



Department of Architecture

Faculty of Technology & Engineering

The M.S.University of Baroda

Vadodara.

Bachelor of Architecture

Syllabus

Applicable from academic year 1994-1995

D.N.Hall Campus, Pratapgunj, Vadodara- 390002. Phone & Fax No.: 0265-2788814

I YEAR B.ARCH.

I SEMESTER

ARCH 1110

DESIGN I (ARCH GRAPHICS)

L: ----
TU – 2

Theory : ---
Pr/ Dr/ Stu : 150

Pr/Dr/ Stu – 8

Total : 150

- A. Introduction to courses in Graphics
Drawing tools handling, lines and their meaning. Line Drawing practice exercises.
- B. Conventions in drawing plans, elevations and sections. Measuring and drawing to a scale : small objects, furniture, door/ windows, a room to etc. Preparation of drawings in pencil and ink.

Conventional methods of indicating different building materials in various Media. Dimensioning and detailing, Anthropometric dimensional studies.

- C. Lettering for titles annotation of drawings etc. The derivations and characteristics of various types, forms, and sizes of letters including vernacular script. Composition and spacing of annotations and titles.
- D. Composition of drawing sheet. Architectural rendering using different techniques and different media including colour.

TERM WORK: Drawing, Sketches and Models etc. based on the above Syllabus.

TEXT/REFERENCES:

1. Rendering with Pen and Ink – Robert W. Gill Thomes and Hudson
2. Human Dimensions and Interior – Space – Julius Panero Martin Zelink, The Architectural Press London.
3. Graphics Thinking for Architects – Paul Lasslan. Van Nostrard.

I YEAR B. ARCH.**I SEMESTER****ARCH 1111****BASIC DESIGN AND WORKSHOP I**

L:
Tu: 2
Pr/Du/Stu: 4

Theory : --
TW incl. Viva : 100
Total : 100

A. WORKSHOP

For first 8 weeks only students will attend the workshop for practical and theoretical training as follows for 3 hours per week.

(1). CARPENTARY: Carpentry's tools and their use. Types of Carpentry points and their uses along with practical exercises, selection of timber for various uses their finishes, tuning etc. Observation of other carpentry work such as fabrication of doors, windows, furniture, roof trusses etc.

(2). MASONRY: Brick and stone masonry work and plastering.

(3). METAL FABRICATIONS: Observation of fabrication works in metal flats, angles, tubes, etc. including plumbing work.

B. BASIC DESIGN

For 2 hours per week for first 8 weeks and later for 5 hours per week.

(1) Exercises to be given to develop skills in free hand sketching (indoors and out door) using different media such as pencils, crayon water colours etc, training in architectural rendering in pencil, ink colours for first 8 weeks.

(2) Introductory lectures on principles of Aesthetics, Understanding of its elements such as lines, forms, patterns, symmetry, contrast, balance negative and positive spaces, proportions, scale, massing and composition. Difference between, and development of two-dimensional and three dimensional composition with the help of sketches, drawings and models. Relationship of aesthetics to architecture. Visits to museums and Art Galleries to explain the above mentioned elements of aesthetics.

TEXTS/REFERENCES:

Meaning of Art : Herbert Read – Faber & Faber

Art in Everyday life : Hetta Gol'stir

Art and Visual perception Rudocyc Arhhim – Faber & Faber series.

I YEAR B.ARCH.

I SEMESTER

ARCH 1112

SOLID GEOMETRY

L: 2
Tu: 1
Pr/Dr/Stu: 3

Theory : 100
TW. Incl.Viva : 50
Total: 150

- A. Introductory lectures to explain the need of Solid Geometry in architectural drawings, namely as a technique of presenting three-dimensional objects and two-dimensional objects and two-dimensional drawings.
- B. Exercises involving geometrical forms presented in different positions as individual objects and then groups: Sections and interpenetration of form.
- C. Use of axonometric, isometric and oblique projections.
- D. Development of surfaces of various geometric forms.

TEXTS/REFERENCES:

Elementary Eng. Drawing –N.D.Bhatt –Charotar Pub. Anand (Plane & Drawing Solid Geometry)

I YEAR B.ARCH.

I SEMESTER

ARCH 1120

BUILDING CONSTRUCTION I

L: 2
Tu: 1
Pr/Drg/Stu: 2

Theory: 100
TW incl. Viva: 50
Total: 150

- A. Introductory lectures on structures. Construction, Elements of Building (such as roofs, supports, enclosures, walls openings, floors, foundations etc) and terminology used in construction (the objective should be to first understand the whole and then its parts).
- B. Description of elementary types of structures such as tribal shelters, cottage and huts in villages mud houses, tents and shamiyanas brick and stone structure etc. Classification of structure into framed, load bearing, skin suspended and composites constructions, their advantages and disadvantages. Different elementary forms of structures which are based on the above mentioned structural systems. Forces and behavior of materials. Having covered a wide range of structural possibilities, construction studies in one common material brick should start.
- C. Brick as a construction material. Principles of brick masonry introduction to bonds used in construction of walls, pillars and foundations, preparation of drawings and sketches.
- D. Foundations and their necessity. Different types of Soils and their physical characteristics and behaviors in relation to different types of elementary footings and foundations. Foundation in brick simple calculations for determining depth and spread of foundations.
- E. Elementary roofs: Lean to pitches, hipped and flat in different materials particularly use of timber for construction simple roofs site visits to explain all the above.

TERMWORK: Drawings and sketches based on the above topics.

TEXT/REFERENCES:

Building Construction Vol. W. B. McKay

Building Construction by Mitchell

Text Books of Building Construction-Murthy

Building Construction-S.C. Rangwala.

I YEAR B. ARCH.

I SEMESTER

CE 1124

BUILDING MATERIAL

L : 3

Tu : -

Pr/Drg/Stu :-

Theory : 100

Tw incl. Viva : --

Total : 100

- A. BRICK : Manufacturing process, strength, varieties, characteristics and different methods of testing bricks.
- B. STONE: Characteristics of stones used in building construction, different methods of quarrying, blasting and dressing etc.
- C. TIMBER: Felling of timber, methods of seasoning different varieties and characteristics, their strength and defects. Deterioration and decay, dry and wet rot and treatment.
- D. LIME, CEMENT AND SAND: Characteristics and manufacturing of lime and cement. Their composition and mixing for mortars and bonding and for plaster. Different method and uses of pointing and plastering.
- E. CONCRETE: Lime and Cement concrete and their constituents. Preparations and mixing. Use of brickbats and metal course aggregate, grading of aggregate and sand. Placing of concrete, vibrating, curing etc. Mass concrete and reinforced concrete, water lime and water cement ratio.
- F. Laboratory tests for concrete, timber, bricks, stones and R.C.C. to judge their strengths.
- G. WATER: Qualitative and quantitative aspects of water used in building construction.

Site visits to show actual preparation and use of building materials.

TEXTS/REFERENCES:

- 1. Building Materials, by Rangwala
- 2. Building Materials by Janardan jha
- 3. Building Materials by Khardikar.

I YEAR B-ARCH.

I SEMESTER

ENG 1136

TECHNICAL ENGLISH

L : 2

Tu : ---

Pr/Drg/Stu : ---

Theory : 50

Pr/Stu : ---

Total : 50

The course shall consist of the detailed study of a Text Book Prescribed by the Board of Studies in English from time to time. The objective will be to improve the student's ability of thinking and expressing himself, through speaking, reading and writing English on the matters related to Architecture.

Units of study with weightage shall be as follows :

- A. Reading Comprehension – based on Text Book.
- B. Writing skills – based on Text book.
- C. Grammar Exercises
- D. Essay Writing on topics related to Architecture.
- E. Letter Writing on topics related to Architecture.

