Bachelor of Architecture
(B. Arch)
CURRICULUM & SYLLABUS
2012
### Semester - I

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Note: Tutorial classes can be conducted in any Theory course by the staff depending on the input required.
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Note:
Tutorial classes can be conducted in any Theory course by the staff depending on the input required.
### Semester – V

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Note: Tutorial classes can be conducted in any Theory course by the staff depending on the input required.
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* Training is undertaken by student in any one of the Architects office, Institutions, organizations headed by an Architect with minimum Five Years of Standing.

Semester – VIII

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Note: Tutorial classes can be conducted in any Theory course by the staff depending on the input required.

TOTAL CREDITS  210
# LIST OF ELECTIVES

## SIXTH SEMESTER (One Elective)

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## NINETH SEMESTER (Two Electives)

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1. MATRICES

2. EIGEN VALUE PROBLEMS

3. DIFFERENTIAL CALCULUS

4. THREE DIMENSIONAL ANALYTICAL GEOMETRY

5. ORDINARY DIFFERENTIAL EQUATIONS
Solutions of second and higher order linear Ordinary Differential Equations with constant coefficients – Cauchy’s and Legendre’s linear equations - Simultaneous first order linear equations with constant coefficients - Method of variation of parameters.

Total - 45 Pds

TEXT BOOKS

REFERENCES
1. **FOCUS ON LANGUAGE**
Parts of speech - Nominal compounds, noun phrases - Relative pronoun - Adjective - numerical, comparison and contrast, collocation and word combinations - Verb - Preposition and relative - Conjunction- connectives, expressions of purpose and function, cause and effect - Articles - adjectives - Sentence pattern - Tenses - Voice - Rewriting the sentences in impersonal/abbreviated passive grammatical structures - Concord - sentence level verb noun agreement - Gerund - rewriting infinitive into gerund - Imperative - rewriting imperative into recommendation using should - Word formation - varied grammatical function of the same word - Affixes - prefix and suffix, number prefix, negative prefix - Reported speech - Editing strategies - Conditional structures - real, unreal, no possibility, zero condition - Writing formal definition - Abbreviation and acronym - Idioms and phrases - Varieties of English - British versus American.

2. **LISTENING SKILLS**
Comprehension practice - Vocabulary development - Familiarity to varied types of spoken English and accents - Developing ability to understand audio and video media - Aiming at overcoming barriers to listening - Listening to documentaries, radio news broadcasts, TV news telecasts - Active listening in discussions and to lectures - Taking notes while listening - Extracting information from listening.

3. **SPEAKING SKILLS**
Oral practice - Role play - Interplay - Seminar - Transcoding visual into oral - Participating in short and longer conversation - Voice record, replay, correction of intonation, pronunciation and flow of speech - Phonemes - vowels, consonants, stress, rhythm, intonation - Group discussion - Participative learning - Acquiring proficiency, fluency, accuracy in oral communication - Speaking practice - Developing confidence - Extempore speech - Learning professional/conversational etiquette.

4. **READING SKILLS**
Vocabulary Extension - Improving vocabulary - Intensive reading - Reading Strategies - identifying topic sentence - guessing meaning from content - picking out specific information - professional reading - Reading practice - Predicting the content, critical and analytical reading - Reading articles in English newspapers, sports magazines, encyclopedias - Reading aloud, use of stress and intonation - Reading and comprehending technical materials - Cloze reading.

5. **WRITING SKILLS**
Discourse cohesion - Improving writing skills, avoiding common grammatical errors in academic writing - Extending the hints - Writing shorter sentences - Punctuation - Dialogue writing - Paragraph writing, problems and solutions, achieving coherence, transition words, sequence words - Essays of descriptive and argumentative - Writing instructions, use of imperatives - Jumbled sentences into sequential paragraph using linguistic clues - Report writing - technical reports, industry visit reports, events reports - Writing recommendations - Letter writing - formal and informal letters - job application and resume, permission for in-plant training, business correspondence letters, calling for quotation, placing order, lodging
complaint, persuasive letters - Assignment writing - Mini-project - Transcoding - transferring of information from text to pictorial/graphical representation and vice versa.

Total - 45 Pds

TEXT BOOK

REFERENCES
1. **PREHISTORIC AGE**
Concepts of culture and civilization - Palaeolithic and Neolithic culture - art forms and evolution of shelter - megaliths - agricultural revolution and its impact on culture and civilization.

2. **ANCIENT RIVER VALLEY CIVILIZATIONS: EGYPT**
Landscape and culture of Ancient Egypt - history, religious and funerary beliefs and practices - monumentality - tomb architecture: evolution of the pyramid from the mastaba - temple architecture: mortuary temples and cult temples. Great Pyramid of Cheops, Temple of Ammon Ra, Karnak - Temple of Abu Simbel (Rock Cut).

3. **ANCIENT RIVER VALLEY CIVILIZATIONS: MESOPOTAMIA**
Urbanization in the Fertile Crescent - Sumerian, Babylonian, Assyrian and Persian culture - evolution of city-states and their character - law and writing - theocracy and architecture - evolution of the ziggurat - palaces. Ziggurat of Ur, Urnammu - Palace of Sargon, Khorsabad - Palace at Persepolis

4. **CLASSICAL PERIOD: GREECE**
Landscape and culture of Greece - Minoan and Mycenaean cultures - Hellenic and Hellenistic cultures - Greek character - Greek polis and democracy - Greek city planning - architecture in the archaic and classic periods - Domestic architecture; Public Buildings: Agora, stoas, theaters, bouletrion and stadias - Greek temple: evolution and classification - Parthenon and Erechtheion - orders in architecture: Doric, Ionic, Corinthian - optical illusions in architecture.

5. **CLASSICAL PERIOD: ROME**

**TOTAL: 45 Pds**

**TEXT BOOKS**
4. G.K.Hiraskar, Great Ages of World Architecture, Dhanpat Rai & Sons, Delhi

**REFERENCES**
1. **SOILS**

2. **LIME**

3. **BAMBOO AND OTHER MATERIALS**

4. **STRAW BALES**
Straw as a building material – Basics, fire, moisture, insects and pests proof.

5. **ROCKS AND STONES**

**TEXTBOOKS**


**REFERENCE BOOKS**

1. FREE HAND DRAWING
Free hand sketching in Bird’s eye view, worms eye view & normal eye view for the following: City
scape, Sea scape, Wild scape, Sky scape, Street views and Heritage areas. Sketching human forms
(Knowledge of anatomy) expressions, graphic representations. Understanding depth, light & shade,
Sciography etc.

2. PAINTING
Understanding depth, light & Shade sciography etc with different media light water colours, postal
colours, water soluble colour pencil, pen and ink, oil pastels, dry crayons etc of campus building
designed by internationally famous architects.

3. MODEL MAKING
Study of linear forms – Creating wire sculptures, mobile sculptures, atrium sculptures, space
sculptures, geodesic domes etc. For outdoor and indoor architectural spaces using card board, form
boards, match sticks, steel wires, bamboo splits etc.

