T.Y.B.ARCH. - SEMISTER – V & VI

ARCHITECTURAL DESIGN

GENERAL NOTE :

1. Design problem should be dealt with Aesthetics and Visual Arts, Basic design, Theory of Design (First year subjects)
2. Students should apply the knowledge of climatology, building construction and materials, structures, building services and other subjects taught upto 4th Semister.
3. Out of Three problems one should be completed in Manual presentation in Semester – V

DESIGN PROCESS :

Data collection in groups of three to four students and proper presentation in suitable format.

Collection and analysis for design of medium size buildings with multi level complex planning.

The student should learn about collection of data, analysis of data and finalization of requirements of prescribed buildings with actual design problems. Study of works of renowned architects on similar problems , Study of their philosophy and approach (book and internet case studies) case study of all types of buildings and actual design problems. (Each upto 500 sq.mts. and not more than 1000 sq.mts.

Considerations for psychological aspects of Architectural space and Aspect of sociology in design to be covered in prescribed theory lectures.

SEMISTER – V (FIFTH)

Lectures	Week	01	Internal	100
Studio	Week	08	External	
Total	Week	09	Total Marks	100

1. Students should be deal with one major (area up to 1000 Sq.mts.) and 1 minor problem (Time bound)
2. The design problem may include buildings of medium density and size. Bank with residence, post office with residence , Hostels, Row houses, Multistoried offices, Apartments, etc.

SEMISTER – VI (SIXTH)

Lectures	Week	01	Internal	100
Studio	Week	08	External	200
			Paper (Duration -12 hrs)	100
Total	Week	09	Total Marks	100

I) Student should be deal with One major design problem with area upto 1000 Sq.mts.

II) The design problems may include I.T. offices, government offices, schools. Recreation and health facilities, pavilions, clubs, other service oriented buildings etc.

LANDSCAPE ARCHITECTURE - V (FIFTH SEMISTER

Lectures	Week		Internal	50
Studio	Week		External	---
			Paper (Duration -2 hrs)	50
Total	Week		Total Marks	100

1. Introduction to landscape Architecture
2. Study of landscape history with respect to Architecture of different types in different countries.
3. Study of Landscape history of India – Mughal Period.
4. Origin of Garden concept , Introduction of Modern Landscape
5. Study of aspects of landscape architecture with respect to social, economical, cultural and functional aspects.
6. Study of landscaping elements their types and characters.
7. Study of different landscaping materials, their uses, construction details. Detailing of outdoor areas.
8. Study of different types of plants, their local names botanical names, classification, physical characters and design values (a) Tree (b) Shrubs, (c)Creepers and (d) Ground covers
9. Factors affecting landscape design – climate and surrounding
10. Case study of local garden, nursery.
11. Design base on indoor and outdoor landscape (Design and details) of any one residential unit with landscape / or public space with landscape.

BUILDING TECHNOLGOY CONSTRUCTION
(T.Y.B.ARCH.) - V (FIFTH SEMISTER

Lectures	Week		Internal	70
Studio	Week		External	---
			Paper (Duration -2 hrs) (60 Marks for Construction and 20 marks for Materials)	80
Total	Week		Total Marks	150

CONTRUCTION – V (FIFTH SEMISTER) 60 MARKS

- FOUNDATIONS
  a) Foundations in soils having low bearing capacity. – Timber and steel grillage foundation.
  b) Pile foundation – different types of piles – timber piles, steel piles and R.C.C. piles, Replacement and displacement piles. Pile caps for two, three and multiple ples. (Reinforcement and structural details)
  Types of hammers used for files pile driving technique ISI stds. For piles.

- Dewatering of excavation tranches.
- Retaining walls – Masonary retaining walls. R.C.C. retaining walls and their different types. Reinforcement details and construction details of retaining wall
- Types of the staircases – Steel, timber and concrete . In R.C.C. – waist slab staircase, cantilever step staircase, Staircase with Reker beam and folded staircase with the reinforcement details, R.C.C. railings and Handrails details. In Timber Staircase – Joinery details of stringer, newel post balustrade , Handrail, Railing , Step (Tread ad Riser)
- Introduction to glass curtain walls and structural glazing fixing details.
- Details of Aluminium, stone , wood tile cladding
- Steel stanchions connections and built up steel sections for steel columns, beams etc.
- Construction detail of Aluminium sliding windows.