TERM WORK: NIL

TEXT BOOK:

Study strategies in English (Student's Book)

Sara Freeman

Orient Longmans

I YEAR B.ARCH.**II SEMESTER****ARCH 1210****DESIGN II**

L : -
Tu : 2

Pr/Drg/Stu: 8

Theory : ---
Tw incl Viva : 150

Total : 150

Setting of elementary design problems aimed at giving the students an understanding of the relationship between forms, functions and structures. Exercises should be framed to use plans, elevations, sections, models and perspective sketches in solving the problems. Students should be encouraged to experiment and try alternatives before reaching final solutions and be also encouraged to express their ideas with the help of different media and materials.

Along with this there must be site visits and analysis of selected building as an extension of class room exercises. Students must also be encouraged to read books on/or related to architecture.

TERMWORK : Design problems/Projects based on the above.

TEXTS/REFERENCES :

Human Dimension and Interior space-Julius Panero. Thames & Hudson.

Pattern Language – Christopher Alexander, Oxford University Press.

Design Fundamentals in Architecture- V.S.Pramar, Samiva Publications.

I YEAR B. ARCH.

II SEMESTER

ARCH 1211

BASIC DESIGN & WORKSHOP II

L : -
Tu : 2
Pr/Drg/Stu : 4

Theory : ---
Tw incl Viva : 100

A. WORKSHOP :
Model making with different materials.

B. BASIC DESIGN :

1. Psychology of forms, such as cubes, cones, pyramids, Spheres and their various derivatives (rectangular, Diagonal, circular etc.) Problems of combining forms.
2. Two dimensional and Three dimensional exercises using different Media and materials- the basic aim being organization of space, order, unity, harmony, balance, etc.
3. Studies of surface textures of materials their psychological and Visual effects-their uses.
4. Lecture to show the relevance of the above studies in Architecture.

Visits to Museums and Art Galleries to explain the above mentioned topics.

TERMWORK : Sketches, paper models, clay models, plaster models for
Spatial studies photograph.

TEXIS/REFERENCES :

Meaning of Art-herbert Read – Faber & Faber.

Art in Everyday Life – Metta Goldstir.

Art and Visual perception – Rudocy Arhhim – Faber & Faber Series.

I YEAR B. ARCH.

II SEMESTER

ARCH 1212

SCIOGRAPHY & PERSPECTIVE

L: 1

Tu : 1

Pr/ Drg/ Stu: 3

Theory: 100

TW incl. Viva: 50

Total : 150

- A. Principles of Sciography and its use in architectural drawings. Exercises involving shadows cast by simple geometrical forms on plain surfaces. Shadows of more complicated forms falling on plain, oblique and irregular surfaces. Study of shadows of building.
- B. Introductory lectures on the principles of perspective drawing and its use in architectural drawing : terms used in exercises involving angular and parallel perspective of simple solids. Perspective of simple parts of buildings and of interiors and exteriors, drawn from different points of views.
- C. Combined exercises of Sciography and perspective.

TEXT/REFERENCES :

Elementary Engg . Drawing –N.D.BHATT –Charotar Publication, Anand.(Solid Geometry)

Architectural Rendering Fundamental – Levinston-6.

Perspective for the Architecture –George-Thames and Hudson. London-6.

I YEAR B.ARCH .

II SEMESTER

ARCH 1220

BUILDING CONSTRUCTION II

L : 2

Tu : 2

Pr/Drg/Stu : 2

Theory : 100

Tw incl viva : 50

Total : 150

- A. SUPER STRUCTURES IN BRICK MASONRY : Bonds in different thickness, piers, junctions, jambs, etc. Different wall finishes for brick work. Arches : Principles and construction details. Preparation of drawings on above topics. Composite masonry of timber and bricks.
- B. STONE : As a building material –principles of stone masonry ancient and traditional uses – types of stone, Bonding Joining ,finishes and stone as a cladding material. Arches in stone masonry composite masonry of stones and bricks etc.
- C. ROOFS : Detailed study and preparation of drawings of couple close roofs and basic joints in their constructions. Introduction to Trusses roofs such as Queen post truss, King post truss etc. and their placement and uses. Elementary roofing materials such as Thatching country tiles. Mangalore tiles, G.I. and A.C. sheets etc.
- D. ELEMENTARY R.C.C CONSTRUCTION : Column, beams-slab relationship and its construction. Site visits to show and explain all above topics. The objective of construction teaching in this semester should be to enable the student to grasp the constructional aspects of small design problems may be solving as design exercises.

TEAMWORK : Drawings and sketches based on the above topics.

TEXTS/REFERENCES :

Building Construction Vol. I & II – W.B. Mackay

Building Construction – Murthy

Text Book of Building Construction – Murthy

Building Construction – S.C. Rangwala.

I YEAR B.ARCH.

II SEMESTER

CE 1225

SURVEYING AND LEVELLING

L : 1

Theory : 100

Tu : 2

Tw incl Viva : 50

Pr/Drg/Stu : 2

Total : 150

- A. Use of Surveys and Site information for Architectural projects size, shape, dimensions and topography of land.
- B. Chain survey of buildings, roads and large pieces of land. Obstacles of in surveying . Principles and uses of optical squares. Principles and use of prismatic compass, plane and table survey and various methods. Use of clinometers.
- C. Types and uses of level, T levels. Dumpy level etc. Uses of Theodolite.

TEXTS/REFERENCES :

1. Surveying and Levelling - T.P. Kanetkar Vol.1
2. Surveying and Levelling - B.C. Punamia
3. Surveying and Levelling - Husains

II YEAR B.ARCH.**I SEMESTER****ARCH 2110****DESIGN III**

L : -

Theory : ---

Tu : 2

Pr/ Drg/ Stu : 150

Pr/ Drg/ Stu : 8

Total : 150

Students should during this year learn to work with designs and gradually increasing complexity. This means firstly incorporating design elements such as site planning, climate, orientation, circulation, use of elementary building materials, construction and spatial organization. On each of these elements there should be some theoretical lectures. Secondly, the projects should begin with design having a few functions such as for example Kindergarten, a small dwelling or a neighbourhood, reading room. This should be accompanied by a theoretical analysis of the aesthetics components of architectural design.

Later, more complex problems such as an art gallery or a bank could be taken.

TEXTS/REFERNCES

1. Graphical: Thinking for Architecture: Paul Lassen.
2. Form, Order and space: Francis Ching
3. Pattern Language: Christopher Alexander

II YEAR B.ARCH.

I SEMESTER

ARCH 2111

BASIC DESIGN III

L: -
Tu : 2

Theory : --
Pr/ Drg / Stu : 100

Pr/ Drg / Stu : 4

1. Experience and appreciation of space and volume. The objective is to make students experience space and volume as sensory qualities. For this, after some introductory lectures have been given he is required to do exercise based upon personal observation and experience of specific spaces, volume selected from this immediate environment. In these exercises, he must sketch features observed, analyze them and re-arrange them in order to create varying spatial effects. Exercises may also incorporate models. The elements of sequences and time involved in the experience of spaces should be emphasized.
2. Effects of Color, Light and Textures.
Introductory lectures on the above in which it is shown how those elements affects and modify the sensory character of spaces/volumes and how these modifications are made use of in architectural design. Color theory exercises based on these lectures.

METHODS OF TAKING STUDIO WORK :

1. As a general rule, all exercises, should reflect the experience contained in design studio.
2. All exercises must incorporate a search for alternatives which precede the final solution. A brief theoretical analysis must accompany each exercise-submission in order to stimulate critical thinking in the student.

TEXTS/REFERENCES:

1. Architecture as space-Brune Zevi
2. Language of Vision-Gyorgy Kepes
3. A search for form-a fundamental approach to Design slliei Gaarines.
4. Form, space and vision –discovering design through drawing Collier Granam.
5. Design and Form – Basic Course at Bannams.

II YEAR B.ARCH.

