. Working on plans, elevation and sections with Revit.
4. Preparation & presentation drawing with Revit

Assignment: -

One Submissions on architectural design project using Revit to be done in college. Assignment shall include problems dealt in subject AR 403

Presentation of architectural design project using above said software.

Contact Periods / week: 4 studios	Continuous Internal Evaluation: 50
Credits: 2	viva (oral & sketching) marks: 50

Objective:

To enable students to learn the techniques of preparing drawings which are used for construction of buildings and to learn the techniques of preparing drawings by using computer software.

Outline

To teach the students about architectural drafting by conventional method and also to have the knowledge of representation of drawings by graphical method.

MODULE-I

Conventional method : Architectural Drafting– lettering, Dimensioning lines, Drafting conventions, Title blocks, office standards, representation of different materials in section.

MODULE-II

Graphic symbols, drafting and preparing foundation plans, floor plans

MODULE-III

Exterior elevations, sections, roof plans, interior elevations, structural drawings, site planning and its detailing, schedules of doors, windows.

MODULE-IV

Finishes, electrical drawings, water supply and sanitary drawings etc

MODULE-V

Projects shall involve detailing of drawings for framed structure buildings(at least two storied building) including using computers for Lettering, Dimensioning lines, Drafting conventions, Title blocks, office standards, representation of different materials in section showing line weightage. Graphic symbols, drafting and preparing all the detail working drawings

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

19AT51 – Architectural Design – V

Contact Periods / week: 9 (1 Lectures + 8 studio)	Continuous Internal Evaluation: 50
Credits: 5	Viva exam: 50

Objective:

1. To understand the use of technologies developed in other fields as a precursor to creating architecture.
2. The design shall deal with multiple functions resulting in complex form.
3. The design shall be sensitive to the needs of disabled, aged people and children
4. To understand creating of spaces. Formal, informal and interactive spaces and their hierarchies in built environment
5. To understand regarding services to be provided i.e. Working operating and their maintenance

Outline:

Design emphasis shall be laid on techniques of construction for achieving the thermal comfort and energy efficiency for a given context. The design shall be mainly addressing to the local issues and construction processes.

STUDIO PROJECT

Studio project shall include problems involving above considerations such as institutes, Residential schools, Shopping complex, medium rise buildings, medium size apartments (G+3), Single function Sports Complex, etc.

Submission

One major project and a time problem to be tackled in the semester. Detailing of architectural features of the major project has to be attempted

- Study of various building techniques and planning methods adopted in building for achieving thermal comfort and energy efficiency.
- Study of structural system adopted
- Case study, data collection, literature survey
- Design proposal including study model
- Detailing of architectural features involved shall be attempted

Contact Periods / week: 5 (1Lecture + 4 studio)	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (4 hrs duration) marks: 50

Objective:

To study construction systems with focus on modern & contemporary building elements

Outline:

Module-I

- a. PVC & FRP, frameless glass doors and windows and partitions. Wooden/ steel/ Aluminum sliding and folding doors and partitions.

Module-II

- b. Steel doors for garages and workshops.

Module-III

- c. Collapsible gate and rolling shutters,

Module-IV

- d. Remote control systems of doors, windows and gates.

Module-V

- e. Structural glazing, aluminum composite panel. Cladding.

Submission

Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. The entire portfolio on construction shall be presented for term work.

Reference:

“Construction Technology” by Chudley

“Construction of Buildings” by Barry

“Building construction” by Frank Ching

19AT53 – History of Architecture –V

Contact Periods / week: 4 (2 Lecture + 2 seminar)	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 part 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 example of each

Module-I

The modernist legacy

1. The European rationalism
2. High tech architecture movement.

Module-II

3. Minimalism
4. Classical revival

Module-III

5. Post modernism
6. De constructivism

Module-IV

7. Contemporary vernacular
8. New expressionists

Module-V

9. Ecological architecture
10. New moderns
11. Populist architecture

19AT54 Advanced Materials

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

Objective: To give the knowledge of advanced material being used in the construction industry & its application in building construction.

Outline:

Module-I

- a. Insulation materials – Thermal and sound insulation materials: mineral wool, unbounded rock and slag wool, polyurethane forms (PUF) etc.,
- b. Uses of steel for aesthetic & structural purpose

Module-II

- c. Glass – its manufacture in its various types like plate, tinted, toughened glass decorative reinforced, laminated glass block, fiber glass, glass murals, partially colored glass, etching of glass and its applications in building industry for both exterior and interiors. Glass fabrication techniques,

Module-III

- d. Fiber reinforced composite materials and products, ATC, GLT etc.
- e. Advanced flooring materials vitrified tiles, wooden flooring etc.

Module-IV

- f. Plastics – types, properties and uses of plastics such as polycarbonates, acrylics, PVC polymer films, fibre reinforced plastic. Rubber and Asbestos cement products. Water proofing elements, construction chemicals and additives, adhesives, plaster of Paris, gypsum, Polystyrenes, sealants.

Module-V

- g. Bituminous products, sealants, waterproofing and weather proofing materials, bonding agents, Aluminum composite panels (ACP), aluminum powder coated sheets for wall cladding, rubber wood for partition walls.

Reference:

“Construction Technology” by Chudley
“Construction of Buildings” by Barry
“Building construction” by Frank Ching
“Building construction” by McKay
“Building construction” by S K Sharma
“Building construction” by Punmiya
“Building construction” by SushilKumar
Product details from various related companies.

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

Objective:

To provide an introduction to design of reinforced concrete structures.

