# DEGREE OF BACHELOR OF ARCHITECTURE
## CREDIT SYSTEM
### 2006 – 2007

## SEMESTER - I

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## LEGEND
- L - Lecture, T - Tutorial, P - Practical/Studio/Laboratory, C - Credit

* - A Minimum of **E GRADE** is required in this subject for moving to the next higher semester
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#### LEGEND
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| Total  |      |                                                      | 13| - | 18| 22|

**LEGEND**

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### SEMESTER – VII

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Total: 16 - 16 24

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**LEGEND**  
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Note: The minimum prescribed credits for the award of B.Arch. Degree is 214.
AR101 – ARCHITECTURAL GRAPHICS - I


Projectional drawings of solids – right prism, right pyramid, right cylinder, right cone. Section lines in different angles & drawing of true section.

Introduction to methods of development; parallel line development, Radial line development and approximate development. Development of oblique solids.

Classification, line of intersection, line or generator method and section plane method.

Exercises related to intersection of simple solids such as prisms, pyramids, cylinders and cone.

Learning to observe, measure and draw to scale the plans, elevations of simple objects such as table, stool, desk and simple chair. Drawing elevations from a given plan drawing of object / objects.

TEXT BOOKS

REFERENCES

AR103 – WORLD ARCHITECTURE


Greek Architecture: Important construction techniques, Visual refinement (Optical correction), The Greek Orders, Brief description of the urban spaces, temples & other public buildings, Greek houses etc.. Eg: Agora, Acropolis, Parthenon, Erechtheion & Theatre at Epidaurus - all in Athens.

Roman Architecture: A brief account of materials, structural systems adopted and construction techniques - The Roman Orders - a short description of Roman urban spaces, temples, thermae, basilicas, theatres, amphitheatres, circuses & houses.


REFERENCES
AR105 – PRINCIPLES OF ARCHITECTURE – I

A brief description of architecture. Architecture as an occupation. Architecture compared to visual and temporal arts. Architecture and science and technology: Architecture and social science. The work of an architect compared to that of an artist, technologist and a designer/craftsman, scope of architecture.

The concept of beauty: Philosophical and psychological view. Subjective and objective aspect of it. Difference in the concept of beauty due to social, regional and temporal variations. Basic principles of visual perception. Form and its visual properties. Visual qualities of five Basic geometric forms. Additive forms and subtractive forms.

Indoor space, outdoor space, the concept of space in buildings. The relationship between man and space. Defining spaces and the degree of enclosure. Organisation of spaces, fenestration, and character of facade, enclosure and internal spaces. Articulation of form.

Proportion, its application and advantages in architecture. Application of order, golden section, modular with examples from history of architecture. Scale, its application in architecture and advantages. Application of human scale and generic scale in architecture.

Ordering principles, their need and application in architecture. Various ordering principles available and their application in buildings with examples from history of architecture. The use of colours in architecture, principles of colours and their application and advantages in buildings.

REFERENCES

AR107 – COMMUNICATIVE ENGLISH

Skimming, scanning, inferring, predicting and responding to content - Guessing the meaning of words from contexts - Note making and vocabulary extension.

Listening and understanding recorded, structured talks and classroom lectures - Comprehending the matter - understanding the links between different parts of speech - practice in note taking.

Features of an effective speech-Practice in speaking fluently - Dialogue practice- simple social exchanges - short extempore talks.

Effective sentences-cohesive paragraphs - clear and concise writing - Introduction to technical writing - Definition, Description, Instruction - Summary Writing practice.

Use of library - Role of Bibliography, Table of contents, Index etc. - use of Dictionary.

REFERENCES

AR109 – BASIC & ARCHITECTURAL DESIGN - I

Exercises in Points & Lines. Organisation of a large number of identical geometric shapes to obtain symmetrical and asymmetrical patterns. Family of shapes: developing various shapes from a given geometric shape - working out composition with such developed shapes.
Organising a large number of identical geometric shapes to express a given theme. Combining different geometric shapes and making a unit of bigger/larger shape and using many such units and expressing a design/pattern. To give emphasis in the expression of design - introducing value & colour.

To achieve focus and center of interest in design using different textural elements. Development of geometric pattern by division, subtraction, and addition or overlapping & to express them with the use of colours. Expressing a given theme in a geometric pattern.

Models / Sculptures to understand the evolution of three dimensional forms from two dimensional shapes. Additive model with similar forms and dissimilar forms made out of various mediums/materials. Subtractive model out of a given geometric form.

Models with linear members such as match sticks, reeds, etc. to understand geometric form and structure. Posters with a given theme. Collage with a given theme.

REFERENCES

AR111 - VISUAL ARTS - I

Line, shapes, form, space, colour, value & texture - exercises given to meet the elements of art.

Balance, unity, pattern, emphasis, movement, rhythm & contrast are introduced and exercises to explain this conditions.

Free hand drawing exercises to be introduced to develop visual perception & thinking by drawing still life objects, furniture, equipment.

Out door exercises like sketching - buildings, streets, rows of buildings and human figures.

Exercises in different mediums for drawing/sketching - to provide sufficient training and practice in using various qualities of pencils, pen & ink. (Pencil, Charcoal, Lumograph Pencil)

REFERENCES

AR113 – ENVIRONMENTAL SCIENCE


REFERENCES:
1. Miller T.G Jr., Environmental Sciences, Wadsworth Pub Co. (TB)
   House, Mumbai, 1196p.

