

SHIVAJI UNIVERSITY, KOLHAPUR
STRUCTURE OF THIRD YEAR B. ARCH. PART-I

Subject Code	Subject	Teaching Scheme		Examination Scheme			
		Lectures	Studios	Annual Paper	Sessional Work (Int.)	Oral (Ext.)	Total
AR3-01	Architectural Design -III	1	8	-	250	250	500
AR3-02	Building Technology – III (materials)	1	-	50 *	-	-	50
AR3-03	Building Technology – III (Construction)	1	4	100*	100	100	300
AR3-04	Structure – III	3	-	100	50	-	150
AR3-05	History of Architecture –II (European & Modern)	2	-	100	50	-	150
AR3-06	Interior Design	1	2	-	50	50	100
AR3-07	Building Services	2		100	50	-	150
AR3-08	Working Drawing	1	2	-	100	100	200
AR3-09	Estimating Specification & Costing	1	2	80	20		100
AR3-11	Landscape	1	2	-	50	-	50
AR3-12	Architectural Acoustics	1	-	100	50		150
AR3-13	Elective (one to be Chosen) out of i) Office & site Practice ii) Tropical Architecture iii) Housing iv) Construction Management	2	-	-	50	50	100
	Total	17	20	630	820	550	2000

* Means combine passing for annual paper together
Third year Total periods per week = 37

STRUCTURE OF THIRD YEAR B. ARCH. PART- II

Subject Code	Subject	Teaching Scheme		Examination Scheme			
		Lecture	Studios	Annual Paper	Sessional Work (Int.)	Oral (Ext.)	Total
AR3-14	Practical Training & Report	Sixteen weeks (96 days)	-	-	-	100 viva	100 viva

EQUIVALANCY WITH OLD SYLLABUS

Old Subject Code	Old Name of the Subject	New Subject Code	New Name of the Subject
AR3-01	Architectural Design -III	AR3-01	Architectural Design -III
AR3-02	Building Technology – III (materials)	AR3-02	Building Technology – III (materials)
AR3-03	Building Technology – III (Construction)	AR3-03	Building Technology – III (Construction)
AR3-04	Structure – III	AR3-04	Structure – III
AR3-05	History of Architecture –II	AR3-05	History of Architecture –II (European & Modern)
AR3-06	Interior Design	AR3-06	Interior Design
AR3-07	Building Services	AR3-07	Building Services
AR3-08	Working Drawing	AR3-08	Working Drawing
AR3-09	Estimating Specifications & Costing	AR3-09	Estimating Specifications & Costing
AR3-10	Computer Technology and Architecture-III	AR3-10	Disaster Management
AR3-11	Landscape Architecture	AR3-11	Landscape Architecture
AR3-12	Architectural Acoustics	AR3-12	Architectural Acoustics
AR3-13	Elective (one to be Chosen) out of Office & site Practice Tropical Architecture Housing	AR3-13	Elective (one to be Chosen) out of Office & site Practice Tropical Architecture Housing Construction Management

SHIVAJI UNIVERSITY, KOLHAPUR

SYLLABUS FOR THIRD YEAR ARCHITECTURE DEGREE COURSE

SUBJECT: :- ARCHITECTURAL DESIGN -III (AR03- 01)

Lecture	- 30	Paper	-	Internal	- 250
Studio	- 240	Duration	-	External	- 250
Total	- 270			Theory Paper	- -
				Total	- 500

Note :-

- 1) Minimum one problem out of three should have common topic & area requirements between all colleges.
- 2) Out of three problems , for two problems knowledge of **climatology, building construction and material , structures ,theory of design, bldg. service, etc.** (First yr.& Second yr. subjects) should be applied .Third Problem should be dealt with more **orientation towards concept, Aesthetics & visual arts ,Basic design.**
- 3) Out of three problems one should be completed in Manual presentation.