MATERIALS – V (FIFTH SEMISTER) 20 MARKS

- FERROUS MATERIALS
  a) Introduction , Iron area, selection, variation of iron ores.
  b) Pig iron – Manufacture , Properties, Types.
  c) Case Iron, - Composition, Types and Properties
  d) Wrough Iron, - Manufacture, Properties, Defector and uses.

- STEEL - Manufacturing of Steel, uses, factors affecting physical properties, magnetic properties, market forms of steel, properties of mild and hard steel.
- NON FERROUS MATERIALS - Aluminum, Copper, Zine, lead, Asbestos, - Manufacture, properties and uses
- Aluminium , Alloy , copper alloy .
- Insulating Materials – Introduction only.

BUILDING TECHNOLGOY CONSTRUCTION
(T.Y.B.ARCH.) - VI (SIXTH SEMISTER)

Lectures	Week		Internal	70
Studio	Week		External	100
			Paper (Duration -) (60 Marks for Construction and 20 marks for Materials)	80
Total	Week		Total Marks	250

CONTRUCTION – VI (SIXTH SEMISTER) 60 MARKS

- DOOR AND WINDOWS -
  a) Sliding door and their construction details in M.S., Aluminium and Teak wood.
  b) Sliding and folding T.W.Doors and their details
  c) Pivoted door and glazed windows
- M.S.ROOFING -
  a) Different Types of M.S.Roof trusses for the span upto 25M. with roofing materials. (Any One truss detail with all construction details)
  b) Northlight roof truss with roofing material.
  c) Roof covering by different type of colour coated sheets. (Straight and curved)

- M.S.Sliding and Openable Gates, (All details)
  Details of Rolling shutter
  Different types of M.S.Grills.
- Precost Construction components, used for column, beams, staircase, flooring, partition, door and window frames.
- Partition Removable and folding in timber and aluminum, Modular aluminum partitions.
- Introduction of ferrocement use, and limitation manufacturing process.

MATERIALS – VI (SIXTH SEMISTER) 20 MARKS

- CERAMICS – VARIOUS CLAY PRODUCTS
  - Tile manufacturing characteristics and types.
  - Terra cotta – Manufacture, vaneting, advantages and disadvantage and uses.
  - Earthenware
  - Stoneware
  - Porcelain
  - Verified tiles
  - Clay blocks
- GLASS :
  Classification, composition and properties of glass manufacturing process, different types of glass special types of glass, colored glass.
- PLASTICS – HISTORICAL BACKGROUND
  Composition, Polymerization, Classification diff. types of resins , moulding, compound fabrication properties and uses.
  Application in building industry .
- INTRODUCTION OF - Heat Insulating materials , New synthetic materials in market.

ARCHITECTURAL ACCOUSTIC
(T.Y.B.ARCH.) - VI (SIXTH SEMISTER)

Lectures	Week	30	Internal	20
Studio	Week		External	--
			Paper (Duration - 3 hrs.)	80
Total	Week	30	Total Marks	100

1. Basic Theory Includes
   Origin of sound, propogation of sound , wave motion , spherical wave front , Frequency of sound, Wave length and amplitude of sound. Sound specturum. Velocity of the sound, Sensitivity of sound hearing, Inverse square law, directional quality of sound, sound and distance, sound measurement.

2. Brief history of architectural Accoustics.
3. Acoustical phenomenon in open space and in an enclosed space. Sound reflection, absorption, transmission, refraction, cross talk, diffraction, diffusion, Reverberaion, reverberation time, room resonance, room echo, flutler echo, sound shadow, whispering gallery etc.
4. Sabins Formula and Reverberation time calculations of enclosed spaces like, halls, Auditorium, studio etc.
5. Sound absorption and absorption coefficients and open window unit (OWU)
6. Different sound absorbing materials and their market forms.
   Mounting and distribution of acoustical materials.
   Criteria for selection of materials.
7 Graphical presentation of first order reflection.
8 Acoustical design requirements for open air theatre, Seminal halls and Radio /TV/ Recording studios etc.
9 Noise and its effects. Measurment of noise Various noise sources, air and structure born noise, transmission of noise in the building.
10 Methods of environmental noise control.
11 Control of mechanical noise and vibration in building services like plumbing and A.C.
12 Noise reduction coefficient and different Materials used for noise control in building construction.
13 Artificial amplification systems
14 Acoustical construction details. e.i. Sound proof door, window, partition, wall and floor, ceiling.