AR102 – BUILDING CONSTRUCTION & MATERIALS - 1

The properties and uses of materials for simple construction such as mud, bamboo, timber, brick, stone, cement, lime, mortars, thatch tiles, asbestos, galvanised, iron and reinforced concrete.

Principles of construction of simple foundation for load bearing wall in stone and brick, Plinth fillings, steps.

Standard terms in brick and stone masonry. English, Flemish and Rat trap bond, types of stone walls, Composite wall and piers.

Principles of construction of various types of arches, lintels and brick jallies.

Panelled door in timber, flush doors, Joints in frame, styles, rails, panels, fixture and fastenings.

REFERENCES

AR104 – MECHANICS OF SOLIDS

Elasticity - stress & strain - Types of stresses - elastic limit - Hooke’s law - modulus of elasticity (Young's modulus)- deformation of a body due to force acting on it - stresses in composite bars - relation between elastic constants. Introduction to strain energy.


Beams & support conditions - types of supports, shear force and bending moment diagrams for simply supported beams, cantilevers, and overhanging beams with concentrated, uniformly distributed and uniformly varying loads.

Theory of simple bending - stress distribution at a cross section due to bending moment and shear force - moment of resistance - bending stresses in sections.

Statically determinate plane trusses, perfect and Imperfect frames - Deficient & Redundant frames - analytical methods for finding out the forces - method of joints.

TEXT BOOKS

REFERENCES
AR106 – HINDU & BUDDHIST ARCHITECTURE


REFERENCES

AR108 – PRINCIPLES OF ARCHITECTURE – II

Human activities. The need for appropriate space and environment for performing the activities efficiently. The impact of the built environment on the activity. The architects role in the creation of built environment. The relationship between form and function in nature and man made objects with examples.

Anthropometrics and the information available in standards & their application in architecture. Circulation: Pattern and space taken by circulation routes. Five different types of circulation pattern, path space relationship, access to buildings and types of entrances.

Climate: basic principles of climatic comfort, means of achieving them in buildings examples to be quoted from history of architecture. Site planning. The relationship between site and its surroundings. Site analysis and optimum use of site.


Culture: Relationship between the believes, values and aspirations of the user and his built environment - with examples from history of architecture. Personal space and territory. Styles of Architecture : Styles and trends in architecture and the factors that cause them.

REFERENCES

AR110 – ARCHITECTURAL GRAPHICS - II

Introduction to building terminology of various parts of a structure. Learning to observe, measure, record and draw to scale the plan of simple built environment, visualizing the section plane (vertical) and developing wall sections through openings.
Drawing elevations, sections & sectional elevations from a given plan drawing of adequate complexity.

Introduction to isometric and axonometric projections: Isometric scale- construction of isometric scale. Projection of plane figures, objects, methods of drawing isometric views. Exercises to draw axonometric views.

Introduction to Scioigraphy, Shadow of points, lines and shapes. Shades and shadows of simple 2D – Planes. Shades and shadows of cube, pyramid, prism, cone, cylindrical forms and combination of these forms.

Shades and Shadows of Complex built forms, Building Plans and Elevations.

TEXT BOOKS

REFERENCES

AR112 – BASIC & ARCHITECTURAL DESIGN - II

Exercises to understand the relationship between form and function.

Study and analysis of a few common household articles.

Study and design of a few utility sculptures: Exercises on the study and application of anthropometrics information.

Detail study of a single room with activity - space analysis, circulation pattern and furniture layout. Detail study of a small building with activity - space analysis, circulation pattern and furniture layout

Reorganisation of an existing space / room for a given activity (which is different from the existing use). Design of space meant for single or multiple function

REFERENCES

AR114 – VISUAL ARTS - II

Hue, Intensity & Value - other qualities of colours - Primary, Secondary & Complementary colours. Shades & Tints - Warm & Cool Colours.

The various functions of colour in creating Designs. Use of various colour harmonies in Design / Art.

Water colours - Transparent and Opaque (Tempera / Poster Colours), Pastels, Colour Pencils and Oils and their uses in expression of a composition / design.

All exercises to be conducted so as to develop observation and skill of expressing graphically - for understanding objects three dimensionally and to have effective visual thinking.

REFERENCES
AR201 – BUILDING CONSTRUCTION AND MATERIALS - II

Study the properties and characteristics of different materials used for roof of coverings R.C.C. and composite roof slab flooring materials timber and glass.

Joinery and detailing of various types of wooden doors fully glazed, partially glazed, sliding and folding door, etc. fully glazed window in timber fixing of glass, fixtures and fastenings.

Developmental reference to traditional trusses, different forms, lean-to, double lean-to collar, couple roof, fixing of Mangalore tiles, A.C. & G.I. sheets and gutters.

Flat roof construction in R.C.C. and composite materials, steels trusses and details of roof coverings and gutters.

Principles of flooring and terracing – floors – brick, stone, concrete and timber floors with timber floors with floor finishes.

REFERENCES

AR203 – STRUCTURAL ANALYSIS

Slope, curvature of the bending beam - relation between slope, deflection & radius of curvatures, simple problems to find out slope and deflection for different loads on beams - Double integration method, macaulay's method, moment area method, Conjugate beam method.