I SEMESTER

ARCH 2120

BUILDING CONSTRUCTION III

L : 2

Tu : 1

Pr/ Drg/ Stu: 3

Theory : 100

Tw incl Viva : 50

Total : 150

1. Explanatory lectures on system of load bearing and framed construction in various materials such as bricks, stone, concrete, wood, steel, R.C.C. etc.
2. FOUNDATIONS: Isolated columns, footings in various materials such as bricks, stone, steel, etc.
3. Foundations for special types of soils such as black cotton, sand gravel, murum etc. for simple load-bearing and frame structures.
4. Plinth and Floor construction
5. SUPER STRUCTURES : External steps in bricks, stone, etc.
6. Construction of floors in different techniques and materials such as Jack arches, brick and stone vaulting, wooden floors and composite floors.
7. Temporary timbering, scaffolding, centering for arches, vaults, RCC columns, beams and slabs. Shoring, underpinning and bracing etc. for foundation.

TEXTS/REFERENCES:

1. Building Construction : W. B. McKay Vol. I, II, III, IV.
2. The Construction of Building : R. Barry Vol, I, II, III
3. Building Construction : Sushilkumar
4. Building Construction : Murthy
5. Building Construction : Rangwala
6. building Construction : Punmia.

II YEAR B. ARCH. I SEMESTER

ARCH 2130

HISTORY OF ARCHITECTURE I

L: 2
Tu: 1

Theory: 100
TW incl Viva: 50

Pr/ Drg/ Stu: 3

Total : 150

OBJECTIVES:

- A. A study of historical architecture enable us to understand how and why a particular architectural environment arose as a response to certain social, cultural situations. (e.g. political, religions, economic, technical). Insights gained thereby are valuable in understanding the architectural environment of today.
- B. To be a contemporary designer, one must understand our social conditions and this requires a knowledge of the past as well as of the present. In addition since architecture symbolizes a culture, we must know the whole of that-culture in order to be a designer.

The above implies that the teaching of the History of Architecture must not be concentrated merely in history of building but also on accompanying social history and emphasis should not be merely on monuments, but also another buildings such as residential markets fortifications etc.

SYLLABUS :

1. From the earliest beginning upto and including the Indus Valley Civilization.
2. From about 500 B.C. to about 700 A.D. This covers mainly the architecture influences by Buddhists and Jains, and also the beginnings of Hindu structures (Gupta and Chalukyan)
3. From about 600 A.D. to about 1200 A.D. this covers the architectural influences by the Hindus.
4. From about 1200 A.D. to about 1700 A.D. this covers mainly the architectural influenced by the Muslims.

METHODS OF STUDY :

1. As far as possible site visits must accompany the lectures.
2. For Termwork, students should take case studies of significant buildings.

TEXTS/REFERENCES:

1. Indian Architecture by PERCI BROWN VOL. 1 & 2.
2. Indian Architecture by SATICH GROVER VOL. 1 & 2.
3. Eastern Architecture by FERGUSTON VOL. 1 & 2.

II YEAR B. ARCH.

I SEMESTER

AM 2123

APPLIED MECHANICS

L: 3

Theory: 100 (3 Hrs)

Tu: - -

Pr/ TW/Viva/ Proj: 50

Pr/ Drg/ Stu: 2

Total: 150

SYLLABUS:

1. Statics – Basic principles of Statics, Forces, Units. Types of systems. Conditions of equilibrium of force system.
2. Resultant of concurrent forces and parallel forces. Analytical and graphical methods moment of force and principles of moment. Parallel forces and couples.
3. Beams- Reaction in the beams.
4. Centroid of simple and complex geometrical areas, Moment of Inertia for simple cases.
5. Trusses- Introduction, Solution of trusses by method of joints and methods of selection.
6. Elasticity of materials – Stresses and strain, Hook's law stress strain diagrams.
7. Elastic constants, working stress and a factor of safety lateral strain and poisson's ratio Relation between elastic constants.
8. Temperature stresses (simple case) Composite section (Stresses).
9. Basic idea about structure in design of Architecture, various structural system concepts for buildings.

TERMWORK GRAPHICS STATICS

This will consist of drawing work containing graphical solution of problems, based on the above topics.

LABORATORY WORK :

This will consist of a laboratory journal containing a report of the experiments performed for (a) complete tensile test (b) Young's modulus for mild steel (c) Shear test on mild steel (d) Compression test on mild steel and cast iron.

TEXTS/REFERENCES :

1. Mechanics of Structures by PROF. JURNAKAR
2. Introduction of Mechanics of Solids by P. KAPILA & AGNTHOTRI
3. Elementary strength of Materials by S. TIMOSHENKO
4. Strength of material by KHURMI
5. Strength of material by RAMAMURTHAN
6. Strength of material by R.C. PATEL, T.D.BHAGZA & B.M.PATEL

II YEAR B.ARCH.**II SEMESTER****ARCH 2210****DESIGN IV**

L : --
Tu : 2

Theory : --
Pr/Drg/Stu : 150

Pr/Drg/Stu : 8

Total : 150

Students should during this year learn to work with designs of gradually increasing complexity. This means firstly incorporating design elements such as site planning, climate, orientations, circulation use of elementary building materials, construction and spatial organization. On each of these elements there should be some theoretical lectures. Secondly, the projects should begin with designs having a few functions such as for example a kindergarten, a small dwelling or a neighborhood reading room. This should be accompanied by a theoretical analysis of the aesthetics components of architectural design.

Later, more complex problems such as an art gallery or a bank could be taken.

TEXTS/REFERENCES :

1. Graphic : Thinking for Architects by PAUL LASSEN
2. From, Order and Space by FRANCIS CHING
3. Pattern Language by CHRISTOPHER ALEXANDER.

II YEAR B.ARCH.

II SEMESTER

ARCH 2211

BASIC DESIGN IV

L : --
Tu : 2

Theory : ---
Pr/Drg/Stu : 100

Pr/Drg/Stu : 4

Total : 100

1. COMPOSITION : The emphasis should now be on 3 dimensional composition based upon working with models. Introductory lectures must be given on the emotional responses to form, arise when varieties of forms are brought together into a composition. Concept of harmony in design.
2. DESIGN : The knowledge gained in the course of first semester, should now be brought together in design exercises in which student designs at two levels:
 - (i) At the level of abstraction in which abstract compositions are made utilizing a variety of forms, (e.g. Pyramids, cubes, cylinder and other variants), The objective is to create a harmonious whole.
 - (ii) At the level of everyday use in which he designs simple objects such as for example furniture (chair, table, etc. in different materials and for different purposes) containers (tea set, jugs etc) in different materials lamp-shades etc. Visits to museum, art galleries and exhibition must form part of studies.

STUDIO WORK:

1. As a general rule all exercises should reflect the experiences gained in design studio.
2. All exercises must incorporate a search for alternative, which precede the final solution. A brief theoretical analysis must accompany each exercise submission in order to stimulate critical thinking in the student.

TEXTS/REFERENCES :

1. Architecture as space by BRUNO ZEVI
2. Language of Vision by GYORGY K. EPES.
3. A search for form a Fundamental approach to design by Elaiel Sarinen.
4. Form, space and vision discovering design through drawing by Collier Graham
5. Design and Form by Basic course at BAUHAS.

II YEAR B.ARCH.

II SEMESTER

ARCH 2230

HISTORY OF ARCHITECTURE II

L : 2

Tu : 1

Pr/Drg/Stu : 3

Theory : 100

TW incl Viva : 50

Total 150

HISTORY OF ARCHITECTURE (EUROPEAN)

1. Architecture of the Greeks Romans.
2. Architectures under Christian influence from its beginning upto 1500 A.D.
3. Architecture of the Renaissance and Baroque.
4. Influence of EUROPEAN architecture on India (e.g. Colonial architecture).

TEXTS/REFERENCES :

1. European Architecture by SIR BANISTER FLETCHER.

II YEAR B.ARCH.