Study of planar forms – creating abstract sculptures out of mount board, metal foils or any other
planar material and also exploring the adoptability of these sculptures to architectural functions-Study
of paper forms-exploration of various folded paper forms and its possible use in architectural spaces.

Study of primary solids – Making mount board models of cubes, cuboids, square pyramid, cylinder
and cone

Study of solids and voids – creation of abstract and semi abstract symbolic sculptural forms and
spaces-Study of Fluid/Plastic forms- use of clay, plaster or any other moldable material and create
plastic and free flowing sculptural forms.

Study of textures – vitiating a cube by way of textures, texture applicability in murals and interior
decoration- Origami/Tessellations. Models using clay, plaster of Paris, wax, wire, match sticks etc.

4. PHOTOGRAPHY
Introduction to photography, exercises on presenting the created models using photography as a
technique.

TOTAL : 60 Pds

TEXT BOOK

REFERENCES
4. Arundell (Jan) Exploring sculpture, Mills and Boon, London/Charles, T. Brand Ford
Company, U.S.A.
ARC104 ARCHITECTURAL DRAWING – I

1. INTRODUCTION
Basic principles of drawing - scale conversion etc. – Practices in lettering.

2. GEOMETRICAL DRAWING

3. ISOMETRIC & AXONOMETRIC
Isometric View: Isometric Views of Objects, building components such as Steps, Canopy etc. Axonometric view: Axonometric view of objects, interior view of rooms etc.

4. MEASURED DRAWING
Understanding of different scales and their uses in practice - Drawings to scale. Examples of Measured drawing - Furniture, Class room plan, Doors, Windows, Entrance Gate, building etc.

5. SKETCHING

TOTAL : 60 Pds

TEXT BOOKS

REFERENCES
1. BASIC DESIGN -1
An introduction to various design elements such as line, shape, mass, colour etc including the theoretical aspects such as properties of line compositions, family of shapes, analysis of forms and colour theory - making two dimensional and three dimensional works using the basic design elements of art.
Understanding the principles of design such as Repetition, Harmony, Contrast, Dominance, Balance, Dynamism, etc., through design compositions, collage works, logos, murals, & Models. Conversion of intangible emotions like music, smell, sound into models.
Understanding the design as a next step continues to the evolutionary process of nature & from nature through Exercises involving natural forms and various approaches to art such as – Representation, Abstraction, and Non-Representational/ Non-Objective compositions. Understanding & creating awareness on environmental impacts on the nature by the daily use materials by exploring lateral thinking to use the recycling materials in to usable models and create a new product.

2. WORKSHOP
Use of hand tools and materials in carpentry, Glass models, masonry and model making involving basic design principles & exposure to different mediums & materials of model – making which involves making three dimensional sculptures involving the basic platonic solids and abstract sculptures using various techniques/ materials such as POP, wire/ matchstick, soap, clay etc.,

TOTAL : 210 Pds

REFERENCE BOOKS
SEASON - II

<table>
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<tr>
<th>ARC106</th>
<th>HISTORY OF ARCHITECTURE AND CULTURE II</th>
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1. ANCIENT INDIA I

2. BUDDHIST ARCHITECTURE

3. EVOLUTION OF HINDU TEMPLE ARCHITECTURE

4. TEMPLE ARCHITECTURE - SOUTHERN INDIA

5. TEMPLE ARCHITECTURE - NORTHERN INDIA
Temple architecture of Gujarat, Orissa, Madhyapradesh and Rajasthan - their salient features Lingaraja Temple, Bhuvaneswar - Sun temple, Konarak. - Somnatha temple, Gujarat, Suryakund, Modhera Khajuraho, Madhyapradesh - Dilwara temple, Mt. Abu.

**Total** - 45 Pds

TEXT BOOKS
1. Percy Brown, Indian Architecture (Buddhist and Hindu Period), Taraporevala and Sons, Bombay, 1983.
REFERENCES

<table>
<thead>
<tr>
<th>ARC107</th>
<th>MECHANICS OF STRUCTURES I</th>
<th>L</th>
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1. FORCES AND STRUCTURAL SYSTEMS
Fundamental principles and concepts - vector algebra, Newton’s laws, gravitation, force external and internal, transmissibility - velocity and acceleration - Couple- Moment about point and about axis - Varignon’s theorem - resultant of concurrent and non-concurrent coplanar forces - static equilibrium, free body diagram, reactions - Problem formulation concept in 2-D and 3-D statics.

2. TRUSSES AND FRAMES
Trusses - assumptions, rigid and non-rigid trusses- simple trusses in plane and space- analysis by method of joints and by method of sections- compound trusses-statically determinate, rigid, and completely constrained - analysis of frames.

3. PROPERTIES OF SECTION
Centroids of lines - areas, volumes, composite bodies - center of mass - Moment of Inertia - Section modules – Radius of gyration - Theorem of perpendicular axis - Theorem of parallel axis — area moment of Inertia - mass moment of inertia - principal moment of inertia.

4. DYNAMICS OF PARTICLES
Displacements, velocity and acceleration, their relationship - relative motion - Curvilinear motion - Newton’s law - work Energy equation of particles - impulse and momentum - impact of elastic bodies.

5. STRESS, STRAIN AND DEFORMATION IN SOLIDS
Tension, compression and shear stresses - Hooke’s law - Stress-strain diagram for mild steel - Ultimate stress and working stress - Elastic constants and relationships between them - Composite bars - Temperature stresses - Strain energy due to axial load - Stresses due to suddenly applied load and impact load.

Total - 45 pds
TEXT BOOK

REFERENCES

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<th>ARC108</th>
<th>BUILDING MATERIALS II</th>
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1. BRICKS

2. CLAY PRODUCTS
Manufacture of burnt clay bricks, paving bricks, hollow bricks – terracotta, porcelain, stoneware, earthenware and glazing and their uses. Roofing materials - Manufacture and uses of Mangalore tiles, pot tiles, pan tiles, case – studies.

3. TIMBER AND TIMBER PRODUCTS

4. TIMBER PRODUCTS
Market forms of timber, Industrial timber, - Veneers, Ply woods, Laminates, advantages and Blackboard uses - case studies.

5. PAINTING AND VARNISHING IN TIMBER
Composition, characteristics, preparation, painting different surfaces Enamels, Varnishing, Miscellaneous paints, defects, uses and cost of materials.

Total - 45 Pds.

TEXT BOOKS
REFERENCES

ARC109  THEORY OF ARCHITECTURE  L  P  C
3  0  3

1. INTRODUCTION TO ARCHITECTURE AND MEANING IN ARCHITECTURE
Definitions of Architecture- context for architecture as satisfying human needs- functional, aesthetic and psychological –architecture as a discipline- introducing the various functional aspects of architecture: site, structure, skin, services, use, circulation etc. Introduction to the factors that lend meaning to architecture- architectural expression and symbolism- character and style- movements, philosophies, ideologies and theories- meaning and interpretation of architecture.