Collection and analysis for design of medium size buildings with multi level complex planning. The student should learn about collection of data and requirements of prescribed buildings with actual design problem of **three buildings.**

Data collection in Groups of three to four students and proper presentation in suitable forms such as **charts, graphs, sketches including circulation diagrams** of different personnel vehicles, etc. Day and night factor of design.

Study of works of renowned architects on similar problems. Study of their philosophy and approach (book & internet case studies.)

Analysis of any building in terms of design process, design principles, materials, etc.

The design problem may include buildings of medium density and size, multilevel complex planning , structures of three floors ,Shops and Departmental stores, Bank with residence, Post office with residence ,Hostels ,Row Houses, Multistoried offices apartments ,IT offices, government offices, Schools, Recreation and Health facilities , Pavilions ,Clubs ,other service oriented buildings etc.

Study of all above types of buildings and actual **design problems for three buildings**
(Each up to **500 sq.m.** and not more than **1000 sq. m.**)

Considerations for **Psychological aspects of Architectural space** and **Aspect of Sociology in design** to be covered in prescribed theory lectures.

SUBJECT – BUILDING TECH. – III (MATERIALS) (AR03- 02)

Lecture	- 30	Paper	- 1	Internal	- -
Studio	- -	Duration	- 2 Hrs	External	- -
Total	- 30			Theory Paper	- 50
				Total	- 50

1. **FERROUS METALS**
 - Introduction
 - Iron ores, selection , varieties of iron ores
 - Pig Iron, manufacture, properties, types, other methods of manufacture
 - Cast Iron, composition , Types, properties, uses
 - Wrought iron, manufacture , properties, Defeats, uses
2. **STEEL :**
 - Manufacture of steel, use, factor effecting physical properties magnetic properties, defects in steel, market form of steel, properties mild and hard steel.
- 3 **NON FERROUS METAL**
 - Aluminum, manufacture, properties, uses, economics of using aluminum , forms of aluminum
 - Copper – Manufacture, properties uses
 - Lead - Manufacture , Properties uses
 - Zinc – Manufacture , Properties uses
 - Asbestos – Properties, use, asbestos cement products
 - Alloy, aluminum, copper alloy
- 4 **PLASTICS**

History, composition, polymerization, classification resins, molding, compounds, fabrication, properties, uses, PVC AND FRP application in building industry.
- 5 **CERAMIS**
 - Clay product
 - Tiles, manufacture, characteristics, Types
 - Encaustic tiles
 - Terra – cotta – manufacture, verities, advantage disadvantage use
 - Earthenware
 - Stoneware
 - Porcelain
 - Clay blocks
- 6 **GLASS**
 - Introduction
 - Classification , Composition , properties of glass
 - Types of glass
 - Manufacture of glass
 - Treatment of glass, colored glass
 - Special verities of glass
- 7 **INSULATING MATERIAL**
- 8 **SOUND OBSORBENT MATERIAL**
- 9 **HEAT INSULATING MATERIAL**
- 10 **NEW SYNTHETIC MATERIAL IN MARKET**

SUBJECT : BUILDING TECHNOLOGY (CONSTRUCTION) – III (AR03-02)

Lecture	- 30	Paper	- 1	Internal	- 100
Studio	- 120	Duration	- 3 Hrs	External	- 100
Total	- 150			Theory Paper	- 100
				Total	- 300

FOUNDATION

- Foundations in soils having low bearing capacity – Grillage footing (Shallow) and R.C.C. pile foundation (Deep).
- Dewatering of excavation trenches.
- R.C.C. and masonry retaining walls.

SUPERSTRUCTURE

- Glass curtain walls and structural glazing.
- Aluminum cladding
- Cladding in stone, wood, tiles and GRC.
- Steel stanchions and girders.

STAIRCASE

- R.C.C., Timber and Steel.

DOORS AND WINDOWS

- T.W. framed & glazed Sliding-folding doors, Aluminum framed & glazed pivoted doors, PVC doors.
- Concrete. Steel and stone door frames.
- Aluminum sliding windows.
- M.S. gates, M.S. shutters, M.S. rolling shutters and M.S. grills for windows.