Proped cantilever beams - Reaction of prop. - Proped cantilever beams with different types of loads - sinking of the prop. Fixed beams - bending moment diagram for fixed beams - continuous beams - moment distribution method - sinking of the supports.

Moving loads and influence lines for statically determinate structures - Types of loads - combination of loads - Influence lines – Introduction.


Theory of columns - Types of end conditions of columns - Equivalent length of a column - Axial loads, combined bending & axial loads, Indian Standard Code recommendations - Euler's formula for long columns - Rankine's formula - Practical applications.

TEXT BOOKS

REFERENCES
AR205 – EUROPEAN ARCHITECTURE


REFERENCES

AR207 – ARCHITECTURAL GRAPHICS – III

Perspective projection concepts, Types of Perspective views, Picture plane, vanishing points, station point, horizon, cone of vision, line of vision, etc.

Perspective Projection of simple & complex geometrical forms.

Perspective projection of interior views of buildings using two point and one point perspective views. shades and shadows on the perspective view of interior of buildings.

Perspective projection of exterior views of buildings using two point and one point perspective views. shades and shadows on the perspective view of exterior of buildings.

Rendering of building exterior & interior perspective views using various techniques and medium.

TEXT BOOKS

REFERENCES

AR209 – SITE PLANNING

Definition of plot, site, land and region. Units of measurements. Reconnaissance and need for surveying – chain survey, compass survey, plane table & theodolite surveys – various equipments used – theory only

Importance of site analysis – factors involved. Accessibility, size and shape of sites. Confirming and non-conforming uses. Climate and topography, infrastructures available, sources of water supply and means of disposal system, architectural and visual aspects. Preparation of site analysis diagram

Architecture
Lie of the land, contours, watershed, surface drainage, ayacuts and irrigation lands.

Water, vegetation, soils, climate, land forms. Sewage disposal, irrigation systems and ecology. Preparation of maps of matrix analysis, composite analysis, locality plans, topographical analysis

Man-made structures, sensuous qualities, cultural data, images and data correlation. Vegetation, plant associations, types and distribution. Preparation of ecological profile of an area.

REFERENCES

AR211 – ARCHITECTURAL DESIGN - III

Developing designs for simple buildings like a small residence and medium sized buildings like community hall, health centre etc. in rural setting using locally available materials and appropriate construction techniques.

The designs should reflect the application of knowledge gained from courses on materials, structures & building construction and Theory of Architecture. Students should be able to communicate their ideas and design effectively with appropriate medium.

REFERENCES

AR213 - APPLIED VISUAL ARTS


Rendering - Rendering techniques for architectural drawings - building perspectives, interior & exteriors in various mediums like pencil, ink, pastels, water colours - opaque and transparent.

Photography – Learning photographic techniques for architectural studies, and learning basic dark room techniques & using camera to enhance visual perception for expressing volume, depth, positive and negative spaces.

Through photography to learn the art of composition, colour balance, aesthetic, light control, proportion, scaling and perspective.

REFERENCES
AR202 - BUILDING CONSTRUCTION & MATERIALS - III

The use and properties of glass, timber products, laminates, paints, terracotta, terrazo, ceramic and glazed tiles. Use of alternative details and specifications pertaining to the application/fixing of the same under various circumstances.


Definition of partition and the role of partitions in buildings. Different types of partitions, and their properties. Joinery details and constructional techniques involved in timber partitions, single and double skinned partitions, partially glazed partitions.

Wall finishes - external facing and veneers - stone facing, wall facing, wall tiling, and cement concrete facing - methods of construction and details pertaining to the same. Introduction to fixing devices in walls, ceilings and floors of solid construction.

REFERENCES

AR204 – CONCRETE TECHNOLOGY


TEXT BOOKS

AR206 - INDO - ISLAMIC ARCHITECTURE

Introduction to Islamic culture in India. Study on the salient features of Islam, Islamic culture compared to other religions - Muslim invasion of India - their establishment and physical expression, Islamic cultural settings in India, mosques compared to temples & churches, Tombs.

An outline idea of all provincial style Architectural characteristics of Jaunpur Mosques Eg. Jami Masjid of Jaunpur general characteristics of malva style & royal complex at Mandu.


REFERENCES

AR208 – MODEL MAKING

Materials for Model Making: Paper, Handmade paper / Handmade board, Cardboard, Mount boards, Balsa wood, soft wood, Plywood, cork sheets, plaster of paris, Perspex sheets, expanded polystyrene (Thermacole), Plastic sheets, etc.

Exercises in straight and curved cutting and preparation of simple geometrical objects. Exercises in preparing block models of groups of buildings including roads and landscaped open spaces.

Exercises in preparing detailed models of buildings from given set of drawings.

The subject teacher shall co-ordinate with the Architectural Design Studio in-charge while working out / Setting out the various exercises in model making.

AR210 – COMPUTER APPLICATIONS IN ARCHITECTURE - I

Introduction to personal computers – hardware / software – operating system – important DOS commands – Windows basics introduction to CAD packages.

Setting up & controlling the AutoCAD drawing environment – Creating & Editing Commands.

Organizing a drawing with layers – Advanced geometry editing – Creating & using Blocks – Inquiry Tools – AutoCAD Design Center.

Text annotation – Creating & Customizing Hatch patterns – Productive Dimensioning – Defining Text & Dimension Styles

Printing & plotting - creating a slide presentation – Drawing utilities – importing / exporting files.