2. ORDERING ELEMENTS AND PRINCIPLES OF ARCHITECTURE
Point, line, plane, form, shape, pattern, light, colour, texture – understanding the elements with respect to architecture Exercises involving the above. Detailed study of the visual and emotional effects of geometric forms and their derivatives. Sphere, cube, pyramid, cylinder and cone – Transformation of forms, Articulation of forms –mass-space/solid-void effects, articulation of edges, corners, surfaces. Case studies - Proportion, scale, balance, rhythm, axis, symmetry, hierarchy, datum, unity, harmony, dominance with respect to architecture.

3. ORGANISATION OF FORM AND SPACE
Spatial relationships: space within space, interlocking spaces, adjacent spaces, space linked by a common space - spatial organization: centralized, linear, radial, clustered, grid - form-space Relationships- Case studies.

4. CIRCULATION AND INTO TOTALITY
Circulation as organizing element: building approach, building entrance, configuration of the path, path space relationship, form of circulation space – Case studies.

5. EXPERIENCING ARCHITECTURE
Understanding architecture in totality in terms of the various aspects through first hand experience, analysis and interpretation using the case of a building, architectural style, work(s) of contemporary architects of International fame. Seminar.

Total - 45 pds

TEXT BOOKS
REFERENCES
1. Leland M.Roth - Understanding Architecture, its experience history and meaning, Craftsman house, 1994.

ARC110 CONSTRUCTION TECHNIQUES I

1. INTRODUCTION
Functional requirements of building and its components, introduction to concept of load bearing and framed structures. Exercises.

2. SOILS

3. BAMBOO

4. STRAW BALE

5. STONE

Total – 60 Pds
TEXT BOOKS

REFERENCES
1. Don A. Watson Construction Materials and Processes Megraw Hill 1972,
2. WB Mckey, Building construction vol 1,2, Longman UK 1981.

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<tr>
<th>ARC111</th>
<th>ARCHITECTURAL DRAWING II</th>
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1. **SCIIOGRAPHY**

2. **PERSPECTIVE: SCIENTIFIC METHOD**
Characteristic of perspective drawing. Concepts and methods of perspective drawing. One point and two point perspective of simple geometrical shapes like cube, prism, combination of shapes, simple one, two and three-point perspective of building interiors and exteriors. Adding of figures, trees furniture etc., shade and shadows and applying rendering techniques.

3. **PERSPECTIVE: SHORT CUT METHOD**
Introduction to short cut perspective method. Adding of figures, trees furniture etc., shade and shadows and applying rendering techniques.

4. **MEASURED DRAWING: HISTORIC DOCUMENT STUDY**
Combined study of historic document along with small building by using simple measuring tools like tapes, photograph etc.

5. **MEASURED DRAWING: DOCUMENTATION**
Documentation of a complete building of a special interest in terms of history, building construction, architectural excellence or technology.

**Total - 75 Pds**

TEXT BOOKS
REFERENCES

ARC181 ARCHITECTURAL DESIGN I

- Scale and Complexity: projects involving organization of single use spaces with simple movement, predominantly horizontal, as well as simple function public buildings of small scale; passive energy
- Areas of focus:
  - Architectural form and space
  - Aesthetic and psychological experience of form and space in terms of scale, colour, light, texture, etc.,
  - Function and need: user requirements, anthropometrics, space standards, circulation
  - image and symbolism
  - Typology/ project: bedroom, bathroom, kitchen, shop, exhibition pavilion, children’s environment, snack bar, residence, petrol bunk, fire station.

Total - 210 Pds

TEXT BOOKS
4. Ernst Neuferts Architects Data, Blackwell 2002

REFERENCES
SEMESTER - III

ARC201  HISTORY OF ARCHITECTURE AND CULTURE III  L  P  C

1. EARLY CHRISTIAN PERIOD

2. EARLY MEDIEVAL PERIOD

3. LATE MEDIEVAL PERIOD

4. RENAISSANCE AND MANNERIST

5. BAROQUE AND ROCOCO

Total – 45 Pds.

TEXT BOOKS:

REFERENCES:
4. Leland M Roth; Understanding Architecture: history and meaning; Craftsman House, 1994
1. CEMENT

2. PROPERTIES OF INGREDIENTS
Cement- Composition, strength, properties, manufacture, test for cement, types of cement. Sand- sources, impurities, classification, tests for bulking of sand, quality of sand – Grain and size- Alternatives. Coarse aggregate-Sources, shape, size, grading, sampling and analysis, impurities. Water- sources, requirements, water quality, tests, Mixing and proportion.

3. CEMENT CONCRETE AND ITS MANUFACTURE
Definition, properties, specification, proportioning, water-cement ratio, workability, curing, waterproofing, guniting, special concretes-manufacture, construction of formwork, placing, quality assurance testing, fabrication, incorporation of steel in concrete. Lightweight aggregates, aerated concrete, no-fines concrete, polymer concrete, RCC, prestressed concrete, fibre-reinforced concrete, ready-mixed concrete

4. SURFACE FINISHING AND FLOORING

5. PAINTS AND VARNISHES
Types of paints – Manufacture, Specifications, External, internal application – cement based, enamel based, distempers and plastic emulsions, - Colours and shades available – Special paints for corrosion, saliency, fire, Textural effects.

Total – 45 Pds.

TEXT BOOKS:
1. M.S.Shetty, Concrete Technology, S.Chand & Co.ltd,New Delhi,1986.

REFERENCES:
1. SHEAR FORCE AND BENDING MOMENT
Basic concepts Types of beams - Types of supports - Types of loads – shear force and bending moment diagrams for cantilever and simply supported beams subjected to various types of loadings – Over hanging simply Supported beams – Point of contraflexure. Relationship between load, shear force and bending moment.

2. STRESSES IN BEAMS
Theory of simple bending – Analysis for bending stresses - Bending stress distribution – Strength of sections – Beams of composite sections (Flitched beams) – Shearing stress distribution in beam sections.

3. DEFLECTION OF BEAMS
Governing differential equation - Slope and deflection at a point – Double Integration method and Macaulay’s method Moment area method - Conjugate beam method - Newmark’s method for simply supported and cantilever beams.

4. COLUMNS
Short and long columns – Concept of Elastic stability – Euler’s theory – Assumptions and Load carrying capacity of Columns with different end conditions – Concept of Effective length – Slenderness ratio – Limitations of Euler’s theory – Rankine’s formula – Eccentric loading – Core of a column section.

5. STATICALLY INDETERMINATE BEAMS
Static and Kinematic indeterminacy - Propped cantilever and fixed beams - Theorem of three moments - Analysis of continuous beams - Shear force and bending moment diagrams for continuous beams.

Total – 45 Pds

TEXT BOOKS

REFERENCES
1. BASICS
Definition and understanding of design – historical evolution – changing role of a designer – and classification involving scale, process, mode of production.

2. DESIGN METHODOLOGY:
History of design methodology movement – theories and philosophy of first generation and second generation design methodologists – analysis of design problems – case studies.

3. CREATIVE THINKING:

4. ARCHITECTURE AS CREATION AND DESIGN:

5. DESIGN APPLICATIONS:
Concept of pattern language – participatory approach – architecture as evolutionary and revolutionary process – review of case studies.