HISTORY OF ARCHITECTURE
(T.Y.B.ARCH.) - V (FIFTH SEMISTER)

Lectures	Week		Internal	20
Studio	Week		External	--
			Paper (Duration - 3 hrs.)	80
Total	Week		Total Marks	100

Subject include the study of various styles in Architecture mainly in Europe, America and Modern period trough various period and ages viz. ancient, Early christen , Bazantine, Romanosque period.

The study can actively help in the preservation and evoluation in the design process. It is not only the study of building but also the effect of climate, religious, social and political conditions, technological development, material selection and aesthetical influences on the building design, type market places, public spaces , city and town planning etc.

TOPICS INCLUDE, DETAIL STUDY OF

1. Egyption Architecture
2. Architecture of Greek period
3. Architecture of Roman period
4. Early christen Architecture in Europe
5. Architecture under bazantine Empire
6. Architecture of Romansque period in the countries France, Britain, Spain, Portugal and Central Europe

HISTORY OF ARCHITECTURE
(T.Y.B.ARCH.) - VI (SIXTH SEMISTER)

Lectures	Week		Internal	20
Studio	Week		External	--
			Paper (Duration - 3 hrs.)	80
Total	Week		Total Marks	100

Subject include the study of various styles in Architecture mainly of Europe and in the Modern priod of Americal and India. Throug various ages of Renaissance, Gothic, Industrial revouation and Modrn period.

The study can actively help in the design process, preservation and evoluation in the design process. It is not only the study of building but also the effect of Climate, religious, social and political conditions, technological development, material selection and aesthetical influemnces on the building design, type, market places, public spaces, city and town planning etc.

Topics include the detail study of

1. Architectural development under Gothic period in the countries France, Britain, Spain, Italy and central Europe.
2. Architectural development under Renaissance period in the countries Italy, (Florance, Athens and Vanice) France, Spain and Portugal , Britain and Central Europe.
3. Introduction of influence of Rainance on Russia.
4. Study of Post Renaisance architecture and effect of Industrial Revoluation in Europe, Amerial and India.
5. American Architecture in the period of 19^{th} and 20^{th} Century .
6. Idea of Modern Architecture, Introduction of Modern building materials and technology.
7. Study of New styles in Architecture like Art Nouveau, Bauhaus, New building in Germany, American Architecture, Functionalisum , Art Décor, Deconstructivisum, New International Style, High tech Architecture – Only Introduction with few examples.
8. Modern concept in India under various Architects after independence. – Only Introduction with few examples and contribution of various architects.

INTERIOR DESIGN

(T.Y.B.ARCH.) - V (FIFTH SEMISTER)

Lectures	Week	1	Internal	50
Studio	Week	3	External	50
			Paper (Duration - 3 hrs.)	50
Total	Week		Total Marks	150

- Introdution to the subject – Interior Design
- Design basics – Intention of good design in general and the application of this intention to modern furniture.

Furniture in relation to the Architecture and to interior design.

Evaluation of any design w.r.t. following points.

1. Functional Issues (2) Issues of structure and material (3)Communication of meaning form.

(Any One example with analysis – Function, Structure and Visual expression) e.g. chair, Table, storage system steel frame storage etc.