II SEMESTER

ARCH 2220

BUILDING CONSTRUCTION IV

L: 2

Theory : 100

Tu : 1

TW incl Viva : 50

Pr/Drg/Stu : 3

Total : 150

SUPER STRUCTURE:

1. Internal staircases in brick stone and wood.
2. Doors, Windows and Ventilators in wood and steel, joinery details plastering and fixtures. Bye –laws regarding light and ventilation.
3. Introductory theoretical lectures on system of trusses. Trusses in steel along with details of junctions, skylight etc. Roof coverings and dewatering systems, corresponding method in wood to described briefly.

TEXT/REFERENCES :

1. Building Construction by W.B.MCKAY VOL. I, II,III, & IV
2. The Construction of Buildings by R.BARRY VOL. I,II,III
3. Building Construction by MURTHY
4. Building Construction by RANGWALA
5. Building Construction by SUSHILKUMAR
6. Building Construction by PUNMIA.

II YEAR B.ARCH.

II SEMESTER

AM 2223

THEORY OF STRUCTURES

L : 3

Theory : 100 (3Hrs)

Tu : ---

Pr/Tw/Viva/Proj : 50

Pr/Drg/Stu : 2

Total : `150

SYLLABUS :

1. Principal planes and principle stresses.
2. Bending moment and shear force diagrams for simply supported Cantilever and overhang beams, Relation between bending moment and shear force.
3. Theory of simple bending, Neutral axis, section modulus and moment of resistance.
4. Distribution of Shear stress in various cross sections.
5. Deflection of cantilever and simply supported beams.
6. Buckling of columns and slenderness ration struts and columns by Euler, Rankine and other formula (without derivations).
7. Direct and bending stresses.
8. Fixed and continuous beams, Moment distribution method, simple cases.

TERMWORK:

(I) GRAPHIC STATICS :

This will consist of drawing work containing graphical solution of the problems based on the above syllabus.

(II) LABORATORY WORK :

This will consist of a laboratory journal containing a report of the experiments performed for (a) Compression test on wood (b) Young's modulus for timber (c)Torsion Test. (d) Modulus of rupture test.(e) Impact and hardness tests.

TEXTS/REFERENCES :

1. Basic Structural Analysis by REDDI, Mc. Graw Hill Pub.
2. Elementary structural Analysis by NCRRES & WILBUR, Mc. Graw Hill, Pub.
3. Mechanics of structures by PROF,JURNARKAR VOL.I.
4. Strength of Materials by RYDER, English Language Society Publication.

III YEAR B.ARCH.

I SEMESTER

ARCH 3110

DESIGN V

L : --
Tu : 2

Pr/Drg/Stu : 8

Theory : --
Pr/Drg/Stu : 150

Total : 150

HOUSING

During this year students should design some kind of Housing i.e. row-houses, cluster-houses, multistoried flats, mass housing or even a complex residential unit for a single family. The objective is to give them experience in a major sphere of architectural design, and in this to emphasis the Socio-economic aspects of the problem. For this purpose some introductory lectures on Sociology of Housing should be given.

TEXTS/REFERENCE

1. Metropolitan Housing Market-case study of Ahmedabad CEPT Ahmedabad 1985 by Mehta Dinesh and Meera.
2. Housing for Low income Urban Families-Economics and Policy in Developing world by Grimes O.F. John Hopking.'76'.
3. "Urban Housing Strategies" by Wakely P.I. London Pitmen 1976.
4. "Laurie Baker" by Gautam Bhatia.
5. "Supports" by Habraken.

III YEAR B.ARCH.

I SEMESTER

ARCH 3120

BUILDING CONSTRUCTION V

L : 2

Tu : 1

Pr/Drg/Stu : 3

Theory : 100

TW incl Viva : 50

Total : 150

FOUNDATION :

1. R.C.C. Foundation of different types like spread, combined , eccentric and cantilevered footing, simple rafts and piles.

SUPERSTRUCTURES :

2. Details of R.C.C. frame construction of columns, beams, slabs and cantilevers etc.
3. Staircase in R.C.C. steel and composite materials of different types including spiral staircase.

DETAILINGS :

4. Partitions, paneling, flooring, built in furniture, wardrobes etc.

TEXTS/REFERENCES :

1. Structure by Dunham.
2. The construction of Building by R. Barry Vol. III & IV.
3. Building Construction by Sushilkumar.
4. Building construction by Rangwala.
5. Building construction by Murthy.
6. Building construction by Mitchell Vol. I & II.

III YEAR B.ARCH. I SEMESTER

AM 3123

STRUCTURAL DESIGN I

L : 3

Tu : ---

Paper (3 Hrs) : 100

Pr/Drg/Viva/Proj : 50

Pr/Drg/Stu : 2

Total : 150

LOADS : 1. Different types of loads acting on structures, dead loads, live loads, wind pressures ; earthquake forces etc. combination of loads. Reduction in live loads. Increase in permissible stresses.

WOOD : 2. Timber as structural material, permissible stress in compression, tension and bending. Modification factor for permissible stresses.

3. Design of compression and tension member of truss.

4. Design of column and flexural members.

R.C.C. 5. Plain cement concrete, properties of cement and aggregates, manufacturing of concrete, mixing, transportation. Placing compaction and curing of concrete.

6. Types of concrete mix, proportioning of concrete mix. Properties of concrete mix, Reinforcing steel-Types and properties of steel.

7. Form work, Removal of formwork.

8. Basic Assumptions for theory of R.C.C. , Derivations of expression for Neutral axis. Lever arm and movement of resonance for singly Reinforced section.

9. Under reinforced. Over reinforced and balanced section. Design of singly reinforced section for flexure.

STEEL STRUCTURES :

10. Standard and classified rolled sections. Design of tension members and compression members, Moment of inertia of compound (built up) section.

TERMWORK : Design of drawing based upon above.

TEXTS/REFERENCES:

1. Civil Engineering Handbook by Khanna.
2. I.S. 875 Loading Standard.
3. I.S. 456 Code of Practice of Plain and Reinforced Concrete.
4. Structural Design in Steel masonry and timber by A.S. Arya. Nemchand Publication
5. I.S 1905 Code of practice for structural safety of Building Masonry.
6. Reinforced concrete by H.J. Shah Charotar Publishers.

III YEAR B.ARCH.**I SEMESTER****CE 3126****WATER SUPPLY AND SANITATION**

L : 2

Paper (3Hrs) : 100

Tu : 1

TW incl Viva : 50

Drg/Proj : 4

Total : 150

OBJECTIVES :

Objective of teaching this subject is to inform the student about water supply and sanitation standards and systems which can be adopted in the design and constructions of buildings for various uses in the Indian situation. The emphasis should be on the locations and installation of these units and systems considering the comfort, convenience, light and ventilation aspects as well as the aesthetic aspects of the architectural design of buildings. Structural constructional, costs and maintenance problems should also be thoroughly dealt with for upto medium-sized domestic and public building such as houses, blocks of flats, schools clubs, museums etc.

SYLLABUS :

1. Sources of water, quality, quantity and treatment.
2. Transportation, distribution and pumping of water.
3. Estimation of quantity of water and sewage.
4. Water supply in low-rise and high-rise buildings. (Vertical and Horizontal layouts)
5. Collection of sewage and its treatment.
6. Building drainage (Vertical and horizontal layouts, for residential and commercial buildings.
7. Sewer less Sanitation, Septic tanks.
8. Refuse disposal.,

The topics mentioned above shall be explained with the help of architectural all working drawings with units and layouts drawings in it and also with the help of the site visits where these services are under installation. Teachers are also requested to give to the students a ll of books related to the above topics and simple understanding of the layouts, design and installation of these units and systems.

TERMWORK :

Termwork shall be prepared on the basis of the theory course prescribed above and in consultation with respective Architectures Design teachers and it should be as far as possible in the context of current Design problem. This termwork should be marked periodically and stage-wise in the class itself when the students do the drawings etc. the weightage for this continuous marking be 60% and only 40% marks be left for final portfolio marking at the time of viva.