Total: 45 Pds

TEXT BOOKS

REFERENCES
1. NATURAL RESOURCES

2. ECOSYSTEM AND BIODIVERSITY
Concept - structure and function - energy flow in ecosystem - ecological succession - food chain - food web, ecological pyramids - biodiversity, definition, values, threats to biodiversity, conservation of biodiversity

3. ENVIRONMENTAL POLLUTION
Definition, causes, effects and control measures of air, water and soil pollution - thermal and nuclear pollution

4. MANAGEMENT OF ENVIRONMENTAL POLLUTION
Solid waste management - treatment methods adopted for municipal sewage and industrial effluent - hazardous and biomedical waste management

5. TOOLS FOR ENVIRONMENTAL MANAGEMENT
Environment impact assessment - precautionary and polluter pay principle - constitutional provision - (air, water and forest) - waste minimization techniques, cleaner technology options, bioremediation

TEXT BOOK

REFERENCES
1. BRICKS
Design and construction of various structural components using bricks – basics of brick bonding principles, types of bonding, foundations, load bearing walls, cavity walls, lintels, arches, corbels, piers, flooring etc. Exercises of the above and application of the design details of brick construction in single or (Ground+1) buildings – small house, community hall, snack bar etc. and understanding the same through case studies. Methods of construction of various non-structural building components such as partition walls, screens, compound walls, parapets, coping. Exercises through case studies and drawings.

2. CLAY PRODUCTS

3. TIMBER JOINERY, PARTITIONS, PANELLING, FALSE CEILING
Methods of construction using natural timber in joinery works including methods of fixing and options for finishing. Window types: paneled, pivoted, top hung, louvered, glazed, windows, French windows, corner windows, bay windows. Door types: ledge-braced, paneled, glazed, sliding, sliding/folding, louvered. Ventilators: top hung, bottom hung, pivoted, louvered, glazed. Hardware: For doors, windows and ventilators-Exercises involving the above through drawings and application for a single or (G+1) building with schedule of joinery. Timber Partitions, paneling, false ceiling. Methods of construction using man-made timber products such as ply woods, block boards, and laminated wood and gypsum products in fixed partitions, sliding/folding partitions, wall paneling, false ceiling. Exercises through drawings and case studies.

4. TIMBER STAIRCASES
Types of timber staircases. Methods of construction of timber staircases- basic principles and design details including detailing of handrail and baluster- Exercises through drawings.

5. TIMBER WALLS, FLOORS AND TRUSSES
Methods of construction using natural timber in various structural components of the building such as walls, floors, roof trusses (lean to couple roofs, collar roof, king post, queen post and other trusses) Exercises through drawings.

Quality assurance measures and testing procedures related to material, workmanship and performance for the above topics.

TOTAL: 60 Pds

TEXT BOOKS

REFERENCES
1. **Scale and Complexity**: Project involving organization of multiples of single unit space with predominantly horizontal movement as well as single use public buildings of small scale; passive energy.

Areas of focus:
- form-space relationships
- spatial organization
- behavioral aspects especially those relating to children
- site planning aspects
- appropriate materials and construction

Suggested projects: Residential buildings, Institutional buildings: Nursery or Primary schools, Schools for children with specific disabilities, Primary Health Center, Banks, Market, Library.

**TOTAL: 210 Pds**

**TEXT BOOKS:**

**REFERENCES**
SEMESTER - IV

<table>
<thead>
<tr>
<th>ARC207</th>
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1. INTRODUCTION TO ISLAMIC ARCHITECTURE
History of Islam: birth, spread and principles - Islamic architecture as rising from Islam as a socio-cultural and political phenomenon- evolution of building types in terms of forms and functions: mosque, tomb, minaret, madrasa, palace, caravanserai, market - character of Islamic architecture: principles, structure, materials and methods of construction, elements of decoration, colour, geometry, light.

2. ISLAMIC ARCHITECTURE IN INDIA & ARCHITECTURE OF THE DELHI SULTANATE
Advent of Islam into the Indian subcontinent and its impact including the change in the architectural scene- overview of development based on political history and the corresponding
Classification of architecture - Islamic architecture in India: sources and influences
Establishment of the Delhi Sultanate- evolution of architecture under the Slave, Khalji, Tughlaq, Sayyid and Lodhi Dynasties – tombs in Punjab- important examples for each period.

3. ISLAMIC ARCHITECTURE IN THE PROVINCES
Shift of power to the provinces and evolution of regional architecture with their own unique influences: geographic, cultural, political, etc., - Bengal, Gujarat, Jaunpur, Malwa, Kashmir, Deccan (Gulbarga, Bidar, Golconda and Bijapur) - important examples for each region.

4. MUGHAL ARCHITECTURE
Mughals in India- political and cultural history- synthesis of Hindu-Muslim culture, Sufi movement - evolution of architecture and outline of Mughal cities and gardens under the Mughal rulers: Babur, Humayun, Akbar, Jahangir, Shahjahan, Aurangzeb- important examples- decline of the Mughal empire.

5. CROSS-CULTURAL INFLUENCES
Cross cultural influences across India and secular architecture of the princely states: Oudh, Rajput, Sikh, Vijayanagara, Mysore, Madurai- important examples.

TOTAL: 45 Pds

TEXT BOOKS
4. Satish Grover, Islamic Architecture in India, CBS Pub, New Delhi

REFERENCES
4. Architecture in Medieval India: Forms, Conte

<table>
<thead>
<tr>
<th>ARC208</th>
<th>BUILDING MATERIALS - IV</th>
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1. IRON AND STEEL

2. NON – FERROUS METALS

3. APPLICATIONS IN CONSTRUCTION AND BUILDING

4. GLASS

5. PLASTICS :

TOTAL: 45 Pds

REQUIRED READING :
1. TIMBER STRUCTURES

2. STEEL STRUCTURES RIVETED AND WELDED JOINTS

3. TENSION MEMBERS

4. COMPRESSION MEMBERS
Introduction – various sections – built up section – Design of columns, Lacing, Battening and other connections.

5. STEEL BEAMS
Introduction – Behaviour of steel beams- section properties – design concepts-laterally supported and unsupported beams – Design of laterally supported beams.

TOTAL: 45 Pds

TEXT BOOKS:

REFERENCES

1. WATER SUPPLY SYSTEM
Water quality, purification and treatment – surface and ground water sources, water/quality nature of impurities, treatments - sedimentation, Rapid sand filters, pressure filters – sterilization and disinfection.
2. WATER DISTRIBUTION SYSTEM
Distribution systems in small towns, layouts – cold water lines, hot water lines, Design criteria for daily water requirements based on occupancy, various kinds of meters, Tank capacity - Pumping plant capacity, Testing of water hardness - calculation of water consumption for Residential/Multistoried buildings Piping systems/piping materials/plumbing fixtures/selection – Domestic hot water systems solar water heating systems, application and installation. Different methods of harvesting rain water from roofs and paved areas Waste water treatment – conventional, modern systems. Mandatory provision with respect to plumbing arrangements in apartment buildings.