REFERENCES
AR212 - CLIMATICALLY RESPONSIVE ARCHITECTURE


Air flow/wind movement around and through buildings. Natural ventilation. Mahoney Tables and their application. Climatic design recommendations for various climatic zones in India.


The sky as a source of light, Daylight factor, Lighting - Windows, Room proportions and other building elements, Daylight penetration, Calculation of daylight factor.

TEXT BOOK

REFERENCE

AR214 – ARCHITECTURAL DESIGN - IV

Projects – Developing designs and details for buildings, which are multi-room, single use, small span, multiple bay such as market, clinic, elementary school, art gallery and bank.

In addition to the design of a single or a small group of buildings, the students should be able to take into consideration the context in which the buildings are located and design the outdoor spaces appropriately.

Understanding design forces, significance of various factors like privacy, convenience, comfort, circulation pattern, furniture arrangement, texture, colour etc. in the built environment.

The design should reflect the application of knowledge gained from courses on materials, structures, construction and theory of architecture.

REFERENCES

AR301 – BUILDING CONSTRUCTION & MATERIALS - IV

Understanding the concepts of foundations, its principles & construction of different types of foundations, materials of construction & details of R.C.C. footings, Raft foundations, Pile foundations.

Purpose and functions of joints in Building construction, types of joints that occur in Buildings. Expansion joints in Brick walls and R.C.C. framed structures and its construction details and materials involved in the construction. Study of relevant IS codes.
Principles of temporary works such as shuttering, centering and scaffolding. Form work, Centering and scaffolding materials used for these temporary structures - timber & steel, literature survey on temporary structures.

Study of casement windows, steel casement windows side hung, its components, study of relevant IS codes specifications, steel ventilators - Top hung - Staggered.

Methods of fixing the steel window, Ventilator frames to walls, fixing of glass, fixtures & fastenings study of different types of putty & glass.

REFERENCES

AR303 – DESIGN OF R.C.C. STRUCTURES
Permissible stresses - limit states - characteristic strength and load - partial safety factor - deflection - modification factors.

Design principles of limit state methods - design of singly reinforced, doubly reinforced, T & L beams by LSD method with IS code specifications - design for shear.

One way and two way slabs for different edge conditions - continuous slabs - IS code specifications.

Columns - reduction factors - compression members and slender columns - Design of columns - columns with helical reinforcement IS code specifications. Staircases - types - design as per IS code specifications.

Footings - design of isolated footings - square, rectangular and circular footings - strip footings - combined footings.

TEXT BOOKS

REFERENCES

AR305 – CONTEMPORARY ARCHITECTURE – I

Developments in Germany: Deutschers work bund, principles and works of Peter Behrens, German expressionism and the works of Walter Gropius and Erich Mendelsohn. The Bauhaus Institute and its impact. Russian Architecture after revolution (1917 – 1934)

The futurism of Antonio Saint Elia, Outline idea of cubism and its impact on architecture, De stijil movement of Netherlands.

Rapid Urban growth in Europe and USA. The emergence of International style of architecture. Principles and works of Frank Lloyd Wright and Le Corbusier.
The styles and trends of architecture brought by Britishers to India and their evolution. The impact of Hindu and Indo-Sarsanic style on the British architecture in India. The characteristics of British colonial architecture with examples form the works of Edwin Lutyen

**TEXT BOOKS**

**REFERENCES**

**AR307 – WATER SUPPLY & DRAINAGE**

Surface and underground sources of water supply, rate of demand, water requirement for various buildings, suitability of water for domestic and trade purposes, methods of distribution systems of supply of water, methods of layout of distribution pipes.

House service connections, systems of supply, storage tanks, water services to multistory buildings, design of pipelines, Materials etc., systems of hot water supply.

Sanitary appliances, Basic requirements of Drainage and Sanitation, Selection and Installation of Sanitary Appliances, Sanitary pipe work within the premises, Drainage system for multi storied buildings.

Individual disposal systems- cess pool, Septic tank etc., Public Drainage system – Types of system, Materials, details of Construction etc., Refuse disposal: - Refuse bins, Refuse chutes etc.

Storm water drainage : Roof drainage – Pitched roofs, flat roofs, Surface Water drainage, storm water drains. Rain water harvesting:- Rainwater harvesting techniques, methods of recharging ground water, construction details.

**REFERENCES**
4. “Hand Book on water Supply and Drainage (with special emphasis on plumbing)”, Bureau of Indian standards, New delhi.

**AR309 – COMPUTER APPLICATIONS IN ARCHITECTURE - II**

Attributes – understanding object linking and embedding – Importing objects into AutoCAD using OLE working with OLE objects.

Understanding 3D coordinate system - Using View ports – 3D drawing & Editing commands – Interactive Viewing in 3D.

Surfacing in 3D, working with advanced surfacing commands – Solid modeling – Advanced solid modeling commands – Editing Solids

Introduction to rendering in 3D – Rendering process – Enhancing digital images from CAD application using Adobe Photoshop, Paint Shop Pro & other graphic programs.
Creating command aliases – customizing AutoCAD toolbars – Adding a command to the cursor menu Introduction to AutoLISP

REFERENCES
1. Ron House "AutoCAD 2000"

AR311 – ARCHITECTURAL DESIGN - V

Projects emphasizing detailed studies and drawings of one or more of the following aspects - space analysis, climatic consideration, services and environmental issues, and site planning.