III YEAR B.ARCH .**I SEMESTER****ARCH 3121****CLIMATOLOGY**

L: 1

Theory: --

Tu: 1

Pr/ Drg/ Stu: 100

Pr/ Drg/ Stu: 3

Total : 100

Climatology is the study/design of buildings/structure and their response to the immediate environment (Micro and environment as a whole) change and variation is necessary for human comfort and this had to be achieved by the interaction of building and climate through design to utilize the diurnal and seasonal variations of the climate factors.

TOPICS :

1. Study of various climates (emphasizing Tropical climate and variation with in Tropical climate and variation with in Tropical climate). Climate analysis and understanding the basic definitions and data.
2. Study of basic principles/components elements, their functions, properties viz, orientation, airflow, building material, structural elements control of openings installation etc.
3. Study of traditional/vernacular architecture and their efficiency. Study of current designs which have given prominence to climatic factors or are based on passive systems. (i.e. energy conscious designs).
4. project this may be on an individual unit to more complex formation at a larger level. Climatic analysis, design and detailing.

TEXTS/REFERENCES:

1. Manual of Tropical Housing by O.H.Koenings Berger & others.

III YEAR B.ARCH.

II SEMESTER.

ARCH 3210

DESIGN VI

L : ---
Tu : 2

Theory : --
Pr/Drg/Stu : 150

Pr/Drg/Stu: 8

Total : 150

The semester design project work should be accompanied by a complete set of working drawing which must include details of sanitation, water supply, electricity layout and lighting fixtures etc. Since this is the last year of the Basic course, the inputs required for office practice must here by emphasize.

In addition to the above, the design of a public institutional building may also be taken.

III YEAR B.ARCH.

II SEMESTER.

ARCH 3220

BUILDING CONSTRUCTION VI

L : 2
Tu : 1
Pr/Drg/Stu : 3

Theory : 100
TW incl Viva : 50
Total : 150

SUPERSTRUCTURE :

1. Long-span trusses in various materials like steel, concrete, wood laminated etc.

DETAILINGS :

2. Special types of doors and windows like sliding, sliding and folding, pivoted rolling shutters, collapsible gates, louvers etc.
3. False ceilings, artificial and concealed lighting.
4. Shop fronts, show cases, counters.
5. Various finishes for interior and exterior surfaces, cladding, use of modern materials.

TEXTS/REFERENCE :

1. Building Construction by Mitchell Vol. I & II.

III YEAR B.ARCH.

II SEMESTER

AM 3223

STRUCTURAL DESIGN II

L : 3
Tu : --
Pr/Drg : 2

Paper (3 Hrs) : 100
Pr/Drg/Proj : 50
Total : 150

SYLLABUS :

R.C.C. :

1. Theories for design of R.C.C. members working stress method, limit state method.
2. Singly and Doubly Reinforced beam.
3. Tee beam and Ell Beam.
4. One way and two way reinforced slab.
5. R.C.C. Column—short column and long column.

STEEL STRUCTURE :

6. Permissible stress.
7. Design of axially loaded riveted and welded connections.
8. Design of simple roof truss.
9. Design of Purlin.
10. Design of simple beams and built-up beams.

TERMWORK :

1. Design and drawing of simple building.
2. Laboratory work.

TEXTS/REFERENCES:

1. I.S. 456 Code of practice for plain and reinforced concrete.
2. Reinforced concrete by H.J. Shah Charotar Publisher Anand.
3. Reinforced concrete by Shinha and Roy.
4. I.S. 800 Latest code of practice for use of structural steel and general building construction.
5. Design of steel structures by Krishnaacher &Sinha, Tata McGraw Hill Pub.
6. Design of steel structures by Arya & Ajmani, Nemchand Pub.

III YEAR B.ARCH.

II SEMESTER

EE 3227

LIGHTING AND ELECTRICITY

L : 2
Tu : 1
Pr/Drg : 2

Theory :50
Pr/Tw incl Viva : 50
Total : 100

1. Illumination : Laws of Illumination. Direct, indirect and semi direct lighting. Architectural lighting preparation of layout plans and sectional elevations for illumination in buildings such as house, school, small hotel, small exhibition hall, shops, offices etc. Materials, Fixtures and methods.
2. Electrical installation and maintenance costs. All these topics to be taught by Architecture Department teacher.
3. General principles of electricity and its generation. Supply and consumption, A.C. and D.C. currents and their fundamental difference. Principles of electricity supply layout and actual installation. Preliminary idea of using wiring system. Their comparative merits and uses. Layout of points, Main supply, Sub supply etc. Electrical installation for different classes of buildings and for different uses such as lighting pumps and motors, cooling, heating and domestic equipments like kitchen aids and recreational (electronics) equipments.
4. Details of supply and distribution systems. Wiring switch boards and other accessories. Maintenance of electrical installation. Projective systems.. Safety measures. Overall economizing the electrical consumption. All these topics be taught by electrical Engg: Department teachers.
5. Electricity and power requirements of high buildings and hospitals, costing and economic layout plan, materials, accessories etc. as per market condition. Installation of small contactors in hotel, hospitals and cinema industries.

TERMWORK :

Visits to the sites where electrical installation layout drawing Plans, sectional elevations etc and details should be prepare on the basis of the courses discussed above and those should also be related to or be based on the Architectural Design problems dealt in II or III year Design Studio. This term work should be marked periodically and stage wise while the students do their work in the class. The weightage being 60% on this continuous marking and the final portfolio be marked out of 40% at the time of Viva.

TEXTS/REFERENCE :

1. Electrical Wiring Estimating & Costing Dr.S.L.Uppal/Architectural.
2. Electrical Tech. By B.L.Theraj & J.M.Larola
3. Indian Electricity Act 1910.
4. Indian Elect. Rules –56
5. Time sever standards for architecture. Design by John.

III YEAR B.ARCH.

II SEMESTER

CE 3224

ESTIMATION AND SPECIFICATION

L : 2
Tu: 2
Pr/Drg/Stu : --

Theory : 100
TW incl Viva : 50
Total : 150

OBJECTIVES : The objective of teaching this subject is to explain to the students of architecture the economic realities of executing their architectural design ideas in terms of qualities aspects of the work involved and of the building materials used. In the long run it will help the students understand the entire cost matrix to enable them to choose the construction materials and the methods and/or to choose the design to match the cost parameters.

TOPICS :

1. Different methods of taking out quantities of residential and public and other structures : Centre line method and out to out method.
2. Preparing estimates for residential and public buildings like schools, Hospitals, Hostels etc. and preparing estimates for some special like retaining walls, roof trusses, water tanks, septic tanks, etc.
3. General ideas about tender forms, modes of measurements schedule of rates.
4. Units of measurement and analysis of rates for common items of construction.
5. Various methods of preparing approximate estimates such as cubical content method unit area method.
6. Different methods of executing the work. Various types of contract their merits and demerits.

SPECIFICATIONS: Definitions and uses of writing specification writing Specifications for various items of construction clause By clause.

TERMWORK: The teamwork should be based on the above theory topics in Context with current architectural design problem.

TEXTS/REFERNCES:

1. Rangwals S.C. : Estimating & Costing Edition 1987 Charotar Book Stall Pub V.V.Nagar
2. Datta B.N. : Estimating & Costing (UE) Edition 1990 Deepak Pub.
3. Chakraborty M: Estimating & Costing & Valuation in Civil Engg Edition 1990 Deepak Pub Gwalior.
4. Patil S.M. : Estimating & Costing
5. Abbett Rober W: Engineering Contract & Specifications John Wiley. London
6. J. Marshall Rodger: Civil Engg Drawings, specifications and Quantities Ernest Benne Ltd. London

III YEAR B.ARCH.