Outline:

Module-I

1. Concrete: Composition, Basics of mix design, water cement ration, strength, durability workability requirements.

Module-II

2. Relevance of RCC in Architectural practice Advantages of RCC over other conventional structural practices. Steel for RCC – Plain & Twisted bars, IS 456 code provisions.

Module-III

3. Working Stress method of design – Basic concept, types of loads, assumptions, calculation of MR for singly RC beam (only). Limit state method of design, design of beams.

Module-IV

4. Necessity and philosophy of limit state design, Limit state design of simply supported slabs, columns (axial and uniaxial bending) and footing (axially loaded square footing). Use of SP 16, IS 456 permitted

Module-V

5. Design of Dog legged and open well stairs (Waist slab type)

Note-

- The teachers are expected to expose the students to demonstration models, tests and experiments with materials and structural systems related to the above topics and Compulsory site visits.
- The teacher is also expected to expound the structural concepts introduced in non-mathematical terms with examples and application in architectural design.
- Test on Concrete –Such as workability to be conducted in laboratory. Visit to Ready mix concrete plant

Reference:

1. “RCC” by Jain and Jaikrishna
2. “RCC” by Ramamrutham
3. “RCC” by N Krishna Raju and RN Pranesh

Contact Periods / week: 4 (2 Lecture + 2 seminar)	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.

Outline:

Module-I

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.

Module-II

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 Norms

Service requirement – Quantity of service and quality of service, passengers handling capacity. Architects role for installations of elevators or information to be provided by Architect to lift company.

Module-III

Escalators 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.

Module-IV

Fire

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.

Module-V

Artificial Intelligent equipments used in Architecture fields.

Door sensors, Sensor controlled lightings, GPS controlled equipments, Sensor securities systems Sensor plumbing fittings.

Solar system equipments used in Architecture and construction fields.

Solar water heater, Photovoltaic cells for generation and equipments used for lightning and cocking

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

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 ...

Elective - A

19AT571 Vernacular Architecture

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

Objective:

Study of Vernacular Architecture of India in context to the Life style, Planning, Environmental (Climate, Topography, Building materials & Construction techniques) & Cultural aspects (Social, Religious, Political & Traditional).

Outline:

Module-I

- Introduction & definitions.

Module-II

- Vernacular Architecture of India in general.

Module-III

- Brief study of the features of vernacular architecture in India (Semi-arid or hot & dry, Warm-humid, Moderate & Composite climates).

Module-IV

- Detailed study and analysis of the features of vernacular architecture in Semi-arid (hot & dry) climate.

Module-V

- Scope of study in future.

ASSIGNMENT:

- Case study & documentation of house forms belonging to Semi-arid (hot-dry) climate.
- Study of one village layout

REFERENCES:

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.

Elective - A

19AT572 Building Economics & sociology

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

Objective:

Module-I

To familiarize students with the basic concepts of Sociology and Economics and their influence on Architecture.

Nature, scope and utility of Sociology, relation between Sociology and society. Essential elements of society, bio-social and socio-cultural systems.

Rural and urban communities and their characteristics. Origin, growth and influence of cities.

Definition of urbanization – patterns of life and influence of urbanization on rural life, urbanization process in India.

Module-II

Migration and its impact on urbanization, social problems of urbanization – problems relating to public health, public transport and public housing, sociological understanding of slums.

Type of social setup influencing architecture. Variations in design solutions arising out of social setup.

Type of community, religion, culture and politics playing role in defining architecture.

Influence of architecture on society, Role of architecture in modulating society.

Concepts of CPTED in architecture.

Module-III

Social surveys and Social research – principles of social research, scope of research, units of study, choice of research topics, sources of information, literature review – official and unofficial documents, library references, publication etc.,

Field survey – adoption of suitable techniques in field research viz., Questionnaires, interview, case study etc., analysis and classification of data.

Module-IV

Definition of Economics, Economic laws, Economic goods, utility, value, price and economy affordability, wealth.

Economic organization of society. Consumption, wants, their characteristics and laws based upon them.

Standard of living, market value, opportunity cost, the laws of diminishing, Increasing and constant returns.

Urban land values, land utilization, factors involved in Development of urban land.

Cost and cost indices, preliminary for building.

Module-V

Concepts of life cycle costing with reference to buildings. Time value of money-present worth and inflation.

Sources of finance for buildings.

Architecture evolving out of affordability and constraints of economy.

Contribution of various architects towards low cost construction.

References:

1) Pannerselvam R, Engineering Economics, Prentice Hall India, New Delhi, 2000

2) Bruce, Steve, Sociology: A very short Introduction, Oxford University Press,
Oxford, 1999

3) Influence of architecture on economy

Elective –B

19AT581 – Climate Responsive Design

Contact Periods / week: 3 (1 Lectures + 2 studio)	Continuous Internal Evaluation: 50
Credits: 2	Viva exam: 50

Objective:

To apply the principles of Solar Passive Architecture to design buildings.

Introduction and Application to passive techniques of cooling such as orientation of building in different latitude on earth surface. Types of planning used for particular climate.

Design of surrounding Space by landscape to change the micro climate by water bodies and plantation.

Use of advanced reflective material & colour to control the heat propagation through building envelope.

Use advanced construction technique and materials used in building to bring down the temperature of indoor space.

Use of evaporative cooling, earth tunnels, roof pond, wind scope, and shaded courtyard etc.

Studio project

Only one design exercise (in hot dry climate) with an objective to integrate passive cooling systems in the design. Study of local materials with respect to thermal cooling and construction Technique & Landscape

Reference:

1. "Housing Climate and Comfort" by Martin Evans
2. "Climate Responsive Architecture" by Arvind Kishan Baker and Szokolay
3. "Energy efficient in India" by Mili Mujumdar

Elective- B

19AT582 Architectural Photography

Contact Periods / week: 3 (1 Lectures + 2 studio)	Continuous Internal Evaluation: 50
Credits: 2	Viva exam: 50

Objective:

To provide and understand, Fundamentals of Architectural Photography, its importance in Architecture.