ROOFING

- Types of M.S. trusses.
- Roof covering by pre painted aluminum sheets - Straight and curved.
- Polycarbonate, Fiber and PVC sheets for roof covering.

Pre cast construction components (RCC) used for columns, beams, slabs, staircases, floorings, partitions.

Partitions in Aluminum, T.W. and plywood with respect to Interior Design.
Modular partitions in Aluminum.

Ferrocement, Siporex – Introduction only.

This subject should be dealt with keeping in mind the fact that construction is a process and understanding the process should be given importance.

Site visits should be constructed for better understanding of construction process.

Measured drawings may be done for better understanding.

SUBJECT : STRUCTURE – III (AR03- 04)

Lecture	- 90	Paper	- 1	Internal	- 50
Studio	- --	Duration	- 3 hr.	External	- --
Total	- 90			Theory Paper	- 100
				Total	- 150

PREAMBLE :-

Considering the intension of architecture course in which students are expected to deal with the construction of building structures. The orientation of the syllabus shall be such that the students shall be able to understand the behavior of structural systems, feasibility of different structural systems, limitations of forms and spans, and proper choice of material in construction of structural components, considering their strength, behavior, & response during service loads.

The intension of this course is to impart basic knowledge of different structural systems preliminary design procedures, & understanding behavior of structure & design concept. Designing simple individual components of small buildings.

It is not expected from students to carryout all load assessments, analysis, designs, checks of major structures/ special structures for which they can seek the help of structural Engineer.

However they shall be able to take decision regarding selection of proper structural systems.

At T.Y.B.Arch. students are expected to carryout analysis, design of basic structural components and design of small structures and preparing sectional plans & elevations for simple components.

Students shall be permitted to use relevant I.S. codes, steel tables, for the purpose of calculations.

PART – I

- 1) Fixed & Continuous Beams :- Advantages, Disadvantages, of fixed and continuous beams.
 - Determination of positive and negative moments for point loads & distributed load.
 - Theorem of three moments.
 - Continuous beams of two to four spans – SFD, BMD
 - Conceptual ideas of full and partial fixity in case of RCC & Steel beams.
 - Settlement of supports – conceptual ideas.
- 2) Design of steel columns with axial and eccentric loads, bending moment about one axis.
 - Concept of bending moment about two axis.
 - Concept of Built up Columns with Lacing and battening.

- 3) Conceptual ideas of steel roof trusses for different spans, Material, roof shapes, Calculation of loads design of simple roof trusses up to 12mt. span.

PART – II

- 1) Cement Concrete – properties during and after setting.
- 2) Theory of reinforced cement concrete – Neutral axis, lever arm, steel percentage, moment of resistance of sections, modular ratio, permissible stresses, under reinforced sections, balance sections, over reinforced section.
- 3) Concept of shear, bond and development length.
- 4) Conceptual idea of application of working stress method to RCC design, Concept of limit state method of RCC design.
- 5) Design of simply supported slabs, cantilever and continuous RCC slabs by limit state method.
- 6) Design of singly reinforced beams, conceptual ideas of doubly reinforced, Tee, Ell beams.
- 7) Design of shear reinforcement for beams.
- 8) Design of short axially loaded columns, reinforcement details, conceptual idea of designing long column.
- 9) Design of simple square & rectangular footings, consideration of bond stress and punching shear.

SESSIONAL WORK :- Minimum 6 Drawing sheets and 8 Assignments based on above topics.

SUBJECT – HISTORY OF ARCHITECTURE – II (AR III – 05)

Lecture	- 60	Paper	- 1	Internal	- 50
Studio	- --	Duration	- 3 hr.	External	- --
Total	- 60			Theory Paper	- 100
				Total	- 150

Subject include the study of various styles in Architecture mainly in Europe , America and in Modern period, through various period and ages viz, ancient, Early christen, Romanesque , Gothic, Renaissance , pre modern , modern and post modern period .