II SEMESTER

ARCH 3231

PRINCIPLES OF HUMAN SETTLEMENTS

L : 1

Tu : 2

Pr/Drg/Stu : --

Theory : --

TW incl Viva : 100

Total : 100

In this first part, the origins of human settlements in their most primary forms are to be investigated. I.e. the behavioral responses to the environment and the gradual change from the unsettled excellence of hunters, nomads and pastoral people to that of settled agriculturist (agriculturalist). The development of the agricultural community in complexity, the emergence of institutional organization and its reflection in the physical layout these are then to be studied. In this context, the effect of climate is also to be taken into account.

With growth of a political organization there appears the urban settlement with its functional differentiations and needed for security. This stage of development, along with urban institutions is to be studied as also the varieties of urban settlement such as administrative towns, garrison towns, commercial or port towns, religious centers etc. It is important to emphasize the relationship between corporate institutions and civic growth.

In the final stage the impact of Industrial Revolution on social organization and settlement the development of differing ideologies and these influences and the situation upto about 1900 AD are to be examined.

TEXTS/REFERENCES:

1. Houghton Evans W: Planning cities by Lawrence & Winart Ltd. London.
2. Vance JE: The scene of Man the role and structure of the city in the Geography of Western civilization.
3. The Buildings of cities: Development and conflict by Kaiser H.H.
4. Emergence of Man: The first cities by Hamblin
5. The study of Urban City by Dyas H.J. (Editor)
6. DAS CAPITAL by KarMarx.
7. Mankind and mother earth by Arnold Toynbee
8. Town planning in ancient Indian by Binod Beharl Dutt.
9. Samarangan Sutradhar by Maharaja Bhoj.
10. A Parajit Pruchha by Bhurendar.
11. Visual Karma Purana
12. Maha Sara
13. Maya Mata
14. Artha Shastra by Kautilya.

IV YEAR B. ARCH.

I SEMESTER

ARCH 4110

PRACTICAL TRAINING

Practical Training in the offices of Practicing Architects or on an Building sites for about 12 weeks. Each students shall maintain Log Book done and bring a Certificate from offices for having a successfully completed the training.

IV YEAR B.ARCH.

II SEMESTER

ARCH 4210

DESIGN VII

L: ---

Tu: 2

Pr/ Drg/ Stu: 10

Theory: ---

Pr/ Drg/ Stu: 200

(incl 2 Tests of 15 marks each)

Total: 200.

The Design problem should be of such a nature that the students learn to relate a number of separate units into a total composition. The functions of the various units should be differentiated so that complex functions and spaces can thus be integrated. At the same time, it is desirable that the problem should be such that complex structural or technical aspects, also have to be considered. The problems could be, for example, a general hospital, a college or faculty (with auditorium), or a civic center. It is important here that the problem should be based on a live situation so that the need to work within given constraints is understood.

TEXTS/REFERENCES.

Books on specialized Topics such as a Theaters and Auditoriums, Offices, Libraries etc.

Books relating to Urban Design and Conversation topics.

ARCH 4220

**ADVANCED BUILDING CONSTRUCTION,
MATERIALS AND SPECIFICATIONS I**

L: 2
Tu: 2
Pr/ Drg/ Stu: 2

Theory: 100 (3 Hrs)
Pr/ Drg/ Stu: 100
Total: 200

Note: Advanced Materials & Specifications: 2 hrs/ w to be taught by Civil Engg. Dept.

Understanding of large scale projects and various complex problems is taken up during this semester. Method of teaching consists of lectures, studio work, site visits and group work experiments and investigations.

1. FOUNDATIONS: Various complexities arising out of
 - (a) Massive size of constructions, and
 - (b) Various soil conditions to clarify Understanding of Pile foundations, Rafts, Shells. Diaphragm Wall construction etc.
 - (c) Basements & their water proofing by internal & external tanking methods etc.

2. MULTI STORIED STRUCTURES:
 - Loads acting on high rise structures.
 - Various types of frames & Framing Systems
 - Appropriate Forms of Buildings
 - Vertical Circulation Systems such as Lifts. Lift wells, Escalators, etc
 - Detailing for External Cladding. Infilling Panels, Curtain walls, etc.

3. LONG SPANNING STRUCTURES:
 - Tensile structures, Cables, Catenaries, Cable Nets, Membranes.
 - Pneumatic structures. Open & Close Pneumatic membranes with +ve and -ve Pressure and Composite structures.
 - Long spanning Beams. Open Web Girders, Built-up Girders & Trusses, Portal Frames, Funicular Arches.
 - Two way transfer of Loads in Grids & Plates, Simple Grids, Woven Grids, Monolithic Grids, Plates, Ribbed Plates, Waffle Slabs.
 - Shells, Various Types & Forms & Curvatures of Shells such as Long & Short Barrel, Hyperbolic Paraboloids, Synelastic & Anticlastic, Developable & Non-Developable, Surfaces of Revolution, Ruled Surfaces etc. Funicular Shells, Difficulties & Problems of erection of shells,

- Space Frames & Geodesic Structures.

4. DETAILING — Structural & Detailing Problems involving complexities of Thermal Resistance Air conditioning. Structural Insulation and Insulation for such other situations with studies of Auditorium, Swimming Pool, Tanks, etc.

5. MATERIALS AND SPECIFICATIONS:

- (a) Specifications of advanced materials, methods of framed structures and Workmanship pertaining to framed structures and modern materials like chromium, plastics, aluminum etc. Acoustical and Insulation Materials.
- (b) Inspection of works in progress, points to be noted and methods of checking that the specifications are being followed. Termwork should be prepared on the above topics in consultation with the Design and Building construction teachers of Architecture Department.

TEXTS/REFERENCES:

- 1) Structure in Architecture by SALVADORI & HELLER
- 2) High-rise Building Structures by WOLF GONG SHCULLER
- 3) Foundations of Structures by CLARENCE DUMHAM
- 4) Cables & Nets by FREI OTTO
- 5) Pneumatic Structures by FREI OTTO
- 6) Shells by FELIX CANDELLA
- 7) Philosophy of Structures by TO R.ROSA
- 8) Examples of works by MERVI, FULLER, TANGE, MAHENDRA RAJ, SARINEN BARINCH etc, Prominent Architects & Engineers.
- 9) I.S.I. Specification Codes.

FOR MATERIALS AND SPECIFICATIONS:

- 10) Specifications by EDWARDS.
- 11) I.S.S. Code of practices for various materials, construction and Work manage
- 12) Various manufactures and manuals and catalogues.

IV YEAR B.ARCH. II SEMESTER

AM 4223

STRUCTURAL DESIGN III

L : 3

Theory : 100 (3Hrs)

Tu : --

Tw incl viva : 50

Pr/Drg/Stu : 2

Total : 150

A. REINFORCED CONCRETE :

1. Shear, Development length, Design of Shear reinforcement.
2. Continuous span one way & two way slab and beams.
3. R.C.C. Column subjected to Axial load and bending moment.
4. Foundations different types of foundation. Isolated, Individual footing design for column.
5. Staircases—various types and layout of stairs, Design of cantilever and Dog legged staircases.
6. Design of Residential building.

B. STEEL STRUCTURES:

7. Built-up beams, plate girder, Castellated girders.
8. Eccentrically loaded columns
9. Design of foundation for steel column.
10. Eccentrically loaded riveted and welded joints.

TERMWORK :

Structural design and drawings based on the above syllabus.

TEXTS/REFERENCES :

1. I.S.456 (Latest edition) Code of Practice for plain and reinforced concrete.
2. I.S. 800 (Latest edition) code of practice for use of structural steel in general building construction.
3. Reinforced concretes by H.J.SHAH. Charotar Pub.
4. Reinforced concrete by Sinha & Roy
5. Design of steel structures by Krishnacher & Simha, Tata Mc.Graw Hill
6. Design of steel structures by Kazimi & Jind; Prentice Hall pub.
7. Design of steel structures by Arya & Ajmani, Nemchand pub.