Outline:

- To understand techniques of Photography, uses of contemporary camera's, Auto Focus, Auto flash, Auto forward, Auto rewind, Zoom Lenses, Types of Lenses Colour filters, Flash guns, Tripods, use of different types of lenses.
- Composing the element, balancing the view.
- Digital Photography micro and Macro Photography, outdoor and indoor Photography, (such as landscape) Night Photography, Evening Photography.
- Use of Photography software such as photoshop-7, Photoshop-CS2, CS3 etc.
- Editing techniques of Photo's in Photoshop and creating foreground and background to the photos.

Assignment:

- Students are asked to take the building Photographs of Architectural Importance exhibiting their concept of creativity. The same shall be submitted in the form of an Album with necessary Explanations.

Reference:

1. "Photographis" 66 by Walter Herdeg
2. Photography by Jhon Hedgecoe
3. Photography and the art of seeing by Freeman Patterson.

SYLLABUS CONTENT OF VI SEMESTER B.ARCH.

19AT61 - ARCHITECTURAL DESIGN – VI

Contact Periods / week: 9 (1 Lectures + 8 studio)	Continuous Internal Evaluation: 50
Credits: 5	Viva exam: 50

Objective:

1. To understand the differences and similarities of institutional goals and architectural goals.
2. To understand the role of built environments.
3. Projects shall be of urban scale with multiple functions based on considering building services such as water supply and sanitation, plumbing, vertical transportation, air conditioning, firefighting, security system, electrical data caballing, hospital services such as humidifier, exhausts, gas lines, bio-waste and pharmaceutical waste etc
4. To understand the need for creating architecture as an envelope to system dependent program (various building services as a system)

Outline:

Various utilities, which remain invisible in most of the buildings, become visible and important in certain categories of buildings. Architecture in such buildings remains at the level of envelopes. Buildings of such nature shall be identified and studied. Projects like hospitals, IT buildings industries, sports complex, pharmaceutical company, milk dairy (medium scale) or three star hotels where services and technology play important role may be considered

Studio project

Studio project shall be attempted with utilities and service dominant buildings like pharmaceutical manufacturing units or medical facilities. Consultants in the field of utilities and services shall be called as part of studio review.

Submission

One major project and a time problem to be dealt in the semester. Detailing of architectural features of the major project has to be attempted

- Study of service and technology as main feature in design
- Study of structural system adopted, influence of Climatic, Environmental and ecological factors
- Case study, data collection, literature survey
- Detailing of architectural features involved shall be attempted

**19AT62 - BUILDING
CONSTRUCTION – VI**

Contact Periods / week: 5 (1 lecture + 4 Studio)	Continuous Internal Evaluation: 50
Credits: 3	Viva marks: 50

Objective :

- To Study the construction systems of roofing for large span and complex buildings

Outline :

Module I

Steel trusses for various spans, ridged truss, saw tooth truss with lattice girders, roof lightings, Asbestos sheet.

Module II

Poly carbonate sheet, FRP Sheet and Profiled MS Sheet cladding and roof fixing details, Structural Glazing.

Module III

Roofs – Shell Roof, Folded Plate, Geodesic Domes, Space Frame.

Module IV

Tensile Structures, Pneumatic structures, pre-engineering metal buildings.

Module V

Self – Supporting steel roofing, Flat Slab, waffle Slab, Coffer Slab.

Submission :

Minimum one plate on each construction topic. Site visits to be arranged by studio teachers. The Entire portfolio on Construction shall be presented for term work.

Reference :

1. Construction Technology by Chudley
2. Construction Of Buildings by Barry
3. Building construction by McKay
4. Building Construction by Frank Ching

19AT63 – Physical Planning – I

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

Objective:

To give an introduction to the discipline of urban and regional planning

Outline:

MODULE- I

Human settlements – Urban settlements and rural settlements, differences, origins, evolution and growth of settlements. Major functions of a city, city forming and city serving functions.

Problems faced by a typical city. Relation between urban and rural settlements, characteristics and planning efforts of cities and towns of various historical periods like Egyptian, Greek, Roman, Medieval, Renaissance, Neo-classical. Industrial Revolution and its impact on cities, the contemporary city. Cities of Indus valley and Vedic period, cities of Moghul period and British period, typical IndoAryan cities, typical Dravidian temple city. (To be dealt in brief)

MODULE- II

Planning Theories – enunciated by Ebenezer Howard, Patrick Geddes, Soria Y Mata, Dioxides, Le Corbusier, Clarence Stein, Clarence Arthur Perry, Hilberseimer – their relevance to Indian Conditions.

MODULE- III

Land use planning, land use classification for cities and rural settlements, analysis of land uses in Indian cities.

Urbanisation, Industrialisation and urban growth, definitions and inter relationship. Trends in urbanization in India since Independence. Growth of metropolitan cities, their growth and management problems, world urbanization trends.

MODULE- IV

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- V

Planning 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

Regional Planning – relation among various settlements of a region, pattern of settlements in a region. Definition of a region, various types of regions, basic principles of regional planning
Urban Redevelopment, Renewal, Rehabilitation and Conservation

References:

- 1) Simon Eisner, Arthur Gallion & Stanley Eisner, Urban Pattern, VNR, New York, 1993
- 2) Clara Greed, Introducing Town Planning, Longman, Scientific and Technical, Harlow, 1973

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

Objective:

To understand the responsibility and liabilities of the profession.