The study can actively help in the preservation and evaluation 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

1. Ancient Architecture in Europe or western countries in detail.
 - Egyptian Architecture
 - Architecture of Greek period
 - Architecture under Rome and roman Empire
2. Architecture in Europe under following periods in detail
 - Early Christen Architecture
 - Architecture under Byzantine empireFollowing countries, Italy, France, Spain and Portugal, Central Europe and Britain.
 - Architecture under Gothic period in countries France, Britain, Spain and Portugal and Late Medieval in Italy, Central Europe.
 - Architecture under the Renaissance period in countries Italy, France, Spain and Portugal, Central Europe and Britain.
 - Only brief introduction the influence of Renaissance in Russia
- 3 Study of Post Renaissance Architecture and the effect of Industrial revaluation on architecture in Europe and America on design, new construction materials and technology.
- 4 Brief Introduction of colonial Architecture in Australia and Africa
- 5 Architecture of America in brief in the period 1790 to 1914
- 6 Brief study of the evaluation of Architecture in 19th and 20th Cent. In the world. Study and analysis of different Architectural styles in this period
 - The Idea of modern Architecture
 - Introduction of new materials and new technology
 - Study of new styles Art Nouveau ; the first modern, Expressionism : Cubism: Futurism: The International style , in and around first world war – The Bauhaus, Constructivism , New buildings in Germany, American Architecture , Functionalism corporate style, Deconstructive , New International style and high tech. Architecture.
(Only the brief Introduction along with the examples of Architects)
 - Introduction to Modern Architecture in India under various Architects after Independence.

QUESTION PAPER SETTING:

For Topics	- 1 -	20 marks
For Topics	- 2 - 3 -	50 Marks
For Topics	- 4 to 6	30 Marks

FOR INTERNAL SESSIONAL WORK

Following sheets containing sketches and brief explanation

For Topic	1	3 Sheets
For Topic	2	6 Sheets
For Topic	3, 4, 5	1 Sheet
For Topic	6	3 Sheets

- NOTE – NO COMBINE PASSING FOR PAPER AND INTERNAL

Reference Books

- A History of Architecture – Sir Banister Fletcher
- A History of Architecture – Spiro Kostof (Oxford uni. Press)
- History of world Architecture – Series by John B. Ward Perking
- A Global History of Architecture – F.D.K.Ching , Mark M Zorzmb1 & Vikramditya Prakash
- Byzantine Architecture – Cyril Mango . Electa /Rizzoli Publication
- Modern Architecture - A Critical History – Kenneth Frampton (Themes and Hudson Pub.
- Modern Architecture Since 1900 –William J.R.curtis(Phaidon ,oxford press Pub.)
- A History of Western Architecture 0 David watking (Barrie and Jenking Pub)
- An Introduction to 20th Cent. Architecture – The Apple press
- Architecture of 20th Century – Mary hollingeswarth
- The Story of western Architecture – Bill Risebero

SUBJECT :- INTERIOR DESIGN (AR03-06)

Lecture	- 30	Paper	- -	Internal	- 50
Studio	- 60	Duration	- -	External	- 50
Total	- 90			Theory Paper	- -
				Total	- 100

This subject introduces the student to methodology of preparation of working drawings based on the principles of visual communication, interpretation and reading of drawing. These drawing should enable the site staff to transform the drawings into actual construction with help of sufficient dimensions and details.

Introduction: - working drawing for composite construction based on design problem done in second year Architecture which should include.

Foundation Plan

All Elevation and sufficient number of section.

Typical Door and windows with joinery details

Other architecture details like colour scheme

Flooring shelves, working platform railing etc.

All flooring plans, elevation, section and other relevant details and information required to obtain building permission from local authorities

Rain water drainage of roofs.

Drawing for plumbing drainage water disposal

Lay out plan showing electrical lighting and installation and other services.