IV YEAR B.ARCH.

II SEMESTER

ARCH 4232

THEORY OF ARCHITECTURE

L : 4
Tu : ---
Pr/Drg/Stu :--

Theory : 100
Pr/Drg/Stu : -
Total : 100

This topic will be covered in two parts, A & B, Detailed below :

PART A:

This rise of what is called the modern movement in architecture and its further development under the influence of such early pioneers as Wright, Gropius, Mies and Corbusier. The subsequent changes in attitudes and premises which occurred are then to be covered. The stages of development to be taken are as follows :

1. Industrial Revolution, Emergency of a new technology which produced New processes and new forms, dominance of technologist or engineer in the designing process. To be illustrate with examples from early structures in cast iron, concrete, glass (Great exhibitions, work of August Perret, Toni Garnier, Chicago School)
2. Revival attempts, e.g. Crafts Movement of William Morris and Art Nouveau (Gaudi)
3. Emergence of an architecture based on the new technology : Guilds in Germany and Bauhaus. Early work of Gropius and Mies.
4. Work of Wright.
5. Brief reference to the Cubist movement in art and its influence on architecture. The work of Corbusier.
6. Work of other masters such as Alvar Aalto, Gunner Asplund, Eero Saarinen, Oscar Niemeyer, etc.
7. Re-Assessment of the modern movement; Post-modernism.

PART B:

A Series of seminars, discussions or lectures will be taken in which one or more years can participate simultaneously. These will be held in those periods at present left free in I,II,III,IV and V year (2 periods of I year, 4 of II,III,IV & V year). These free periods can be clubbed together as found convenient.

Topic mentioned are suggestive, and could be varied :--

1. Concept of space and of Place.
2. Traditional theories of architecture (Vitruvius, Indian classical texts).
3. Concept of "House" in various civilizations.
4. Design attitudes, e.g. Orthodox modern, un-orthodox modern, post-modern.etc.

IV YEAR B.ARCH.

II SEMESTER

ARCH 4215

LANDSCAPE DESIGN

L: --
Tu : --
Pr/Drg/Stu : 3

Theory : --
Pr/Drg/Stu : 100
Total :100

The framework of Landscape Architecture is here broadened from being merely concerned with horticultural beautification and ornamentation, into a study of the relationship and response of man to his environment. With this broadened objective the course is divided into two parts.

- (1) Landscape Planning ,
- (2) Landscape Design.

The first part shall deal with an introductory of recourse so that land can be put to appropriate and efficient use. The second part shall deal at a micro level with emphasis on organization of space, site planning, visual elements etc. The exercises shall include physical design of parks, gardens, urban landscape projects, etc.

Biosphere - Its origin, function, present state and need to preserve it.

Ecology - The inters relationship of biotic and abiotic elements in the biosphere with example of various ecosystems, and environmental study.

Methodology - Methodology of investigation and land use patterns.

Material - Study of types of forests, Types of Trees, plants, methods of plantation.

Site Planning — Site planning at micro-level.

Landscape in Historical perspective — Study of English Mogul, Japanese gardens, Their basic principles and historical, climatologically and social background.

Landscape Design Project— The objective of this shall be to understand a site in terms of opportunities and constraints resulting from analysis of natural and man made Components and evolving a design strategy so as to achieve a healthy compromise between man and nature. Each student shall do an individual design project based on this analysis.

IV YEAR B.ARCH.

II SEMESTER

ME 4228

AIR CONDITIONING AND AIR COOLING

L : 2

Tu : --

Pr/Drg/Stu : 1

Theory : 50 (2 Hrs)

Pr/Drg/Stu : 50

Total : 100

1. PSYCHROMETRY: Introduction, Meaning of air conditioning
Psychometric relations, Psychometric chart, Basic Psychometric process.
2. COMFORT AIR CONDITIONING: Requirements of comfort air conditioning, comfort chart, Design considerations, Requirement of Temperatures and humidity in high heat load industries. Recommended design conditions, ventilation and ventilation standard. Provision of ventilation by architect point of view.
3. AIR COOLING : Basic cooling load, basic requirement to reduce the cooling load from architect point of view. Various types of Insulation material used.
4. AIR DISTRIBUTION : Basic duct design and layout of duct from architect point of view. Air distribution system, ventilation systems. Air cleaning system and their installation in the building, Noise control, Basic Acoustic, sources of noise control, selection of grills and their places of installation.
5. AIR CONDITIONING SYSTEMS : Central station. Unitary air conditioning, Self contained air conditioning units etc. Installation of systems in the building .
6. COOLING TOWER : Basic knowledge of various cooling towers and their proper place of installation.

TEXTT/REFERENCE :

1. Air conditioning —by Stocker
2. Refrigeration Air conditioning —by Arora & Domkundwar
3. Refrigeration and Air conditioning —Jordan and Prister
4. Air-conditioning —by Jenning and Lewis
5. Air conditioning Engineering —by W.P.Jones
6. Thermal Engineering Vol.III— R.C.Patel

V YEAR B.ARCH.**I SEMESTER****ARCH 5110****DESIGN VIII**

L: 2

Theory: ---

Tu: –

PR/ Drg/ Stu: 300

Pr/ Drg/ Stu: 8

Total: 300

The Design problem should be of such a nature that it should derive from, or be related to an overall urban situation, such as area redevelopment and conservation of deteriorating commercial or cultural area, or the need to have an Integrated housing complex with shopping and school, Problem of this nature would thus imply studying the overall situation before coming to a specific solution (for example the character of urban development, architectural characteristic, traffic problems, land uses etc). The problem set should be based on live situation as far as possible. Marking of this Design VIII Termwork (Drawings and Models etc) shall be conducted at the end of First semester by a panel 2 Internal and 1 external examiners (Including the Chairperson) appointed by University, Marks obtained by the students shall be included and declared in the F.S.B. ARCH V Results.

V YEAR B.ARCH.

I SEMESTER

ARCH

ADVANCED ARCHITECTURAL COMPUTER GRAPHICS

L : 2
Tu: --
Pra:2

Theory – 50 marks (2 hrs)
T.W./Viva – 50 marks
Total: 100 marks

1. Latest operating system (e.g. DOS Windows, etc.) Various elements of Desktop. A typical My computer window.
2. Introduction to Information Technology.
 - a. How Information Transfers
 - b. Introduction to World wide web – along with interesting websites (e.g. Yahoo)
 - c. Different use of Internet e.g. www, E mail, News and Information.
3. Computer Aided Design
 - a. Application of computers in Architecture.
 - b. Other related software used in Architecture.
 - c. Other latest software like Word Processor, Excel, Lotus, Basics etc..

V YEAR B.ARCH.

I SEMESTER

ARCH 5120

**ADVANCED BUILDING CONSTRUCTION,
MATERIAL AND SPECIFICATION II**

L: 3

Tu: --

Pr/ Drg/ Stu: 3

Theory: 100

Pr/ Drg/ Stu: 100

Total : 200

1. Design and construction keeping with upto date development in materials and techniques.
2. Study of various construction and structural systems on analytical basis and comparative basis.
3. Writing specifications for specialized works and materials
4. Clause by clause analysis of standard specifications issued by the Indian standards Institute for buildings such as large scale Industrial and commercial structures.

V YEAR B.ARCH.

I SEMESTER

AM 5122

STRUCTURAL ANALYSIS

L: 3

Tu: - -

Pr/ Drg/ Stu: 2

Theory: 100

Pr/ Drg/ Stu: 100

Total: 200

REINFORCED CONCRETE:

1. Structural layout of various type of buildings
2. Various types of foundation. Design of Combined footing
3. Water tanks. Types of water tank. Design to Cylindrical water tank
4. High rise buildings, Industrial Bents, flat slab and grid slab
5. Shells and folded plate construction
6. Precast, Prefabricated members
7. Retaining walls: Cantilever and counter fort type retaining walls.