To understand the process of Contract management.

Outline:

MODULE 1

1. Profession: Idea of profession; differences between profession, trade and business.
2. 2. Profession of architecture: Types and extent of services offered by architects, scale of fees, stages of payment, and contract between client and architect.
3. 3. Code of Professional Conduct: Architects Act of 1972, role of Council of Architecture, Indian Institute of Architects in functioning of the Profession.

MODULE 2

4. Practice: Types of Architectural firms, proprietorship, partnership, associate ship and private limited firms; advantages and disadvantages of each type of firm; building clientele and projects.
5. Architectural competitions: guidelines of COA, procedure of conduct of competitions.
6. Office Management: Administration of Architectural firms; basic accounting procedures.

MODULE 3

7. Tender: Tender document and its content. Types of tenders, advantages and disadvantages of each type; suitability to various projects. Tender notices, opening, scrutiny, process of selection and award.

Architect’s role in tender process. Earnest Money Deposit, Security Deposit, Retention Amount, Mobilization Amount and Bonus & Penalty Clauses. Issues arising out of tendering process and the role of an architect.

MODULE 4

8. Contract: General Principles, types of contract; Contract document. Contract Management: Architect’s role in Contract Management. Conditions and Scope of Contract; role of an architect in ensuring completion of contract.

Issues arising in Contract: i) Termination of contract, ii) Certificates 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 certification of variations, ix) Prime cost, provisional sum.

MODULE 5

9. Byelaws: Building byelaws, National Building Code, floor area ratio, floor space index, floating FAR, zoning regulations. Overview of Master Plan/CDP of relevant cities.

REFERENCES:

1. Namavathi, Roshan, Professional Practice for Architects and Engineers, Lakhani Book, New Delhi, 2001.
- 2) Krishnamurthy K G and Ravindra S V, Professional Practice, S V Ravindra, 2009, Bangalore.

19AT65 – Structures –VI

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

Objective:

Introduction to the design of steel structures (with ref to IS 800- 2007 Limit state method)

Outline:

MODULE -I

Advantages & disadvantages of steel structures. Different structural steel forms loads and load combination (limit state method of design)-(3hrs)

Design of simple and eccentric bolted connections bearing type & HSFG bolts. (7hrs)

MODULE-2

Welded connection: Advantage & disadvantage types of welds design of simple weld connections- (6hrs)

Design of Structure tension members-(6hrs)

MODULE-3

Design of compression members: design of angle struts design of column of lacing(single & double) (6hr)

Design of laterally restrained beams - (6hrs)

MODULE-4

Design of column base - (5hrs)

Slab base type

MODULE-5

Gusseted base

Provision for fire protection for steel structures weld provisions. -(3hr)

Note: the teacher is also expected to expound the structural concepts introduced in non-mathematical terms with examples and application in architectural design and Site Visits (Minimum 4nos.)

Reference:

“Design of Steel Structures” by Ramachandra (by Limit state method)

“Design of Steel Structures” BY Kazimi and Jindal (by Limit state method)

“Design of steel structures” By L. S. Negi

“Design of steel structures by Subramanian

“Design of steel structures by Duggal

19AT66 – Construction Management

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

Objective:

To provide an insight into Management of Building/Construction projects involving management of money, manpower and machinery.

Outline:

MODULE-1

Construction Organization

Need management of building /construction projects – role of Project or Construction Managers in the building industry.

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, qualities of an ideal construction organization, ethics in construction industry.

MODULE-2

Construction Management Techniques.

Construction Planning scheduling and controlling phases.

MODULE-3

Use of Management techniques – Bar Chart, Mile Stone Chart, Networking using PERT and CPM.
Projects cost Analysis using CPM.

MODULE-4

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.

MODULE-5

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 pumping equipment)

Note – Use of software to be encouraged although the same is not for the examination purposes.

Reference:

- 1) 'Construction Planning, Equipment and Methods' by RL Peurifoy
- 2) 'Project Management for Architects' by S P Mukopadhyay
- 3) 'Part and CPM' by L S Srinath

Elective- C

19AT671 - Landscape Design

Contact Periods / week: 4 (2Lecture + 2 studio)	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

6. Landscape Design principles. 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

Elective- C

19AT672 - Housing

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

Objective:

To introduce to the scenario of housing in india. To understand various aspects to mass housing its effects on the outcome

Outline:

A general review of housing through the ages, growth and structure of housing (Particularly in India).

Objectives of National housing policy, housing need and housing demand in India. Introduction to planning and design criteria for housing, layouts for different socio-economic groups, densities, floor areas, floor area ratio, open spaces, community facilities, standards and norms, infrastructure layouts, circulation, clustering.

Row-housing, duplex, cluster types user requirements and the spaces within the house, rural housing design evaluation of housing designs. Brief review of institutional (Government and Private) schemes /programmes and concepts in mass housing for the lower income groups, present approaches to cost production of housing traditional and new building materials.

Slum and squatter settlements problems possibilities.

Urban renewal and housing

Note: At least one major design exercise related to a mass housing project and one term paper on any of the other topics is to be completed by the students.

19AT681 – Building Acoustics

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

Objective:

To develop the knowledge and skills required for understanding acoustics in buildings and its integration with architectural design.

Outline:

MODULE-1

Introduction to the study of acoustics – nature of sound, 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 and Eyring’s formulae, sound absorbents, porous materials, panel or membrane absorbers and cavity or Humboldt resonators, role of functional absorbers.

Absorption coefficient of indigenous acoustical materials, method of setting out of raked seating.