3. SANITARY WASTE AND SEWERAGE SYSTEM

4. WASTE MANAGEMENT CONCEPT
Sewerage disposal - Primary, secondary treatment, activated sludge, intermittent and trickling sand filters, sewage treatment plant – layout for residential/commercial buildings - Solid waste disposal: Refuse disposal, collection, and conveyance disposal of town refuse. Sanitary land fills, incineration, vermicululture, aerobic digestion for compost, anaerobic digestion for energy and organic filler (Bio gas) and rural energy systems.

5. EQUIPMENTS FOR DISPOSAL
Space requirements, Configuration and Sizing of motors and deep well, centrifugal, submersible, reciprocating pumps and their location in building types.

TEXT BOOKS:

REFERENCES:
2. Manual on sewerage and sewerage treatment, CPHEEO – Ministry of works and housing, New Delhi, 1980
4. Renewable energy, basics and technology, supplement volume on integrated energy systems) Solar Agni systems, Sri Aurobindo Ashram, Pondicherry 605002 India
1. INTRODUCTION
Definition of plot, site, land and region, units of measurements, reconnaissance and need for surveying.

2. SITE SURVEYING
Chain survey and Triangulation – Instruments used method of survey and plotting into survey drawing, plain table, Compass and Theodolite Surveys, method, instruments used and application. Computation of area by geometrical figures and other methods. Marking plans, layout plans and centerline plans – Importance, procedure for making these drawings and dimensioning. Setting out the plan on site – Procedure and Precautions.

3. SITE ANALYSIS
Importance of site analysis; on site and off site factors; Analysis of natural, cultural and aesthetic factors – topography, hydrology, soils, vegetation, climate, surface drainage, accessibility, size and shape, infrastructures available - sources of water supply and means of disposal system, visual aspects; Preparation of site analysis diagram.
Site selection criteria for housing development, commercial and institutional projects.

4. DETAILED ANALYSIS AND TECHNIQUES
Context of the site. Introduction to existing master plans land use for cities, development control Rules. Preparation of maps of matrix analysis & composite analysis. Study of contours, slope analysis, grading process, grading criteria, functional and aesthetic considerations.

5. SITE PLANNING AND SITE LAYOUT PRINCIPLES
Organization of vehicular and pedestrian circulation, types of roads, hierarchy of roads, networks, road widths and parking, regulations. Turning radii & street intersections Study of microclimate; vegetation, landforms and water as modifiers of microclimate.

TOTAL: 45 Pds

TEXT BOOKS:

REFERENCES:

1. CONCRETE CONSTRUCTION
Construction of simple framed buildings using RCC Types of foundations (strip foundation, raft, isolated, combined, and continuous) construction details.
Construction details of RCC frames- beams, columns, slabs, precast frames. Construction details of apertures- concrete lintels, sunshades, arches, shading devices, screen walls, pergolas. - Construction principles and details for RCC slabs- one way slabs, 2-way slab, continuous, flat slab, waffle slab, coffer slab etc. - Construction details of concrete blocks-for walls, lintels, floors and roofs. Exercises through drawings and case studies.

2. WATER-PROOFING AND DAMP-PROOFING

3. DESIGN AND CONSTRUCTION METHODS
Staircases- basic principles, types of staircase- straight flight, dog-legged, quarter-turn, spiral, helical and other types. Support conditions for stairs and details of handrail, baluster etc. and finishes for stairs. - Exercises through case studies and drawings.

4. ADVANCED CONSTRUCTION SYSTEMS IN INDIA
Design and detailing of building materials and components developed by research organizations like CBRI, SERC, NBO, BMTPC. Special construction details for materials like brick, concrete, other materials developed by Building research organization. Exercises through case studies and drawings.

5. GLASS
Construction methods using glass for single storey all glass structures like pavilions, green houses, staircases. Construction methods using glass for single/multi-storey buildings including curtain walling details. Exercises through case studies and drawings.

Note: Quality assurance measures and testing procedures related to material, workmanship and performance for the above topics.

TOTAL: 60 Pds

TEXT BOOKS
1. M.S. Shetty, Concrete Technology, S.Chand & Co.ltd,New Delhi,1986.

REFERENCES
1. Alan Blanc, Stairs, Steps and Ramps, Butterworth, Heinemann Ltd., 1999
2. Francis D.K Ching Building Construction illustrated, John Willey & Sons, 2000
Scale and Complexity: Projects involving public and community oriented buildings - multi room, single use, small span, multiple storied, horizontal and vertical movement; active cum passive energy; comprehensive analysis of rural settlement in a hierarchical manner.

Area of focus:
- Rural settlements and architecture
- Community oriented design
- Simple public buildings (not more than Ground+ 2 floors)

Suggestive Typologies/ projects: Rural projects that involve studies and design at settlement and building level- noon meal centre, market, primary health centre; department store, higher Secondary school, campus students centre.

TEXT BOOKS;
4. Ernst Neuferts Architects Data, Blackwell 2002

REFERENCES
1. Richard P. Dober, Campus Planning
2. Kanvinde, Campus Planning in India

TOTAL: 210 Pds
SEMESTER - V

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<th>ARC301</th>
<th>HISTORY OF ARCHITECTURE AND CULTURE - V</th>
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1. LEADING TO A NEW ARCHITECTURE
Beginnings of modernity – Origin and development of Neo Classicism- Structural Neo classicists: Laugier, Soufflot, Schinkel, Labrouste - Romantic Neo classicists: Ledoux , Boulle, Durand, Jefferson- Industrialization and its impact- Urbanization in Europe and America- split of design education into architecture and engineering streams- Emergent new building / space types- Growing need for mass housing- Development of Industrial material and construction technologies- concrete, glass and steel- structural engineering, standardization-Industrial exhibitions- Chicago School and skyscraper development.

2. REVIEWING INDUSTRIALISATION
Opposition to industrial arts and production - Arts and Crafts in Europe and America: Morris, Webb- Art Nouveau: Horta, Van De Velde, Gaudi, Guimard, Mackintosh - Vienna secession: Hoffman, Olbrich- Wright’s early works

3. MODERN ARCHITECTURE: DEVELOPMENT AND INSTITUTIONALISATION
Adolf Loos and critique of ornamentation- Raumplan: Peter Behrens - Werkbund – Modern architecture and art - Expressionism: Mendelsohn, Taut, Polzeig- Futurism- Constructivism, Cubism - Suprematism- De-Stijl Bauhaus- Gropius, Meyer and Mies - CIAM I to X and its role in canonizing architecture- growth of International Style Ideas and works of Gropius, Le Corbusier, Aalto, Mies, later works of Wright

4. MODERN ARCHITECTURE: LATER DIRECTIONS
Post WW II developments and spread of international style – Later works of Corbusier: Brasilia, Unite- Works of later modernists: Louis Kahn, Paul Rudolph, Eero Saarinen

5. COLONIAL ARCHITECTURE IN INDIA
Colonialism and its impact- early colonial architecture: forts, bungalows, cantonments – Stylistic transformations: Neo- classicism, Gothic Revival and Indo Saracenic - PWD and institutionalization of architecture - Building of New Delhi showcasing imperial power.