Analytical work on various issues specific to the project introduced will be carried out for the development of link / connection between studio work and lecture courses. A high standard of graphical representation and verbal skills are expected from the students to present their design ideas.

Projects to include buildings with single or multi-use, multi-span & multiple activities such as Library, Institutional buildings (eg. High School), Shopping Center, Nursing Home & Apartments etc.

Display of competence in the application of knowledge gained from the following will be an essential requirement for all the design projects:


REFERENCES

AR302 – BUILDING CONSTRUCTION & MATERIALS - V

Properties of aluminium and its uses in buildings, aluminium extrusions, aluminium doors and windows fixing details using extruded sections. Fixing details of neoprene rubber beading, glass panels, fixtures and fastenings.

Study of various types of Aluminum partitions, its extrusions & details of components for partitions, Different types of aluminum panels for partitions, cladding component for various structures, aluminum grill modules, roofing of industrial buildings.

Suspended ceilings and false ceiling using aluminum sections, construction details for providing thermal insulation and insulation of cold storages and study of insulation materials like glass wool, insulating boards, gypsum boards, plaster of paris, and various kinds of perforated boards.

Concrete shell roofs of various types and folded plates construction techniques, - its strength and durability. Study on different forms & shapes of shell structures - its construction details and materials.

Fixing details of sound absorbing materials, its properties and uses, Study of relevant IS codes, Study of damp-proofing materials like Bitumen felts, etc. Relevant construction chemicals for W.P.C. & O.P.C. Study of construction chemical products.

REFERENCES
AR304 – ADVANCED STRUCTURES

Definition - Principles of prestressing - Pretensioning and post- tensioning - materials of prestressing - systems of prestressing - applications and uses - losses of prestressed concrete members – Approximate design of simple prestressed beams.

Multistoried building frames – Substitute frame analysis for gravity loads – Frames with horizontal loads – Analysis by portal & cantilever methods.

Definitions - various forms & classification of shells - Advantages and disadvantages - Folded plate roofs – Applications – Types of folded plates – Structural action of plates – Introduction to flat slabs and grid systems.


Introduction – Properties of Indian standard rolled steel sections – Types of loads – Permissible stresses in tension, compression and shear as per IS code.

TEXT BOOKS
2. Ramamruthan "Prestressed Concrete" Dhanpat Rai & Sons, New Delhi, 1996.

REFERENCES

AR306 – CONTEMPORARY ARCHITECTURE – II

Principles and works of Mies Van der Rohe, Louis Khan, Paul Rudolf and Kenzo Tange. The factors that contributed to their style of Architecture and their impact.

Crities of modern movement: Roberty Ventury, Christopher Alexander, Aldo Rossi and Jane Jacob. Emergence of later trends in modern architecture.

Brutalism, Archigram, Metabolism in architecture, Deconstruction in architecture and the emergence of regionalistic architecture.

The impact of International style of architecture in India, Early public buildings such as vigyan Bhawan Supreme Court building etc. The works of Le corbusier and Louis Kahn in India with examples. Their impact on architecture of fifties and sixties

The trend in Indian architecture after 1970 Principles and works of the following architects: Balakrishna Doshi, Charles Correa, Anant Raje and Laurie Baker with suitable examples.

TEXT BOOKS

REFERENCES
AR308 - ARTIFICIAL LIGHTING AND ELECTRICAL SERVICES


Design of general lighting schemes. Study of lighting systems used in different types of buildings. Preparation of lighting layout for different types of spaces / buildings.

Supplementary artificial lighting for buildings. Outdoor lighting, Flood lighting and lighting of thoroughfares.

Principles of electrical installation in buildings. Distribution, Circuits and elements of building wiring systems. Safety methods and measures to be adopted, study of relevant I.S. Codes.

Electrical load estimation, branch circuit design and electrical wiring design for different types of buildings.

TEXT BOOK

REFERENCES

AR310 – LANDSCAPE ARCHITECTURE


Introduction to major and minor landscape elements. Role of landscape elements in landscape design Plant material - Characteristic features. Introduction to planting design. Basic principles and elements of urban landscape. Introduction to street furniture.

Modification of site topography, grading, methods of estimating earth volumes / Layout of drainage & other utilities / Layout of roads & pedestrian paths / Materials & construction of paving / Creation & maintenance of water bodies / Selection of plant materials & their care, method of planting.

Basic principles of landscape design: factors to be considered, components involved and study of contemporary landscape architecture.

Japanese gardens: History, development, features elements and types of Japanese gardens.
Mughal gardens of India: History, influences, development features and elements of Mughal gardens.

REFERENCES
AR312 – ARCHITECTURAL DESIGN - VI

Projects – Projects will emphasis on physical context and the exploration of an architectural vocabulary for given situations.

Technology to be integrated in the design process. To consider aspects such as external detailing, interior design, use of materials and arrive at a coherent language for the building. Special study offers an opportunity to students to research, organise and produce an extended piece of written and graphical work.

Projects to include buildings or building complexes with single or multi - use public activities, Multistoreyed type in sub-urban/urban settlement such as Courts, College, commercial complex, Hospitals etc.

Display of competence in the application of knowledge gained from the following will be an essential requirement for all the design projects:


REFERENCES

AR401 - PROFESSIONAL TRAINING

The students are required to undergo Practical Training in a qualified, registered and competent Architect's Office. Students will be trained in the various practical aspects of Architecture, Construction & Professional practice.