- Historical Back ground or History of Interiors in Brief.
  1. Ancient Period – Egyption, Greek and Roman , Bazantine
  2. Medival Period - Gothic and Renaissance in Europe and India
  3. Renaissance Period
  4. Contemporary Period – Various theories developed
  5. History of Interior especially in the colonial development w.r.t.India only.
- Technology of Furniture –
  1. Stability – Refers to properities of the object that cause it to remain in position.
  2. Strength – property of object that resists forces various loads – Static load and live load and Dynamic load concept in furniture

- Loads generating various stesses – Compressive tensile bending, shear and torsion
- The overally strength of the furniture and various joints.
  a) Strength of individual parts resulting inherent strength characteristics of material chasen and size and formation of part
  b) Strength of integraly of joints between parts
  c) Overall geometry of object and distribution of stresses to parts, joints. Etc.

- DESIGN PROCESS AND METHOD – Sketches, sketch model (study) Prepartion of drawing, working detail , finished models, mockups – if possible for small object , Prototype design and projects
- DESIGN OF SMALL INTERIOR SPECES – (Application of above content) Reception air, Meeting Room Conference room, small commercial area, residential areas etc.

ESTIMATION COSTING AND SPECIFICATIONS (I)
(T.Y.B.ARCH.) - V (FIFTH SEMISTER)

Lectures	Week	30	Internal	20
Studio	Week	15	External	---
			Paper (Duration - 3 hrs.)	80
Total	Week	45	Total Marks	100

NOTE : Combined head of passing

This subject enables the student to prepare outline specifications, approximate estimates, and detailed estimates for simple buildings and get an idea of financial aspects of building Construction.
Students shall note that oral exam at SEMISTER SIX is based on total syllabus of this subject at SEMISTER FIFTH AND SIXTH both

- Estimation – Introduction, Aim and objects, scope and importance of the subject
- Types of Estimation – Approximate Estimation, purposes and their types
- Revised Estimate, supplementary estimate, A.M. estimate
- Listing of building items, modes of measurements principles of taking out quantities.
- Rates of labor and materials
- Principles of rate analysis, lead and life charges,
- PWD current DSR
- Contingencies, work charge establishment
- Provisional items, provisional quantities, provisional su spot item.
- SESSIONAL WORK
    1. Approx Estimate of (G + 1) Building
    2. Detailed estimate of any one simple civil work lime compound wall, water tank, single room, Stair case, simple RCC frame etc.
    3. Rate analysis of any five building items
    4. Short notes (Minimum Four) to cover above syllabus

ESTIMATION COSTING AND SPECIFICATIONS (II)
(T.Y.B.ARCH.) - VI (SIXTH SEMISTER) ar – 06 - 05

Lectures	Week	15	Internal	50
Studio	Week	30	External	50
			Paper (Duration -)	Nil
Total	Week	45	Total Marks	100

NOTE : Combined head of passing

This subject enables the students to prepare outline specifications, approx. Estimates and detailed estimates for simple buildings and get an idea of financial aspects of building construction . Student shall note that oral exam. is based on total syllabus of this subject at SEMISTER FIFTH AND SIXTH both

- Methods of detailed estimation of building items, rules for deductions of openings.
- Preparing bill of quantities
- Preparing abstract sheet and costing with brief specifications
- Specifications – Types, purposes of writing specification , principles of writing specification , detailed specification of building items.

- SESSIONAL WORK

1. Detailed Estimate of simple building with 100 – 200 sq.mts. builtup area.
2. Writing detailed specifications of at least five building items.
3. Short notes (Minimum FOUR) to cover above syllabus.

STRUCTURE - V

(T.Y.B.ARCH.) - V (FIFTH SEMISTER)

Lectures	Week	60	Internal	20
Studio	Week		External	---
			Paper (Duration - 3 hrs.)	80
Total	Week	60	Total Marks	100

The orientation of the syllabus shall be such that the student shall be able to under stand the behaviour of structure systems, feasifility of different structure systems, limitation of forms, spans, choice of proper structure materials, strength considerations, behaviour , and response to loads.

1. Fixed and continuous Beams & Advantages, dis-advantages of fixed and continuous beams.

Determination of Positive and negative BM for point loads and UDL
Theorem of Three moments
Continous beams of two to four spans – SFD, BMD
Conceptual ideas of full and partial fixing in case of RCC and steel beams
Settlement of supports – Conceptual ideas.