Total: 45 PDS

TEXT BOOKS:

REFERENCES:
UNIT I - INNOVATIONS IN STEEL INDUSTRIES
Structural steel-definition and protection, fire protection of steel - Corrosion of ferrous metals (Causes, factors of corrosion and prevention).
Steel sheeting- types of sheeting. Stainless steel in building Industry - innovations , Design and construction parameters developed by INSDAG.

UNIT II – LIGHT ROOFING MATERIALS
Light-roofing materials - Recent trends in roofing materials like Corrugated GI Sheets, Pre-coated metal sheets, Polycarbonate sheeting, Teflon coated sheets, PTFE Steel alloys properties and uses

UNIT III - SPECIAL CONCRETE AND CONCRETING METHODS

UNIT IV - VENEERS AND LAMINATES
Basic characteristics, advantage, uses, types : Resin bonded plywood, laminated wood, insulating boards and other miscellaneous Boards.

UNIT V OTHER MATERIALS- Adhesives, Sealants and joint fillers
Relative movement within buildings, Asphalt & Bitumen: Natural and artificial products, forms of asphalt, emulsion, cement mastic bitumen felt, their properties and uses
Types of sealants- elasto-plastic, elastic sealants- joint design- fire resistant sealants- gaskets-adhesives, epoxy, bitumen, plastic pipe)
Rubber: Natural rubber, latex, coagulation, vulcanizing synthetic rubber.

REFERENCES:
4. M.S.Shetty, Concrete Technology, S.Chand & Co.ltd,New Delhi,1986.

Total: 45 PDS

2. PRINCIPLES OF LIMIT STATE DESIGN AND ULTIMATE STRENGTH OF R.C. SECTION: General aspects of Ultimate strength, Stress block parameters for limit state of collapse, Ultimate flexural strength of singly reinforced rectangular sections, Ultimate flexural strength of doubly reinforced rectangular sections, Ultimate flexural strength of flanged sections,

3. SHEAR, TORSION, BOND ANCHORAGE LENGTH AND SLABS: Ultimate shear strength of RC sections, Ultimate torsional strength of RC sections, Concepts of development length and bond stress design of simply supported slabs: General consideration of design of slabs, Rectangular Slabs spanning one direction, Rectangular slabs spanning in two directions for various boundary conditions.

4. COLUMNS: General aspects, effective length of column, loads on columns, slenderness ratio for columns, minimum eccentricity, design of short axially loaded columns, design of column subject to Combined axial load and uniaxial moment and biaxial moment using SP – 16 charts.

5. FOOTINGS: Introduction, load for footing, Design basis for limit state method, Design of wall footing, Design of isolated rectangular footing for axial load and uniaxial moment,

TEXT BOOKS:

1. Bhandopadya, Design of Concrete Structures, Prentice hall India, 2008
2. Gambir, M.L. Fundamentals of Reinforced Concrete Design

REFERENCES


1. ELECTRICAL AND ELECTRONIC SYSTEMS: ELECTRICAL WIRING SYSTEMS
Bus way, Bus Bars, lighting track and conduits (Aluminum metallic, non metallic) arrangements. Power handling, equipment, switch board, panel boards.
Lighting conductors: Purpose, materials, fixing, earthing arrangements.
Electronic and Communication systems

2. FUNDAMENTALS OF LIGHTING

3. ILLUMINATION AND LIGHTING
Electric light sources: brief description, characteristics and application of different types of lamps, methods of mounting and lighting control Luminaries classification/ - Lumen method for design – Room reflectance/ Glare –manufacturer’s data on luminaries / luminaries cost.

4. LIGHTING DESIGN: INSTALLATION AND APPLICATION INBUILDINGS

5. LIGHTING DESIGN: CONVEYING SYSTEMS
Basic design Principles, criteria for planning sizing, selection and layout of vertical distribution systems –lifts, Escalators and moving walkways) along with mechanical, dimensional details.
Elevators- types of elevators - design criteria, capacity, frequency, car size, speed, number and size of elevators, layout of banks of elevators, planning and locating service cores in buildings, types of elevators – pit, machine room details – NBC code Escalators and Conveyors parallel and crisis cross escalators, horizontal belt conveyors, horizontal moving walkways – design criteria, speed size, capacity, number. Detailing for comfort, convenience of users- special features for physically handicapped and elderly.

TOTAL : 45 PDS

TEXT BOOKS:

Conveying systems
1. Elevators, Escalators, Moving Walkways – Manufactures catalogues

REFERENCES;
Electrical Systems:
1. Handbook of building Engineers in metric systems, New Delhi 1968

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<tr>
<th>ARC305</th>
<th>ESTIMATION AND SPECIFICATION</th>
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1. SPECIFICATIONS
Technical specifications writing for items of works based on CPWD / MASTER FORMAT – CSI computer specifications Institute, US. For different types of buildings - for the purpose of calling tenders – different works like Civil / structure, Interior / fabrication, Electrical / plumbing etc.

2. ESTIMATION:
Types – Approximate & Detailed, for simple buildings & interiors
Brief Estimate - Plinth Area Method, budgeting & percentage Based.

Detailed estimate: Quantity take off (QTO) from REVIT & Items of work based estimate & tender preparation EXCEL.

3. RATE ANALYSIS:
Analysing Schedule of rates based on CPWD/ software aided for various items of works - materials / labour, Profit & overheads, Utilities - power / water / tools etc.

4. BUDGETING:

TOTAL : 45 PDS

TEXT BOOKS:

REFERENCES:
2. T.N.Building Practice, Vol.1, Civil, Govt. Publication.
4. P.W.D. Standard specifications, Govt. Publication
1. STEEL CONSTRUCTION

- Structural steel sections: construction methods, methods of connections, steel in foundations, column-beam connections.
- Steel roof trusses: Design and detailing. Types of trusses- north-light, butterfly truss, bowstring truss, space frames, portal frames, spacer decks- construction details of the above and the context in which they are used.
- Steel roof covering. Types of roof covering using steel, aluminium, asbestos, and other sheets.
- Steel staircases: basic principles, types of staircase- straight flight, dog-legged, spiral and other types. Support conditions for stairs and details of handrail, baluster etc. and finishes for stairs.

Exercises of the above through drawings and case studies.

2. STEEL DOORS, WINDOWS AND ROLLING SHUTTERS

- Types of doors, windows – operable, sliding etc., methods of construction using steel.
- Design and detailing of steel rolling shutter, collapsible gate, strong room, safe vault doors.

Exercises of the above through case studies and drawings.

3. ALUMINIUM DOORS AND WINDOWS

- Brief study of aluminium products- market forms of aluminium, aluminium extrusionssketches of the above.
- Aluminium doors and windows- design details. Doors- operable, sliding, pivoted, fixed.
- Windows- operable, sliding, fixed, louvered. Ventilators- top hung, bottom hung, pivoted, louvered.