Maintenance of personal diary, recording important observations, architectural detail, technical data, site visit particulars, presentation of drawings and reports done during the training period are the essential submission requirements. Marks will be awarded on the basis of student's monthly progress reports, work diary, drawings & reports done during the training period and the Architect's certificate.

AR402 – BUILDING CONSTRUCTION & MATERIALS - VI

Modular Co-ordination Module - basic module - multimodules - horizontal & vertical multimodules and submodules. Modular space grid. Modular dimensioning and modular drawing.


Space structures. Skeleton frame works (space frames) - single layer grids (two way, three way & four way) and double layer grids (lattice grids & true space grids). Offset grids and differential grids.


REFERENCES
AR404 – BUILDING STRUCTURAL SYSTEMS


Types of trusses for different spans – Materials used – Load distributions– IS Code specifications – Types of connections.

Introduction to the effect of earthquake on structures – Basic principles of construction and materials used – Code recommendations.

Types of building structural elements – Load calculations for different structural elements – Load distribution methods – Code recommendations.

Structural System Design – Fixing up of structural elements for the given plan – sizes and positions of the same – use of modular coordination – exercises with different building plans.

REFERENCES

AR406 – ARCHITECTURAL ACOUSTICS


Acoustical design of Auditoriums - adequate loudness, uniform distribution of sound energy, optimum reverberation time & elimination of acoustical defects. Methods of raking the auditorium floor and the balcony. Acoustical Design of seminar rooms, Conference halls, Cinema Theatres etc.


Sources of outdoor noise - Traffic noise - air traffic, rail traffic, road traffic and sea shore & inland water traffic. Planning & Design against Outdoor Noise - for air traffic, road traffic and rail traffic.

REFERENCES

AR408 - ESTIMATION & SPECIFICATION

Introduction, Main items of work, Importance of specification, Types of specifications - General and detailed specifications - Method of preparation of specifications.

Introduction, Types of Estimate, Detailed Estimate - Units of Measurements, Details of measurement and calculation of quantities of various items of work, Methods of Building Estimate - separate or individual wall method, Centre line method.
Analysis of rates for main items of work in buildings, considering current market rates for building materials, labour wages, plants and tools, transportation, handling, storage and contractor's profit.

Preparation of Detailed estimate (Details of Measurements and Calculation of quantities & Abstract of Estimated cost) for different types of buildings including R.C.C. framed buildings.

Cost price and value. Factors controlling the cost of Urban real properties, Valuation, Depreciation, Rent and its implications.

**TEXT BOOKS**

**AR410 - HUMAN SETTLEMENT SCIENCE - I**


Activity pattern and landuse, Traffic and road network, Density of population. Central Business District of a city. Urban nodes, fringe area and suburbs. The problem caused due to this including slums. Internal spatial structure: Concentric theory, Sector theory, Multi nuclei theory, Inverse concentric theory.

Pattern of settlements in a region and their major function. The relationship between geographic characteristics of a region, economic activity and culture of the inhabitants Basic principles of regional planning. Satellite towns.


Planning principles of: Ebenezer Howard - Garden city movement, Patrick Geddes, Dr.C.A.Doxiates, LeCorbusier, Soria Y Mata - Linear city Clarence, A. Perry - The neighbourhood concept.

**REFERENCES**

**AR412 – AIR CONDITIONING & MECHANICAL SERVICES**


Unit type equipment: (i) room A.C. & (ii) split A.C.: Package Units: (i) fully self contained (factory made) & (ii) split type units: Central DX Plants and Central Chilled Water Plants. Schematic details of various systems. Comparison of various systems. Space data of A.C. equipment rooms.


Causes of fire, Mechanism of fire spread in buildings, classification of fire. Grades of fire hazard – Personal hazard, internal hazard & exposure hazard classification of building based on occupancy. High temperature effects and combustibility of building materials and structure. Fire resistance of buildings.
Passive and Active fire precautions: Site planning, Heat sensitive detectors, Fire alarm system, means of escape. Fire fighting installations: hose reel, internal hydrant system, CO₂ system, wet risers, etc.

REFERENCES

AR414 - ARCHITECTURAL DESIGN - VII

Projects introduced should provide opportunities to understand and learn how to solve the built environmental needs for multi-faceted public activities in an urban context. Examples of projects include air port, bus terminal, railway station, cinema complex, exhibition hall, indoor sports complex and campus planning. Design problems involving high density and/or large scale housing.

Complete set of Working Drawings are to be prepared for one of the Architectural Design Projects.

Display of competence in the application of knowledge gained from the following will be an essential requirement for all the design projects: Materials & Structures, Theory of Architecture, Environmental Science and Behavioural Science.

REFERENCES

AR501 - PROFESSIONAL PRACTICE I


Comprehensive Architectural services, Conditions of Agreement. Scope of work and schedule of services - as per the Council of Architecture. Standard Terms for Urban Design work – Scope of work, Schedule of services – Preliminary evaluation stage, Concept design stage, detailed design stage and Implementation stage.


TEXT BOOKS
AR503 – HUMAN SETTLEMENT SCIENCE – II

Industrial development, Regulation of land and allocation of resources. Professions in planning: Surveyor, Landscape architect, Economist, sociologist and Architect.

Planning process. Various stages of the planning process with relevant examples. Surveys in planning, Physical characteristics, utilities, population, employment and industry, Housing, commercial and transportation, land use.