MODULE-3

Acoustical design requirement for halls used for speech, drama and music – general purpose halls used for both speech and music, cinema theatres, open air theatres. Study of auditoria designed and acoustically treated.

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 insulations. Constructional measures of noise control and sound insulation.

MODULE-5

Use of Sound measuring instrument. 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 and seashore and inland. Traffic planning and design against outdoor noise for air traffic, road traffic and rail traffic.

Assignment

Design of a small auditorium for a capacity upto 200 persons

- Speech
- Dance & Drama plus multipurpose hall
- Film theater

Design & draft plans, sections, and acoustical details at least any two of the above

Noise attenuation technique inside and outside with examples and sketches

Submission of portfolios with material finishes and samples.

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

Elective- D

19AT682 – Architectural Conservation

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

Objective:

Introduced to the role of Architectural conservation, types methodology, procedure and restoration

Outline:

MODULE-I

1. Introduction to architectural conservation of buildings of importance - definition nature, purpose and scope. Values in conservation; Ethics of conservation building conservation legislation etc.

MODULE-II

2. Preparatory procedure for conservation :

Inventories, inspection, documentation; degree of intervention for prevention of deterioration, prevention of existing state, consolidation of the fabric, restoration, rehabilitation, reproduction, reconstruction etc.

MODULE-III

Structural aspects of building to study structural elements such as beams, arches and domes; thumbs and walls, piers and columns, foundation etc. Causes of decay in buildings by natural and human factors, Disasters, Botanical, Biological and Microbiological causes.

MODULE-IV

3. Conservation procedure - the work of conservation Architect and his team of coworkers: inspection documentation and reports, Research, analysis, Preventive maintenance, fire and security, cost control, special skills in arts and crafts.

MODULE-V

4. Case study / appraisal of Conservation project of a medium size in view of the above issues referred in block 1 to 3 above.

Reference-Books

An introduction to conservation by Feildon B. M. UNESCO Paris

Conservation of Building by I. H. Harvey.

A critical bibliography of Building Conservation By Smith I. H.

19AT71 – ARCHITECTURAL DESIGN – VII

Contact Periods / week: 9 studio	Continuous assessment marks: 50
Credits: 5	Viva Marks: 50

Objectives:

1. Learn about reading and documenting urban contexts and to understand the idea of urban space. To understand the difference between urban designs as opposed to urban development.
2. To understand the role of architecture in shaping urban fabric.
3. To create architecture which fits into a specific urban context.
4. To understand the needs of privacy, community spaces, efficiency of open spaces and idea of extended living areas
5. To understand the structural feasibility of buildings for various forms
6. To differentiate and understand the nature of organic and planned communities.

Outline:

1. Studio projects shall be based on considering the principals involved in **community** architecture
2. Studio projects shall be based on sustainable architecture and energy efficient buildings, reuse recycled and recharging resources such as water, solar bio-resources,

The role of urban space as a public realm needs to create such spaces as extension of private domain. The public building shall be investigated and shall become one of the architectural goals of the project. Some of the prerequisites of the project shall be;

1. Multiple functions.
2. Public access to majority of the space,
3. Large-gathering areas, which are open and extendable to the immediate urban context
4. Analyzing structural feasibility of the project to adopt various structural systems for spanning.

Studio Project

High-rise building Projects like transport interchanges, large retail areas with entertainment areas, transport terminals with commercial areas, performing art center with museums and such multiple functions shall be taken. Study part of the studio shall be documented and shall review as part of the viva.

Eg of projects: Large group housing with other amenities, large retail areas with entertainment areas, Bus Terminal, Sports terminals, Community areas etc.

The design shall be sensitive to the needs of disabled, aged people and children.

Submission -

One major project and one mini project as time problem to be tackled in the semester. Detailing of architectural features of the major project has to be attempted

- Study of sustainable as a concept adopted in design
- Study of structural system adopted, influence of Climatic, Environmental and ecological factors, harvesting solar energy.
- Case study, data collection, literature survey
- Design proposal including block model

Detailing of architectural features involved shall be attempte

19AT72 Building Construction

Contact Periods / week: 05 (01Lectures+ 04 studios)	Continuous Internal Evaluation: 50
Credits: 3	Viva marks: 50

OBJECTIVES:

To acquaint students with more complex structural systems, constructional details and building types with emphasis on applied constructional details from Architectural Design Project with developing the skills in Architectural Detailing.

MODULE - I

- 1) Prestressed and Post Tension Technology.
- 2) Various Building components developed by CBRI.
- 3) Various structural systems. Suitable for long span structures.

MODULE - II

- 4) Multi Basement construction with structural, lighting, ventilation, rain water disposal details.
- 5) Various structural systems suitable for High Rise Structures. Wind pressure, shear wall and various other issues.

MODULE - III

- 6) Earth quake resistance detailing.
- 7) Curtain wall construction.

MODULE - IV

- 8) Pre Engineered Building system.
- 9) Factory Building using precast and prefabricated concrete elements.

MODULE - V

- 10) New trends in industrial buildings, spanning, roofing, lighting, ventilation etc.
- 11) Architectural detailing of any one structure, such as a. Stadium, b. Tensile structure, c. Multiplex, d. Cinema Theatre/Cultural center, e. Civic Center.
- 12) Green roof construction

REFERENCE BOOKS:

1. Elements of Structures by MORGAN
2. Structures in Architecture by SALVADORI
3. Building Construction by MACKAY WB. Vol. 1 to 4
4. Construction of Building by BARRY Vol. 1 to 5
5. Construction Technology by CHUDLEY R. Vol. 1 to 6
6. Building Construction illustrated by CHING FRANCIS D. K.
7. Elementary Building Construction by MITCHELL
8. Structure and Fabric by EVERET

19AT73 – Pre - Architectural Design Project

Contact Periods/ Week :3studios	Continuous Internal Evaluation: 50
Credits: 2	Term Work: 50

Objective:

In depth study of building type & area of interest selected for Architectural Design Thesis in 8th semester as a database.