Exercises of the above through case studies and drawings.

4. ALUMINIUM PARTITIONS, STAIRS, CURTAIN WALLING, ROOFING

- Partitions- fixed partitions, false ceiling, shopfront, using aluminium – construction methods and details.
- Aluminium staircase- design and construction details- including detailing of handrail and baluster.
- Aluminium roofing- Northlighting, glazing bar, roofing sheets - construction details including gutter details
- Aluminium Curtain walling- design and construction details.

Exercises of the above through case studies and drawings.

5. PLASTICS

- Primary plastic building products for walls, partitions and roofs - design and construction details.
- Secondary building products for windows, doors, rooflights, domes, and handrails- design and construction details.

Exercises of the above through case studies and drawings.

Quality assurance measures and testing procedures related to material, workmanship and performance for the above topics.

TOTAL: 75 PERIODS
TEXT BOOKS:

REFERENCES:
2. Alan Blanc, Stairs, Steps and Ramps, Butterworth, Heinemann Ltd., 1999

ARC381  ARRCHITECTURE DESIGN - IV  L  P  C  0 14 7

FOCUS: Multi use space and multi level planning- complex circulation– intensive site level planning, design of open spaces– massing of built forms.

SUGGESTIVE TYPOLOGIES/ PROJECTS: Commercial buildings like commercial/shopping centre, residential projects like group housing, apartments, Institutional projects like nursing homes, public buildings like auditoriums etc.

TOTAL: 210 PDS

REQUIRED READING

Reference Books:
1. National Building Code IST
2. Richard P. Dober, Campus Planning
3. Kanvinde, Campus Planning in India

SEMMESTER - VI

ARC307  HISTORY OF ARCHITECTURE AND CULTURE - VI  L  P  C  3 0 3

1. CRITIQUING MODERNISM
2. AFTER MODERNISM – I

3. AFTER MODERNISM – II

4. ALTERNATIVE PRACTICES AND IDEAS

5. POST INDEPENDENT ARCHITECTURE IN INDIA

TOTAL : 45 PDS

TEXT BOOKS:

REFERENCES:
7. Brian Brace Taylor, Geoffrey Bawa, Thames & Hudson

<table>
<thead>
<tr>
<th>ARC308</th>
<th>CLIMATE AND BUILT ENVIRONMENT</th>
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1. CLIMATE AND HUMAN COMFORT

2. DESIGN OF SOLAR SHADING DEVICES

43

3. HEAT FLOW THROUGH BUILDING ENVELOPE CONCEPTS
The transfer of heat through solids – Definitions – Conductivity, Resistivity, Specific heat, Conductance, Resistance and Thermal capacity – Surface resistance and air cavities– Air to air transmittance (U value) – Time lag and decrement.

4. IMPACT OF AIR MOVEMENT DUE TO NATURAL AND BUILT FORMS
The wind – The effects of topography on wind patterns – Air currents around the building – Air movement through the buildings – The use of fans – Thermally induced air currents – Stack effect, Venturi effect – Use of court yard.

5. CLIMATE AND DESIGN OF BUILDINGS
Design strategies in warm humid climates, hot humid climates, hot and dry climates and cold climates – Climate responsive design exercises.

TOTAL : 45 PDS

TEXT BOOKS:
1. O.H. Koenigsberger and others (1993), Manual of Tropical Housing and Building – Part I - Climate design, Orient Longman, Madras, India.

REFERENCES:

<table>
<thead>
<tr>
<th>ARC309</th>
<th>DESIGN OF STRUCTURES – III</th>
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1. LIMIT STATE DESIGN OF BEAMS
Concept of Elastic method, Ultimate load method and limit state method – Advantages of limit state method over other methods
Estimation of loads on beams – transfer of load from slab to beam – design of singly, doubly reinforced – design of simply supported beams – Design of continuous beams using codal coefficients – detailing – use of SP – 16 for the design.

2. LIMIT STATE DESIGN OF SLABS
Behavior of one way slab and two way– design of one way slab and two way slab by direct design method as per BIS code.

3. LIMIT STATE DESIGN OF COLUMNS

4. LIMIT STATE DESIGN OF FOUNDATION
Types of R.C.C. foundation – individual, combined, strip footing – Design of individual column footings – Rectangular sloped footing – design of combined footings.

5. R.C.C ARCHES

TOTAL : 45 PDS

TEXT BOOKS:

REFERENCES:
3. Dr. B.C. Punmia, Reinforced Concrete Structures, Vol, 1 & 2 Laxmi publication, Delhi, 1994.

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<th>ARC310</th>
<th>BUILDING SERVICES - III</th>
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1. INTRODUCTION TO AIR CONDITIONING
Introduction to A/C conditions - basic of refrigeration systems - components of refrigeration system - compressor, condenser - control devices, evaporator - filters cooling tower - Vapour compression cycle - Concepts of cooling load - calculation of cooling load – conductivity, transmission heat load - internal heat gain - concepts of zoning - room air distribution – types of outlets.

2. AIR CONDITIONING SYSTEMS AND ITS APPLICATIONS
Air conditioning system for small buildings – window types, evaporative cooler, packaged terminal units and through the wall units split system b) Systems for large building – Chilled water plant – All Air system, variable air volume, All water system Configuring/ sizing of mechanical equipment, equipment spaces and sizes for chiller plant, cooling tower, Fan room, Circulation Pumps, Pipes, ducts.
3. **FIRE SAFETY : DESIGN AND GENERAL GUIDELINES OF EGRESS**

4. **FIRE DETECTION AND FIRE FIGHTING INSTALLATION**
   Heat smoke detectors – sprinkler systems , Fire fighting pump and water requirements, storage – wet risers, Dry rises, Fire extinguishers & cabinets ,Fire protection system – CO2 & Halon system, Fire alarm system, snorkel ladder.
5. SPACE PLANNING & FACILITY MANAGEMENT
Space requirements – Space planning for various air conditioning components both indoor & out door units. space requirements for the different fire fighting equipments

TOTAL : 45 PDS

REFERENCES:
4. Design for fire safety (Andrew H Buchanan, John Wiley & Sons Ltd., New York)

ARC 311 ARCHITECTURAL DETAILING  L  P  C
1  3  3

1. INTRODUCTION TO CURRENT DEVELOPMENTS IN BUILDING INDUSTRY
Smart Materials: Characteristics, classification, properties, energy behaviour, intelligent environments. Recycled and ecological materials and energy saving materials: Straw-bale, card board, earth sheltered structures, recycled plastics, recycled tyres, paper-crete, sandbags, photovoltaic, solar collectors, light-pipes, wind catchers.

Exercises of the above through case studies and drawings.

2. DETAILING OF WALLS, ROOFS AND FLOORING FOR INSTITUTIONAL BUILDINGS
a) Detailing of a residence - selected spaces. b) Detailing of classrooms, library (in school, college) c) Detailing of lecture hall, auditorium, exhibition spaces

Exercises of the above through case studies and drawings.