PRESTRESSED CONCRETE:

8. Prestressing, Pretensioning, Post tension compression of concrete with respect to R.C.C.
9. Materials of Prestressed concrete
10. Examples of Prestressed concrete beams.

TERMWORK:

Structural Design and drawings based on the above topics.

TEXTS/ REFERNCES:

1. I.S 1242 Code of practice for prestressed concrete
2. Design of Prestressed concrete by T.Y. LIN
3. Fundamentals of Prestressed concrete by NAGRAJAN, B.I. PUB
4. Design and construction of concrete shell roofs by RAMASWAMY McGraw Hill Pub.

Other remaining same as mentioned in the syllabus of Structural Design II

V YEAR B. ARCH.

I SEMESTER

ARCH 5123

ACOUSTICS I & II

L: 2

Tu: --

Pr/ Drg/ Stu: 1

Theory: 100

Pr/ Drg/ Stu: 50

Total : 150

ACOUSTICS I

Properties of Sound: Propagation of sound, displacement amplitude and practical velocity, speed of sound, characteristics of sound waves, sound Intensity, decibel scale, and directionality of sound sources.

1. Sound: Subjective aspects, study of the ear and the hearing mechanism, sensibility of the ear, loudness and loudness level
2. Principles of Room Acoustics: Room resonance, normal modes, sound pressure distribution, diffusion of sound, growth of sound in a room, average decay rate, Reverberation time, Sabine's formula for time of reverberation, Limitations of the use of Sabine's formula etc.
3. Open Air theatre: propagation of sound in the open air, effect of wind, effect of temperature gradient, speech articulation tests in the open air, design of an open air theatre, uses of orchestra shell in the open theatre.
4. Sound, Amplification System: Single channel sound amplification systems, stereophonic sound systems. High quality speech reinforcement systems, Microphones, Loud speakers placing, Heat effect, use of a columns of loud speakers.

ACOUSTIC II

1. General principle of transmission and propagation of sound reflection and Absorption; coefficient of absorption; types of reflection and absorbents.
2. General principles underlying good acoustical design and their application to buildings.
3. Study of Acoustical design for various types of halls, for special for music and for both speech and music; Acoustical analysis of an auditorium.
4. Use of Electro Acoustical aids for various types of Halls designed for speech music debating etc.
5. Acoustical defects and their remedies; Reverberation; echo; sound fool, Interference, resonance, dead spots; distortion, masking effects of sound etc.
6. Noise: Definition and identification of various sources of noise, effects of Noise on human beings.
7. Methods of environmental Noise control in cities and urban areas such as Problems of Industrial and traffic noise, Air craft's noise, zoning regulations, selection and planning of sites etc.
8. Noise control in buildings, special problems concerning the insulation against structure borne noise and air borne noise, insulation of noise from air conditioning ducts and various types machines etc.
9. Acoustic materials and their uses.

TERMWORK : It consists of a journal and typical studies based on the above.

V YEAR B.ARCH.

I SEMESTER

ARCH 5130

HUMANITIES

L: 3

Tu: - -

Pr/ Drg/ Stu: –

Theory: 100

Pr/ Drg/ Stu: –

Total : 100

This is a study of general social, economic and cultural factors which influences architecture.

1. **CULTURAL FACTORS:** The concept of 'Settlement' as applicable to differing cultures.

Rural /Urban attitudes, attitudes to public and private spaces. Civic

Institutions and their reflection in architecture.

2. **SOCIAL INSTITUTIONS:** A study of social institutions and their reflection/influence on architecture:-

- The Family: Joint family and nuclear family.
- The Neighborhood –it's character and needs.
- The work-place.
- Education.
- Religion.
- Governance: Corporations, Panchayats, Civic centers.
- Security.
- Recreation: Parks, Stadium, etc.
- Culture: art galleries, museums etc.

3. **ECONOMIC FACTORS :** Rural/Urban dichotomy. Social, political industrial and economic factors effecting the location, construction, financing and marketing of buildings with emphasis on costing. Slums, LIG, MIG, high-rise building .

V YEAR B.ARCH.

I SEMESTER

ARCH 5131

TOWN PLANNING

L: 3
Tu :-
Pr/Drg/Stu :-

Theory : 50
Pr/Drg/Stu : 50
Total : 100

OBJECTIVES:

Town Planning deals with the wider context of physical and overall development. In a defined situation this wider context is based on the needs, demands or aspirations of the users they may be individuals, groups or society at large, however the architectural design responses to them are based on and are governed by the political, social, economic and objectives which constitute town planning ideas, theories and policies. Teaching of town planning as a subject head is thus aimed at informing the students about the evolution of ideas, theories and policies (regulatory measures) which provide physical and developmental context for any architectural design exercise.

TOPICS:

- A. GENERAL: Introduction, objectives, definitions-human activities (functions), their location (land uses), relationships and linkages (access routes)-physical developmental and architectural responses. Compatibility functional, aesthetic and environmental relationships. Circumstantial factors affecting land use and shelter forms. Town planning considerations and components their impact on architectural and vice versa.
- B. IDEAS, THEORIES AND POLICIES:
 - 1. Segregation of land uses and /or segregation of movement routes, civic spaces (squares) in towns and cities their functions, location and organization civic design and city beautiful concepts, sanitation models and byelaw housing-industrial townships, garden cities conservation and redevelopment-planning at regional and national level and its impact on town planning and architecture concentration problems, suburban sprawls-decentralization green belts-New towns, cities of tomorrow-town planning models and its analysis.
 - 2. Town planning policies, standards and controls-Master plan structure plans, action areas, environmental areas-conservation and civic design controls-development initiatives.

Architectural design activity and the role of architect_in the context of developmental and social objectives of town planning.

V YEAR B.ARCH.

ARCH 5210

L : 2
Tu : -
Pr/Drg/Stu : 20

II SEMESTER

DESIGN THESIS (TW)

Theory : -
Pr/Drg/Stu: 600
Total : 600

Each student should take up an individual topic of Design for which there should be some preliminary theoretical analysis and case studies of the topic concerned. The objective of the Thesis is to orient the design towards a solution which is based upon a theoretical premise. Presentation of the solution should therefore include these theoretical aspects.

However, any student may take a purely theoretical problem which does not involve "Design" in the conventional sense.

A topic taken in any year should not be repeated for subsequent two years unless the theoretical parameters are significantly altered.

V YEAR B.ARCH.

II SEMESTER

ARCH 5232

PROFESSIONAL PRACTICE AND VALUATION

L: 4
Tu : -
Pr/Drg/Stu:-

Theory : 100
Pr/Drg/Stu :-
Total: 100

1. Historical perspective and development of Architectural profession in India.
2. Rules regarding code of professional conduct, duties and liabilities, rules regarding architectural competitions.
3. Architectural services and scale of professional charges.
4. Tendering procedure and building contracts.
5. Introduction to Law, Enactments. Rules and Regulations concerning buildings and properties in force by control and state Government and study of local byelaws in details with case studies.
6. Valuation of buildings and Arbitration.
7. Various setups of Architectural offices and their work procedures.

V YEAR B. ARCH.

II SEMESTER

ARCH 5233

ELECTIVE (TW)

L: -
Tu:-
Pr/Drg/Stu : 6

Theory:-
Pr/Drg/Stu: 100
Total : 100

Any topic related to Architecture can be taken up by the students as an elective subject to the conditions that it should be approved by the Electives Committee of teachers appointed by the Head of Architecture Department and there should be minimum 10 students opting for the elective. The Termwork on the electives shall be assessed periodically and the nature of the final presentation work on the elective i.e. whether drawings, models, reports, essay or essay and sketches etc. Shall be decided by the teacher guiding the particular elective.

The final examination (Semester Examination) will have one external examiner and internal examiner (teacher concerned) for each elective.