Use of computer tech., may be permitted to prepare working drawing. But periodical checking of drawing (Check prints to required scale) shall be done and final drawing these drawing shall kept for inspection & along with final a drawing at the time of external (oral) Exam.

SUBJECT :-BUILDING SERVICES (AR03-07)

Shivaji University

Syllabus for Building Services at TY B Architecture

Lecture	- 60	Paper	- 1	Internal	- 50
Studio	- -	Duration	- 3 Hrs	External	- -
Total	- 60			Theory Paper	- 100
				Total	- 150

Note: The study of services in third year shall be to generate awareness of various services in buildings, concepts of working of various services, effects of these services on building planning and understanding adequate to work with the consultants of these services. The institute shall encourage site visit and discussion with consultants and Architects to ensure understanding of building planning.

ELECTRICITY

Electrical Generation and transmission, Co generation, captive power plants, stand by system, uninterrupted power supply, inverters.

Pollutants in electrical generation, green energy, renewable energy concepts, carbon footprint and carbon credits.

A C and D C supply, 3 phase and single phase supply

Components of electrical installations for various building uses, HT, transformers, electrical panel rooms, cable trenches, controls, wiring systems, safety devices, starter, Earthing, metering of electricity.

Electrical installations in various building types, Residential bungalow, apartments, commercial recreational buildings and factory buildings etc. Site visits to such installations with particular stress on electrical installation for lifts, A. C. motor pumps etc.

Market survey of Electrical materials and electrical appliances.

Exercises of preparation of electrical layouts of residential buildings

LIGHTING

Natural Illumination, sky component, Principles of good illumination. Illumination levels required for various activities. Different lighting systems and concepts of the same. Lamps and luminaries.

Study of lighting for residential activities, offices, shops, theatre, factories etc.

Outdoor lighting.

HOT WATER SUPPLY

Polluting and non polluting renewable sources of energy for water heating systems.

Systems in multistoried buildings, Boilers, Pressure boilers, Locations of boilers, storage tanks, up feed and down feed systems. Piping for hot water, insulations etc.

Site visits

HEATING VENTILATION AND AIR CONDITIONING (HVAC)

Natural and artificial ventilation, Comfort conditions, temperature control, humidity control, air changes, filtration of air

Fans, Exhaust fans, blower fans etc. Air filters of various types

Humidification of spinning mills etc

Site visit

Building heating, energy forms for heating, Preventing heat loss from building, local and central heating, radiators, convectors etc

Passive solar heating, orientation, heat storage, materials.

Air conditioning, Preventing heat gain, energy for air conditioning, Refrigeration cycle, different systems of AC, window, split, ductable, air cooled, water cooled, air cooling and water cooling systems. Fire dampers, ducting, diffusers etc. Exhaust and Plenum.

Intelligent building systems in air conditioning,

Sick building syndrome, effect of pollutants, improving air quality in AC buildings.

Applications to various buildings

Site visit

HOSPITAL GASES

Oxygen, nitrogen and suction, stand alone and centralized systems.

FIRE SAFETY

Fire regulations for buildings, fire resistant materials, fire rating, ease of evacuation, types of fires, fire hazards, Fire sensors, alarm systems, fire officer, fire drills

Extinguishing materials, portable extinguishers, sprinklers, dry and wet risers, hose reel installations etc.

Site visits

SAFETY SYSTEMS

Burglar protection systems, security systems, limited access systems, CCTV etc.

Site visit

Data cabling systems, terminals etc.

LIFTS AND ESCALATORS

Various types of lifts, lift planning in buildings, innovations in lifts.

Planning of escalators, limitations.

Site visits

PUMPS

Different types of Pumps, working, applications.

Water pumps, sewage pumps, Centrifugal, Reciprocating volute, turbine

COMPRESSORS

Different types of Compressors and their applications.

SUBJECT: - WORKING DRAWING (AR03-08)

Lecture	- 30	Paper	- -	Internal	- 100
Studio	- 60	Duration	- -	External	- 100
Total	- 90			Theory Paper	- -
				Total	- 200

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.