Outline:

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

1. **Pre-Project:** –The stage should ideally be accomplished in this semester. The work involves students to discuss with the faculty to identify an area of interest & specific types of buildings. The pre project stage should end with a conclusion drawn from literature and desktop case studies. Formation of clear design guidelines and “project program”.
2. **Project seminar** - Student shall present a seminar on the project topic, which would include the following;
 - a. Precedents of similar projects, either actual visit to such projects or through literature reviews.
 - b. Cultural, contextual, historical models of architectural approach to such project,
 - c. Prevalent or historical models and
 - d. Rhetorical (symbolic) or a speculative (tentative) statement that would be the basis of further investigation. (For example: Architecture in the information age: Design of libraries, in the new virtual reality regime).
 - e. Documentation which is a part of this presentation shall be taken as completion of “Desktop case study” and design guidelines as a part of the final requirement
 - f. Site selection place and finalization of program for Architectural Design thesis

Submission

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

19AT74 – PROFESSIONAL PRACTICE – II

Contact Periods / week: 3 lecturers	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3 hrs) 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 - I

Supervision & Contract Administration: Site visits, site meeting. Co-Ordination with various agencies, site book, 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 - II

Valuation and Dilapidation: Definitions and architect's role in preparation of valuation and dilapidation 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 - III

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

MODULE - IV

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

MODULE - V

Laws related to Property and Land: Land tenure, types of land holdings, land registration, easement rights, covenants, trespass and nuisance etc.

Reference:

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

19AT75 - STRUCTURE - VII

Contact Periods / week: 4 Lectures	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3 hrs) marks: 50

Objective:

To give an introduction to pre – stressed concrete, special and advanced structural systems and structural forms. Detailing of RCC & steel structural members.

MODULE - I

1. Basic concepts of pre–stressed concrete.
PSC materials advantages and disadvantages pre–stressing systems behavior of pre–stressed concrete member problem on analysis.
2. Losses in pre-stress concrete and estimation of total loss in pre-stressing system.
(Simple problem on estimation of losses) Design concept of PSC beam & slab (No numerical problem to be solved)

MODULE - II

3. Basic concept of shell advantages and disadvantages classification of shells. Structural concepts and detailing in shell structures. Folded plate behavior. Structural concepts and detailing in folded plate.
4. Behavior of flat slab advantages and disadvantages and typical detailing in flat slabs. Behavior of grid slab and structural detailing in grid slab.

MODULE - III

5. Typical structural detailing's in RCC staircases (doglegged stairs, spiral stairs, cantilever)

MODULE - IV

6. Typical structural detailing's RCC beam to beam connections and beam to column connections. Structural detailing of one way & two slab (simple supported)
7. Typical structural detailing's of steel- beam to beam and beam to column connections. (framed, seated connections)

MODULE - V

8. Basic structural concepts of space frame, tensile structures pneumatic structures advanced structural systems high rise buildings.

19AT76 Estimation & Costing

Contact Periods / week: 04 (02Lectures+ 02 studios)	Continuous Internal Evaluation: 50
Credits: 3	Theory marks: 50

Objective:

To develop the necessary skills for estimation and writing specifications for various types of buildings and developmental work.

MODULE - I

1. Introduction importance of Estimation, types of Estimates modes of measurements
2. Principle of rate analysis. Factors affecting rate analysis preparation of rate analysis of building items

MODULE - II

3. Specification: importance of specification detailed specifications of building items.
4. Study of local schedule of rates, PWD system, measurement book, muster roll, running account bill, interim and final certificate.

MODULE - III

5. Preparation of detailed estimate and abstract of single story building load bearing structure (long wall & short wall method and center line method)
6. Estimation of RCC works (beam, slab & column with footing). Detailed estimate and abstract of single storey RCC framed building

MODULE - IV

7. Detailed estimate and abstract of sloped roofs with roof materials such as Mangalore tiles, AC sheet, GI sheet, PVC sheet supported by steel or wood.

MODULE - V

8. Preparation of detailed estimate and abstract of water supply works (masonry tank resting in ground & underground pipe network in building)
9. Preparation of detailed estimate and abstract of sanitary works (manhole and septic tank drains)

ELECTIVE-E
19AT771 – EARTHQUAKE RESISTANT ARCHITECTURE

Contact Periods/ week: 4 Lectures	Continuous Internal Evaluation: 50
Credits: 3	Theory examination (3 hrs) marks: 50

Objective:

To provide awareness and introduction to earthquake prevention measures in building.

MODULE - I

Building safety from natural Hazards: an introduction Elementary seismology
Earthquake occurrence in the world, plate tectonics, faults, earthquake hazard maps of India and the states.

Causes of earthquake, seismic waves, magnitude, intensity, epicenter and energy release, characteristics of strong earthquake ground motions

Seismological instruments: Seismograph, Accelerograph, Seismoscope/multi SAR

Flexibility of long and short period structures;

MODULE - II

Site planning, Building forms and Architectural Design Concepts for Earthquake resistance

Historical experience

Site selection

Site development

Building forms – Horizontal and vertical eccentricities, mass and stiffness distribution, soft storey etc.,

Seismic effects related to building configuration

Plan and vertical irregularities, redundancy and setbacks

Special aspects – Torsion, appendages, staircase, adjacency, pounding, Contemporary international approaches,

MODULE - III

Performance of Ground and Building in past earthquakes

Earthquake effects – On ground, soil rupture, liquefaction, landslides

Behaviors of various types of buildings, structures.