Plans: Regional plan, Master plan, Zonal development plan, Structure plan and Transportation plan. Regional plan types and delineation of regions. Land use plan, local development plans and their components.


Development control: Issues, Aims, Form, and Contents. Planning Standards: and other standards such as sunlight, Noise, Parking etc. Planning in Pre and post-Independent India, British legacy. Major milestones in urban planning in post independent India.

REFERENCES:

AR505 - ARCHITECTURAL DESIGN - VIII

Design problems at urban or metropolitan scales and environment, multi-use complexes including functions such as residential, public services, industrial, commercial, transportation, cultural and civic.

The focus should essentially be on an urban design exercise with emphasis on design to suit the surrounding environment in relation to both traffic and planning control.

The design output should clearly indicate the application of theory of architecture, materials & structural systems, environmental sciences and behavioural sciences.

REFERENCES

AR507 – ENVIRONMENT AND BEHAVIOR

Introduction to the discipline environmental psychology, its importance in the field of architecture, understanding the principles of psychology, the roots and Edges of environmental psychology- Theories and approaches in Environmental Psychology.

Process of creativity, Visual and creative thinking. Types of thinking. Memory and built environment- theories on different types of memories, articulation of masses and spaces, sense and sensation modalities- language of architecture and its role in creativity.

Concept of personal spaces, personal space and human behavior. Personal space and environmental design. Concept of territoriality, territoriality and human behavior & territoriality and environmental design.


REFERENCES:

AR509 - URBAN DESIGN

Need for urban design. The scope and objectives of urban design. The relationship between Architecture, Urban Design and City Planning. Brief history of urban design.

Urban land use population density and transportation and their relationship between urban build and urban environment. The causes and consequences of chaotic and disorderly urban environment of today with special emphasis to CBD.

Visualisation of image of the city and its elements. Perception of urban environment: Kevin Lynch’s Principles.

Understanding the organisation and articulation of urban spaces. Urban spaces and urban activities. Elements of townscape.

Techniques of urban design. Urban renewal - the scope, need and procedure. Urban conservation.

REFERENCES

AR502 - PROFESSIONAL PRACTICE - II


**TEXT BOOKS**


**AR504 - CONSTRUCTION MANAGEMENT**

Project management functions, Planning process. Project work breakdown, Modelling and analyzing networks and work scheduling process. Bar charts and Mile stone charts.

Network analysis fundamentals, CPM Network analysis procedure.

PERT - Network, Time estimates, Probability Distribution, Critical Path, Slack and Probability of achieving completion date.

Project cost analysis - Cost versus time, Contracting the Network etc.


Updating the network based on the project progress. Computer applications in construction management – using MS Projects software for project planning, scheduling and control.

**TEXT BOOKS**


**REFERENCES**


**AR506 - DISSERTATION**

Dissertation is seen as a culmination of the development of the student's knowledge, attitudes and skills over the course of studies of Architecture.

Student is expected to develop a subject of his or her own choice and to demonstrate the ability to use effectively the tools of independent investigations and judgement to evolve design criteria. The application of these may be original design or research oriented work.

Student must carry out the Dissertation under the supervision of the full-time faculty who will be the Guide / Dissertation Adviser. The overall Dissertation work will be monitored and co-ordinated by the Dissertation Committee of the Department of Architecture.
ELECTIVES

AR351 – VERNACULAR ARCHITECTURE

Vernacular architecture - introduction - factors contributed to its evolution with examples. The advantages of studying it and possible application today.

Few examples of vernacular architecture: at world level with factors that contributed to their evolution. Middle East, Africa, Far East. Tribal Settlements.

Vernacular architecture in India - Factors that contributed to its evolution. A few examples of tribal settlements.

Vernacular architecture in Tamilnadu - factors that contributed to its evolution. A few examples of Tribal settlements. Settlement planning strategies, Regional and occupation wise variation.

Influence on modern architecture, examples from the works of Frank Lloyd Wright, Green Broken & Hasan Fathy, Geoffery Bawa. Possible applications of vernacular architectural techniques today.

REFERENCES

AR353 – PAINTING

Emphasis on Colour Theory - application of different colour harmonies in painting. Learning different colour schemes - monochromatic, analogous & complementary colour schemes.

Painting still life objects in water colour, poster colour, pastels and in oils. To provide knowledge about local colour, tonal colour & atmospheric colour.

Knowledge about brush strokes and textures and effective use of different mediums

painting landscapes, buildings and highlighting the centre of interest and focal points. The need for abstraction and simplicity in paintings - suggestive way of painting.

Knowledge of different styles and different period in paintings and brief knowledge about different artists.

REFERENCES

AR352 – ADVANCED COMPUTER APPLICATIONS

Over view of Archi CAD / Setting up a project, Drawing and editing Wall / window / door / slab / roof etc. , 3D window , Navigation and Editing in the 3D window / Story Concept / section and elevation Settings/ libraries / photo rendering settings / Perspective views and fly-through / VR - concept

Introduction to 3D studio Max / Max user interface / Modeling / Applying Materials to geometry / Creating lights / Photo realistic Rendering / Simple Animations / Exporting files from Auto CAD to 3D studio Max

Introduction to Maya / Maya user interface / Modeling - modeling with primitives, NURBS modeling, polygon modeling / Rendering & Animation – hypershade, keyframing, animating the transform node / Dynamics – active and rigid bodies , adding an emitter with forces
Introduction to Adobe Photoshop, Adobe Premiere / Manipulation of digital image and digital video in the context of developing interactive multimedia

Introduction to virtual reality / Immersive visualization / WWW as a tool for the presentation of design information / Introduction to HTML / Overview of Web editors.