Foundation 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.

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.

Drawing for plumbing drainage water disposal.

Layout plan showing Electrical lighting and installation and other services.

Use of computer technology may be permitted to prepare working drawing .but periodical checking of drawing s (Check prints to required scale) shall be done and these drawing shall be kept for inspection along with final drawings at the time of external (oral) exam.

SUBJECT: ESTIMATING, SPECIFICATIONS AND COSTING (AR03-09)

Lecture	- 30	Paper	- 1	Internal	- 20
Studio	- 60	Duration	- 3 Hrs.	External	- --
Total	- 90			Theory Paper	- 80
				Total	- 100

This subject enables the student to prepare outline specifications, approximate estimates and detailed estimates for simple buildings and gets an idea about financial aspect of construction of buildings “The estimation of civil items of load bearing structures with R.C.C. slab and Manglore tiles pitched Roof and R.C.C. Items required – should be done”.

PART – I

- Introduction – Estimate, Definition, Aim & Object, Scope and importance of the subject.
- Types of Estimate – Detailed
 - Approximate
 - Supplementary
 - Revised
 - Complete
- Methods of Estimate for (a) Approximate estimate
(b) Detailed estimate
- Listing of Building Items – i.e. Item nomenclature
 - Modes of measurement
 - Relevant IS codes for modes of measurement
 - Order of taking off the quantities
- Detailed estimate on item rate basis
 - Taking of quantities
 - Preparing bills of quantities
 - Preparation of measurement sheet and abstract sheet
 - Brief specification of item in abstract
 - Current rates of labour and materials
- Rate analysis –Principles of rate analysis
 - Lead charges calculation
 - P.W.D. current district schedule rates of Maharashtra State i.e. D.S.R.
 - Establishment charges
 - Contingencies
 - Rate analysis as per current D.S.R. for different building items.

PART – II

Estimate of a simple single storied residential building with part pitched roof and part flat R.C.C. roof (without services) sessional work based on above topics.

NOTE :- Plans for the estimate to be furnished by the institution, at least one estimate should be based on the work of design done in the second year by the student.

SUBJECT: DISASTER MITIGATION AND MANAGEMENT (AR03-10)

Lecture	- 30	Paper	-	Internal	- 50
Studio	- 30	Duration	-	External	- -
Total	- 60			Theory Paper	- -
				Total	- 50

Contents

Definition – Disaster, Mitigation, Management, Preparedness, Vulnerability
Rehabilitation

Types of Natural and man-made hazards

Some important past disasters

Authorities, NGO's in mitigation and management

I.S.codes, local bye-laws and national Building code.

Site planning, building forms and Architectural Design

Structural detailing

Disaster management cycle

Studio Work

Case study and report writing

Site visit to any disaster

Disaster mitigation layout for public building/institutional buildings/national important structures.

References

1. Planning to cope with disasters – Vol.-1
National disaster mitigation division, Govet. Of India
2. Manual on natural disasters management in India
National institute of Disaster Management Govet. Of India
3. A manual of Earthquake resistant Non-engineer construction
Indian Society of Earthquake technology – IIT, Roorkee.

SUBJECT: - LANDSCAPE ARCHITECTURE (AR 03– 11)

Lecture	- 30	Paper	- -	Internal	- 50
Studio	- 60	Duration	- -	External	- --
Total	- 90			Theory Paper	- --
				Total	- 50

1. Introduction to landscape architecture
 - a.) The profession of landscape architecture
 - b.) Conceptual definition of landscape architecture
 - c.) Components of practice in landscape architecture
 - d.) Theory of landscape architecture

2. The garden in history
Origin of garden concept & garden in history in the various periods like ancient, early modern, modern with respect to India & Europe.

3. Study of the aspect of landscape architecture with respect to social, economical, cultural & functional aspects.
4. Study of landscaping elements, their types & characters.
5. Study of different landscaping materials, their uses & construction details – detailing of outdoor spaces.
6. Study of different types of plants, their local names, botanical names, physical characters & design values
 - a) Trees
 - b) Shrubs
 - c) Creepers & Ground covers.