Seismic Design Principles

Concepts of seismic design, stiffness, strength, period, ductility, damping hysteric energy dissipation, center of mass, center of rigidity, torsion and design eccentricities.

Seismic base isolation and seismic active control

Structural detailing, Innovations and selection of appropriate materials

MODULE - IV

References to code provisions for the buildings, IS 1893 – 2002, IS 4326 – 1993

Seismic detailing provisions: Masonry and Wood building (IS 4326, IS 13828)

Seismic Designs and detailing of RCC and steel buildings:

IS 1893 – 2002, IS13920 – 1993, IS 456 – 2000 IS 800 – 2004

Brief about Special reinforcing and connection details in structural drawings.\

MODULE - V

Earthquake Resistant Construction Details.

Various types of construction details of

Foundations, soil stabilization, retaining walls, plinth fill, flooring, walls opening, roofs terraces, parapets and boundary walls, underground and overhead tanks, staircases and isolation of structures.

Local practices: traditional regional responses

Seismic vulnerability evaluation of existing buildings

Weakness in existing buildings, aging weathering, development of cracks

Concepts in repair, restoration and seismic strengthening, materials and methodologies for seismic retrofitting.

Retro fitting for earth quake resistant building

Elective – E
19AT772- Urban Design

Contact Periods / week: 04 (02 Lectures+ 02 studios)	Continuous assessment marks: 50
Credits: 3	Theory Marks: 50

OBJECTIVES:

- To understand the scope and nature of urban design as a discipline
- To introduce the component of a city and their interdependent
- To learn to interpret the city in different ways and layers
- To create awareness of contemporary urban issues as well as learn about possible Ways to address them

MODULE - I

INTRODUCTION TO URBAN DESIGN

Components of urban space and their interdependencies – Outline of issues/aspects of urban space and articulation of need for urban design – Scope and objectives of urban design as a discipline

MODULE - II

ISSUES OF URBAN SPACE

Understanding and interpreting of urban problems/issues- place making and identity, morphology; sprawl, generic form, incoherence, privatized public realm – effects/ role of real estate, transportation, zoning, globalization – ideas of sustainability, heritage, conservation and renewal contemporary approaches : idea of urban catalyst, transit metropolis, community participation - studio exercise involving the above

MODULE - III

BEST PRACTICE IN URBAN DESIGN

Contemporary case studies from developing and developed economies that offer design guidelines and solutions to address various issues/aspects of urban space – case studies

URBAN DESIGN FRAMEWORK

- Formulating the vision of the place
- Formulation of Objectives
- Development strategy
- Policy and development framework
- Bench mark study and presentation by each group

MODULE - IV

Working as a studio group, you will transform community issues and objectives into a unified vision for the neighborhood with a series of strategies and an urban design framework. The urban design framework will establish a future vision of the corridors, districts and neighborhoods of the community. The framework will establish significant places for public investment as well as important civic design features of private development

URBAN DESIGN PROJECT

MODULE - V

This unit will involve reading task on the new urbanism followed by class room discussions Once the overall vision for the place has been formulated and development objective are chalked out the group disperses. Each individual design will zoom in to their respective area of intervention for:

- Project identification
- Formulation of design program

- Urban Design Project framework
- Formulation of area
- Design Development
- Draft Proposal
- Final Project

OUTCOMES

The students understood the role of Urban design as a discipline, and its role in understanding and interpreting a city. Various reading methods to be explored, to understand the historical as well as present urban form, possible ways to address them

Reference Books:-

General Reading

- Alexander Christopher : Urban Pattern
- Alexander Christopher : New theory of Urban Design
- Alexander Christopher : City is not a Tree
- Lynch Kevin : City Sense
- Lynch Kevin : Image of City
- DETR and CABE (2000) By Design : Urban Design in the planning System : Towards Better Practice
- DETR (2000) Planning policy Guidance Note 3 : Housing
- Krieger, A (Ed) (1991) Towns and Town Making Principles, New York, Rizzoli
- Tibbalds, F (1992) Making people Friendly Towns, Longman
- Urban Villages Group (1992 and 1998) Urban Villages
- English Partnerships/ Urban villages Forum (1998) Making Places
- Housing Corporation (1998) Scheme Development Standards
- Housing Corporation/DETR (1999) Housing Quality Indicators

Web Sites: Council of Architecture and Built Environment: www.cabe.org.uk

ELECTIVE-F
19AT781 - INTERIOR DESIGN.

Contact Periods / week: 4 (1 Lectures+ 3 studios)	Continuous Internal Evaluation: 50
Credits: 3	Viva marks: 50

Objective:

To introduce the students to the discipline of Interior Design and to develop basic skills required for handling simple interior design projects.

MODULE - I

Designing the size and form of interior spaces using user – activity analysis and anthropometrics, effect of enclosure, fenestration, color and lighting on perception of interior space, application of scale, proportion to enhance the quality of interior space, psychological effects of space.

MODULE - II

Elements of interior space – design for comfort – climatic comfort, natural and artificial lighting, air conditioning and acoustics.

MODULE - III

Furniture design – Role of furniture, ergonomic factors of furniture design and materials used. Matching furniture to decorative style, fitted furniture, its characteristics and application. Functional classification of space, barrier free design.

MODULE - IV

Surface treatment– decorative material for ceiling, walls, floors drapery upholstery for openings and furniture respectively and matching them with overall color scheme and composition, source and collection of information, elements of indoor plants and interior landscape and use of water.