**AR354 – GRAPHIC DESIGN**


Tools of Graphic Expression. Styles of expression – an overview Illustrations - developing manual presentation skills Computer graphics - overview of current packages, their potentials & applications (packages to include 3DS Max, adobe series, Corel draw & flash)

Introduction to print – making process. Designing for printing. Lettering & Typography. Design of books, posters, promotional materials, stationery etc..

Developing trade marks & Corporate logos. Evolving a comprehensive corporate identity program Developing environmental graphics / signage Brand promotion – including packaging design & admaking for both the print & electronic media

Multimedia design presentation. E books / interior CD Roms. Animation Web design

**REFERENCES**


**AR452 - INTERIOR DESIGN**

Designing the size and form of interior spaces using user-activity analysis and anthropometrics. The effect of enclosure, fenestration, colour and lighting on perception of space. Application of scale, proportion to enhance the quality of space. Psychological effect of space.

Design for comfort - climatic comfort, natural and artificial lighting, airconditioning and acoustics, Services - airconditioning ducts, electrical wiring, water supply and removal of waste water. Elements of furnishing and surface treatment. their need and scope.


Role of furniture, evolution of furniture style, economic factors of furniture design and materials - its characteristics and application. Functional classification of space. Barrier free design.

Decorative materials for ceiling, walls, floors. Drapery and upholstery for openings and furniture respectively and matching them with overall colour scheme and composition. Sources and collection of information. Elements of Indoor plants and Indoor Landscape and use of water.

**REFERENCES**

AR454 – ENVIRONMENTAL CONTROL AND DESIGN WORKSHOP

To consolidate the theoretical inputs of subjects Climatically Responsive Architecture and Architectural Acoustics through application of the principles learnt from the subjects.

To expose the students to the Climatic, Lighting and Acoustic problems and issues in the Built Environment.

To effectively link the above mentioned subjects to the prevailing Climatic, Lighting and Acoustic issues in the Practice of Architectural Design.

The course intends to take up a small hypothetical or live project and attempts to work out solutions to the same. It may involve one or two project/s from Climatic or Lighting or Acoustic issues from the field.

The projects may also take up previous design problems of the students and consciously apply climatic principles to improve the quality of design.

AR551 – ENERGY EFFICIENT BUILDINGS


Factors that affect energy use in buildings - functional factors, environmental factors, envelope factors, air-conditioning systems factors, energy source factors and electrical systems factors. Fenestration design for optimal daylighting.


Modification of microclimate through landscape elements for energy conservation. Energy conservation through site selection, siting & orientation. Energy conservation through integration of building and site, site planning & site design.

AIMS OF EXPERIMENTS

1. To evaluate the Thermal Environment of a given space - use of the state-of-the-art equipment "Thermal Comfort Data Logger" along with the appropriate probes. Use of other types of data loggers for monitoring the various environmental parameters.
2. To determine the level of daylighting in a given room / space - using Lux Meters, data loggers and by using the software DAYLIGHT.
3. To prepare, calibrate and use Thermocouples for measurement of temperatures.
4. To evaluate the natural ventilation of a given room/space - using handheld anemometers, appropriate probes & data loggers and the software BREEZE.
5. Studying the Thermal Images of the building and obtaining the surface temperatures & energy flow data.

REFERENCES

AR553 - HOUSING

Qualitative and quantitative needs in the field of housing at the global level. Problem in the field of housing in developing countries (Third world countries) with special emphasis to India.

The peculiarities of urban housing land for urban housing - problems and possible solutions. The relationship between place of work and home.

Assessing the housing deficit of a region projecting the number of houses to be constructed therein, the future plan period, in order to remove deficit. Public sector and private sector housing, the need for housing policy and the role of HUDCO and State Housing Boards.

Slums - Definitions, Causes and consequences. Attempts made to solve the problem of slums.

Low cost housing: Ways and means of controlling the cost of houses. A few low cost construction techniques and material tried out in India and in developing countries. Current income and economically weaker sections.

REFERENCES

AR557 - ARCHITECTURE CRITICISM

Introduction and need for architecture criticism in the academy of architects. Criticism in day-to-day transaction. Architecture criticism a societal perspective.

Types and characteristics of Architectural criticism, Crux of normative criticism, interpretive criticism, Description criticism, Peer criticism,

Sub divisions of normative criticism. Interpretive criticism, Descriptive criticism, Understanding the essence and purpose of each type and its contemporary usage., Status quo of Architectural criticism.

Theory and grammar and practice of Architecture criticism and its positive and negative impact on the society. Survey of literature, design magazines, and journals, search for architecture criticism, its collection.

Identifying parameters for positive development in the society, educating people through criticism, understanding the people's need and catering to it, facilitating the people know their future and choices ends of criticism.

REFERENCES

AR559 - LANDSCAPE DESIGN

One design exercise where outdoor spaces will be designed and details of various elements & components of the design will be worked out. One study oriented work will be given which will involve study of the use of outdoor spaces by different user groups, landscape elements, street furniture, etc.

REFERENCE