7. Factors affecting landscape design – climate, surrounding, etc.
8. Case studies – nursery, garden
9. Design of indoor & outdoor landscape

SUBJECT – ARCHITECTURAL ACCOUSTICS – (AR 03– 12)

Lecture	- 30	Paper	- 1	Internal	- 50
Studio	- -	Duration	- 3 Hrs.	External	- --
Total	- 30			Theory Paper	- 100
				Total	- 150

1. BASIC THEORY , INCLUDES

- Origin of sound, propagation of sound, sound and vibration wave motion and spherical wave front: Frequency, wave length and amplitude of sound : Sound spectrum ,velocity of sound sensitivity of sound hearing : inverse square law : directional sound: Sound and distance : Masking : Decibels: Pattern of reflected effect of climatic condition on Sound in open space , sound.
- Brief history of architectural acoustics
 - Acoustical phenomena (Behavior of sound) in enclosed spaces – Sound reflection , Absorption, transmission , refraction , cross talk diffraction , diffusion , Reverberation , room resonance , room echo , flutter echo , sound shadow , multiple echo , whispering gallery etc.
 - Sabins formula and reverberation time calculations. Sound absorption, sound absorption coefficients
 - Sound absorbing materials and their market forms
Porous materials, panel absorbers, cavity resonators, space absorbers, different variable absorbers, absorption by openings
Mounting and distribution of absorbing materials, choice of materials, measurements and sound absorbing calculations.
 - Graphical representation of the first order reflection in different geometrical forms and their application in design
 - Acoustical design requirements for different types of the enclosed and open spaces in brief.
Open air theater , Auditorium , Cinema theater , Halls for diff. Uses seminar halls,studios (Radio / T.V.)
 - Noise and its effects, Measurement of noise, various noise sources , air borne and structure borne noise , transmission of noise in the building.
 - Various different methods of Environmental noise control,
 - Control of mechanical noise and vibration in various building services e.g. Air conditioning, machinery noise in industry, plumbing.
 - Check list for the noise control for different types of bldgs. e.g. Auditoriums, Hospitals, Industrial buildings.
 - Noise reduction coefficient for different materials and calculation
 - Acoustical construction details and sound insulation construction details e.g. sound proof door, window, floor, partition, wall applications, ceilings etc.

For Internal sessional work sketches should be made on a3 size drg. Sheets to explain the various terms on topics as follows.

- Topics 1 to 3 2 sheets
- Topic 4 – R.T. Calculations in detail , explain plan and section the application of materials etc. – 2 sheets
- Topics -6 - Graphical presentation of sound reflection – 1 sheet
- Topic 13 - Construction details – 2 sheets

QUESTION PAPER SETTING

Topics	1 to 3	20 marks
Topics	4 & 12	20 marks
Topics	5 to 11	50 marks
Topics	13	10 marks

REFERANCE BOOKS

- Detailing for Acoustics – Architectural press London
- Acoustical design in Architecture – Vern O Knudsen Cyrill M Harries , (John Wiley and Sons)
- Environmental Acoustics – Lislle L Doelleo (Mc Graw Hill Book Co.)
- Concepts in Architectural Acoustics – M david egan (--do-)
- Architectural Acoustics – Shiraskar
- Vastushilpache Dhvani Sanyojan – Edki & Pethe

SUBJECT :- ELECTIVE (AR03-13)

(one to be chosen out of -----)

Lecture	- 60	Paper	- -	Internal	- 50
Studio	- -	Duration	- -	External	- 50
Total	- 60			Theory Paper	- -
				Total	- 100

I) OFFICE AND SITE PRACTICE

This subject is serve as basic introduction to the "Professional Practice" subject taught later on. Subject will deal with how the job is "Processed" during planning and execution, both in Architects office an at site.

Letter writing in Architect's profession, report on design, Concept of this year's design project.