2. Design of steel columns with axial and eccentric loads, BM about one axis

Design of steel columns with axial and eccentric loads, BM about TWO axis
Concept of built-up columns with batten and lacing
Conceptual Ideas of roof trusses – for different spans, materials, roof shapes calculations of loads, and design of simple roof tress upto 12 mt span

SESSIONAL WORK - Minimum THREE drawings and FOUR assignments based on above topics.

STRUCTURE - VI

(T.Y.B.ARCH.) - VI (SIXTH SEMISTER) ARE 06 - 03

Lectures	Week	60	Internal	20
Studio	Week		External	---
			Paper (Duration - 3 hrs.)	80
Total	Week	60	Total Marks	100

Note : Combined head of Passing

The orientation of the syllabus shall be such that the student shall be able to understand the behaviour of Structure systems, feasibility of different structure systems, limitation of forms, spans, choice of proper structural materials, strength consideration, behaviour, and response of loads.

Theory of reinforced concrete
Concepts of working stress and limit state methods of designing R.C.C. members
Natural axis, lever arm , steel percentage , MR Modular ratio , concepts of under reinforced , over reinforced and balanced R.C. Members
Design of singly reinforced beams
Concepts of doubly reinforced beam and flanged beams
Design of beam for shear reinforced concepts of shear, bond and dev. Length
Design of short axially loaded R.C. Columns
Design of simply supported and cantilever slabs
Design of axially loaded R.C.C. Footing

SESSIONAL WORK
Minimum THREE drawings and FOUR assignments to cover above topics

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BACHELOR OF ARCHITECTURE, SEMSTER V
BUILDING SERVICES - III

Lectures	16	Marks Internal	50	Paper	Exam marks 50
Studios	32	Marks external	00	Duration	2 Hrs

(Mechanical Services at Project Scale Level)

Electricity
Lighting
HVAC
Lifts and Escalators
Fire Fighting
Security Systems
Pumps

BACHELOR OF ARCHITECTURE, SEMSTER VI
BUILDING SERVICES - IV

Lectures	16	Marks Internal	50	Paper 1	Exam marks 50
Studios	32	Marks external	00	Duration	2 Hrs

(Services for Hospitals & Hotels)

Hot Water Supply
Hospital Gases
CSSD
Laundry
Community Kitchens
House Keeping Services
Incinerators
Swimming Pools

(T.Y.B.ARCH.) - (FIFTH SEMISTER)

SUBJECT: - WORKING DRAWING – SEMISTER - V

Lectures	Week	1	Internal	50
Studio	Week	3	External	--
			Paper	---
Total	Week	4	Total Marks	50

The subject introduces the student to methodology of preparation of working drawing based on the principles of visual communication interpretation and reading of drawing. These drawing should enable the site staff to transform the drawing into actual construction with help of sufficient dimensions and details.
Introduction of working drawing for composite construction based on design problem done in second year architecture which should include.
C.C. framed structure , steel framed structure and load bearing structure.
Foundation plan, floor plans, roof plan.
All elevation and sufficient number of section.

All flooring plans, elevation section and other relevant details and information required to obtain building permission from local authorities as per D.C. Rules of Maharashtra Govt.
Rain water drainage of roofs

(T.Y.B.ARCH.) - (SIXTH SEMISTER)

SUBJECT: - WORKING DRAWING – SEMISTER - VI

Lectures	Week	1	Internal	50
Studio	Week	3	External	100
			Paper	Nil
Total	Week	4	Total Marks	150

The subject introduces the student to methodology of preparation of working drawing based on the principles of visual communication interpretation and reading of drawing. These drawing should enable the site staff to transform the drawing into actual construction with help of sufficient dimensions and details.
Introduction of working drawing for composite construction based on design problem done in second year architecture which should include.
C.C. framed structure , steel framed structure and load bearing structure.
Foundation plan, floor plans, roof plan.
All elevation and sufficient number of section.

Typical doors and windows with joinery details.
Other architecture details like colour scheme.
Roofing shelves, working platforms, railing etc.
.
Drawing for plumbing drainage water disposal.
Layout plan showing Electrical lighting and installation and other services.

Site development details, gate, compound wall, paving levels, landscape etc.