MODULE - V

Study of different materials used in interior design like steel, glass, pop, aluminum, timber, fabrics, plastic, composite materials, through market survey.
Detailed Estimation & specification of Interiors.

Assignment

The class work shall include two interior design projects (one major and one minor) to be handled with complete design, detailed furniture layout, specification for the materials, and their application. The projects shall relate to residential, commercial educational or interiors of other public spaces of smaller scale

- Collection of samples,
- Study & submission of portfolios relating to individual aspect like furniture, accessories, water, special lighting schemes and upholstery

Note – use of hand skills may be encouraged rather than computer.

Reference:

“Human Dimension and Interior Space” by PaneroJulious & Zelink Martin
“Design of Interior Environment” by Alexander and Mercourt.

ELECTIVE-F
19AT782- Physical Planning -II

Contact Periods / week: 4 (2 Lecture + 2 studios)	Continuous Internal Evaluation: 50
Credits: 3	VIVA exam marks: 50

Objective:

To develop skills for carrying our surveys, analysis, presentation with respect to existing areas in order to redevelop/improve them.

Outline:

- Urban Renewal – causes and consequences of urban blight and obsolescence – slums and shanties – methods of conducting surveys, analysis and settlements.
- Planning Techniques – study and analysis of existing settlements, 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.
- Environmental and management issues.
- Regional Planning – relation among various settlement of a region, pattern of settlements in a region. Definition of a region, various types of regions, basic principles of regional planning.

Submission

- Design of a housing layout for 3000 +/- population as per the local bye-laws (prepare a layout with detailing of services).
- 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

The study shall be conducted by groups of 4 to 5 students only and proposal to be submitted individually

Reference;

- 1) “The Urban Pattern: City Planning and Design” by Gallion and Eisner
- 2) “Urban Planning” by Chapin

SYLLABUS CONTENT OF VIII SEMESTER B. ARCH.

19AT81 – ARCHITECTURE DESIGN PROJECT (Thesis)

Contact Periods / week: 30 studios (10 Lectures+ 20 studios)	Continuous Internal Evaluation: 50
Credits: 20	Viva: 200

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 completed 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

Contact Periods / week: 3 Lectures	Continuous Internal Evaluation: 50
Credits: 3	Theory exam (3 hrs 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.

Out line:

MODULE-I

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

MODULE-II

2. Sustainability in planning: Various aspects of sustainability in site planning and planning of building. Planning techniques - efficient space utilization, minimum exposed hard surfaces, usage of landscape elements for various needs of site etc.
3. Climate: Various means of passive techniques in buildings with respect to local climate. Indoor temperature management. Local techniques of passive architecture.

MODULE-III

4. Materials: Selection of materials based on environmental qualities, Use of local materials, recyclable and reusable materials and low energy embodied materials, etc.

MODULE-IV

- 5 .Construction techniques: Various methods of constructions that are considered to be sustainable.

Services:

- Sewerage: Sewerage system and its disposal, treatment methods within the site,
- Electricity: Ways and means of reduction in electricity consumption. Use of solar energy for lighting of building, road, parks and garden, water pumping etc. use of solar panels as architectural feature.
- 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.

MODULE-V

6. Waste management: Recycling & reuse of waste produced within the site. Concepts like Biogas and biomass plant, Vermiculture etc.
- 7 .Role of LEED India and TERI GRIHA etc in certification process for Green buildings

Assignment

Seminars on one case study and proposal need to be conducted examples.

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. Climatic design by D Watson
7. Green Architecture by Micheal J. crosbie

Solar Architecture

Contact period: 3 Lecturers	Continuous Internal Evolution: 50
Credits: 3	THEORY (Drawing oriented) (3 Hrs) Marks: 50

Objective:

To provide an understanding the behaviour of various structures, forms and material

Outline:

MODULE-I

Construction techniques of structures and structural components

Structure in Architecture:

Building type & building forms in mud & thatch, stone & wood, brick & concrete & steel & glass.

MODULE-II

Structural behaviour of different types of stairs – cantilever, stair with edge beam, stringer beam, spiral stairs, circular / helical stairs etc

MODULE-III

Advanced structural system in multistoried building

Design principal of retaining walls / protection walls

Design principal of water tanks, sump

MODULE-IV

Prefabricated building components

Substructure:

Introduction to deep foundation

MODULE-V

Introduction to Art and Architecture of bridges components and modular Co-ordination

Introduction to shells, folded plates, space frames, tensile structure and pneumatic structure

Reference

1. CBRI Publication on prefabricated
2. Design of Structures by Ramamrutham
3. National Building code Published by Beauru of India

19AT83 - SEMINAR

Contact Periods/ Week :3 studios(1Lecture + 2 Studios)	Continuous Internal Evaluation: 50
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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.

19AT91- Professional Training

1st Part of 5th year

Contact Periods : 16 ½ weeks (100 days)	Continuous Internal Evaluation: 50
Credits: 25	Viva marks: 50

and

SYLLABUS CONTENTS OF X SEMESTER B. ARCH.

19AT1001- PROFESSIONAL TRAINING.

2nd Part of 5th year

Contact Periods : 16 ½ weeks (100 days)	Continuous Internal Evaluation: 50
Credits: 25	Viva marks: 50

Common syllabus for 19AT91and 19AT1001

Viva exam will be conducted at the end of each 9thsem and 10th semester.

Objective:

To provide exposure to the various dimensions of architectural practice.

Outline :(at the end of 9th semester and 10th semester)

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 each in 9th sem and 10th sem totaling to minimum 200 working days of 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 and 10th 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.