Office administration, filling, recording of letters and drawings, maintenance of accounts, modes of maintenance of accounts, cash book, bank transactions ledgers, depreciation, profit and loss statements. Modern office equipment, reproduction, drafting machines and modern drawing equipment.

Method of execution of works, types of tenders and their suitability for various projects, tender documents, tenders procedure, conditions of contract of IIA and State PWD (Introductory), scrutiny of tenders and recommendations.

Infrastructure for commencement of work.

Work order, bar chart for construction work and office work, site supervision, duties, site visit reports, interim, final bills, completion certificates, sessional work based on above topics like drafting of tender notice, special conditions, bar chart for a typical building, visit report etc.

II) TROPICAL ARCHITECTURE

- **INTRODUCTION**
- **CLIMATE : THE GIVEN CONDITION**
Global climatic factor, Elements of climate, classification of Tropical Climates, Site Climate
- **COMFORT : THE DESIRABLE CONDITIONS**
Thermal comfort factors, thermal comfort indices, effective temperature its use.
- **PRINCIPALS OF THERMAL DESIGN**
Thermal quantities, Heat exchange of buildings, periodic heat flow.
- **MEANS OF THERMAL CONTROL**
Mechanical contrast, structural control, Ventilation and air movement
- **LIGHT AND LIGHTING**
Light principals, day lighting, and prediction techniques
- **NOISE AND NOISE CONTRAL (INTRODUCTION)**
SOUND: Principles, Noise control, Noise problem in tropics

- **APPLICATION**
Shelter for Hot – dry climate, Shelter for Warm – Humid climate, Shelter for Composite climate, Shelter for Tropical upland climate
- **SUSTAINABILITY AND BUILDING DESIGN (CLIMATIC APPROACH)**
Five pillars of sustainability
 - (1) Environmental (ecological)
 - (2) Society (community)
 - (3) Economy (employment generation)
 - (4) Architecture
 - (5) Climate
- **GREEN BUILDING DESIGN (CLIMATIC APPROACH)**
 - (1) Site planning
 - (2) Energy efficiency
 - (3) Effective water management
 - (4) Waste management
 - (5) Indoor air quality
- **ENERGY EFFICIENCY IN BUILDING (CLIMATIC APPROACH)**
 - (1) Site planning (Plan form, ratio of built/open space, location of water bodies, landscaping)
 - (2) Building envelop and fenestration
 - (3) Solar passive techniques.
- **VERNACULAR ARCHITECTURE**
 - (1) Locally available material and construction techniques
 - (2) Culture and traditions
 - (3) Application to modern contemporary buildings

REFERENCE BOOK :

- **CLIMATIC DESIGN, MANUAL OF TROPICAL HOUSING AND BUILDING**
Koenigsberger, Ingersoll, Mayhaw, Szokolay

III) HOUSING

Human settlements and Housing concepts

Traditional Housing systems in different ages and different countries.

Housing in different climatically conditions, Effect of social and economical conditions on housing.

Building materials for housing ,respective use, fabrication and construction techniques.

Residential zoning as part of town planning , co-ordination with zones. Air pollution and Environmental protection.

Problems of mass housing in city.

Housing problems in India.

Housing problems I urban rural and industrial areas.

Co-operative and ownership Housing.

Role of promoters and builders in housing , Housing through private, semi-public, Public and industrial sectors.

present laws regulations regarding housing.

IV) CONSTRUCTION PROJECT MANAGEMENT-I

- Introduction to project management concept.
- History of management.
- Purpose, goal and objectives.
- Characteristics of projects.
- Different aspects of management.
- Introduction to the traditional management system.
 - Gantt's approach
 - Bar chart
- Introduction to work, study, time study & motion study.
- Concept of work –Break-Down schedule.
- Introduction to modern management concept.
- Concept of equipment management.
 - Construction tools & equipments
- Concept of material management.
 - Local and non local material
 - Investigation
 - Exploration
- Site layout for construction work (introductory).