3. DETAILING OF WALLS, ROOF, FLOORING FOR COMMERCIAL BUILDINGS
a) Detailing of shop-fronts, office spaces for commercial buildings including detailing of crucial elements such as entrance porches, main doors, staircases, show-windows, enclosed and air-conditioned atrium spaces.
b) Detailing of façade and selected spaces for apartment buildings, hotels and hostels.

Exercises of the above through case studies and drawings.

4. DETAILING OF BUILT-IN FURNITURE AND FITTINGS
Detailing of built-in elements like kitchen counters, cupboards, cabinets, toilets, toilet fitting.

Exercises of the above through case studies and drawings.

5. DETAILING OF EXTERIOR AND INTERIOR ARCHITECTURAL ELEMENTS
Detailing of architectural elements like indoor fountains, water walls, transparent floors, street furniture, hard and soft landscape, swimming pools, water bodies and courtyard spaces.
Detailing of interior architectural elements in existing buildings (e.g. Staircase in bookshops, restaurants, playpen in restaurants, reception areas in hotel lobbies etc.)

**Exercises of the above through case studies and drawings.**

**TEXT BOOKS:**
2. Richardson Dietruck, Big Idea and Small Building, Thames and Hudson, 2002

**REFERENCES:**
1. Susan Dawson, Architect’s Working Details(Volume 1-10), 2004
2. Swimming Pools, Lane Book Company, Menlo Park, California

**ARC382**

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<th>ARCHITECTURE DESIGN - V</th>
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**1.DESIGN STUDIO**

Small complexes - concept of multi planning and circulation analysis – grouping of buildings Involving services integration, Design and detailing for movement of physically handicapped and Elderly persons within and around buildings.

Examples: office buildings such as Bank corporate offices, BPO Centers, School of Management, film institute, Art Centre, Museums

**REFERENCES:**

**SEMMESTER - VII**

<table>
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<tr>
<th>ARC481</th>
<th>PRACTICAL TRAINING - I</th>
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**OBJECTIVES:**

- To facilitate an understanding of the evolution of an architectural project from design to execution.

- To enable an orientation that would include the process of development of conceptual ideas, presentation skills, involvement in office discussions, client meetings,
development of the concepts into working drawings, tendering procedure, site supervision during execution and coordination with the agencies involved in the construction process.

The Practical training program would be done in Architecture offices empanelled by the Institution and in firms registered under the Council of Architecture.

The progress of practical training shall be assessed internally through submission of log books supported by visual documents maintained by students every month along with the progress report from the employer/s of trainees.

The students would be evaluated based on the following criteria:

1. Adherence to time schedule, Discipline.
2. Ability to carry out the instructions on preparation of schematic drawings, presentation drawings, working drawings.
3. Ability to work as part of a team in an office.
4. Ability to participate in client meetings and discussions.
5. Involvement in supervision at project site.

At the end of the Internship program a portfolio of work done during the period of internship along with certification from the offices are to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.

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**OBJECTIVES:**

➢ To facilitate an understanding of the evolution of an architectural project from design to execution.

➢ To enable an orientation that would include the process of development of conceptual ideas, presentation skills, involvement in office discussions, client meetings, development of the concepts into working drawings, tendering procedure, site supervision during execution and coordination with the agencies involved in the construction process.

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The progress of practical training shall be assessed internally through submission of logbooks supported by visual documents maintained by students every month along with the progress report from the employer/s of trainees.

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1. Adherence to time schedule, Discipline.
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At the end of the training program a portfolio of work done during the period of training along with certification from the offices are to be submitted for evaluation by a viva voce examination. This will evaluate the understanding of the students about the drawings, detailing, materials, construction method and service integration and the knowledge gained during client meetings, consultant meetings and site visits.

**SEMESTER IX**

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<tr>
<th>ARC 501</th>
<th>HUMAN SETTLEMENT PLANNING</th>
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1. **INTRODUCTION**

2. **FORMS OF HUMAN SETTLEMENTS**
Structure and form of Human settlements – Linear, non-linear and circular – Combinations – reasons for development – advantages and disadvantages – case studies – factors influencing the growth and decay of human settlements.

3. **PLANNING CONCEPTS**
Planning concepts and their relevance to Indian Planning practice in respect of Ebenezer Howard – Garden city concepts and contents – Patrick Geddes – Conservative surgery – case study – C.A. Perry – Neighborhood concept Le Corbusier – concept and case studies

4. **URBAN PLANNING**
Scope and Content of Master plan – planning area, land use plan and Zoning regulations – zonal plan – need, linkage to master plan and land use plan – planned unit development (PUD) – need, applicability and DCR

5. **URBAN RENEWAL AND REGIONAL PLANNING**
Urban Renewal Plan – Meaning, Redevelopment, Rehabilitation and Conservation – Regional Plan – Area delineation, Land utilization plan, hierarchical system of settlements, their sizes and functions

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCES:

<table>
<thead>
<tr>
<th>ARC 502</th>
<th>SOCIOLOGY AND BUILDING ECONOMICS</th>
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1. Economics
Brief introduction of general economics through an introductory survey of concepts in micro and macro economics as applicable to building industry as follows. Micro Economics: The market, budget constraint, choice, demand and supply, uncertainties, equilibrium, technological constraints, profit maximization and cost minimization, monopoly and oligopoly, production welfare and public good. Macro Economics: GNP, NNP, demand and supply, inflation, interest rate, employment, saving and investment, monetary and fiscal systems and policies.

2. General discussions on various economic issues such as public versus private participation, equity, labour intensive versus capital intensive projects. General economics of the basic inputs into building construction- land, labour, capital and materials. Financing for projects, sources costs and utility in financing. Agencies and institutions directly and indirectly influencing economic aspects of project.

3. Sociology
Family as the basic unit of „Society”. Differences in lifestyles due to regional background, religion, caste, income group, etc. and their implication in Architectural design of the housing units. Sociological aspects in the history of the evolution of housing / shelter forms.

4. Sociological problems of interaction, isolation, privacy, accessibility, conflict, alienation related to the planning and design of different buildings with the references to the people of different age group/population groups.
5. Power structures in society – local self government, administrative structures – structure of decision making processes related to building projects at various government and private organizations levels.

TEXT BOOKS:
1. Amos Rappoport, House Form and Culture
11. Dewett, K.K. Modern Economic Theory, Shyam Lal Charitable trust, New Delhi, 2005

Dissertation offers an opportunity to look at architecture, history and design primarily through textual. However, like design, dissertation involves process of observation, reflection and abstraction. Students are encouraged to choose any topic of their interest. They may range from analyzing the works of an architect, history, typological changes, writing, design process and many more. The dissertation should state its objectives, followed by exhaustive documentation and arguments. The emphasis however, could vary according to the topic. The dissertation proposal in about 1500 words stating the topic issues to be explored and the scope must be submitted. After approval the work would be periodically reviewed. A well written report of a minimum 15,000 words must be submitted in the prescribed format, by the University. The student would subsequently make a presentation of his/her work and defend them.
AIM:
To explore the continuity and dynamics of urban form with a thrust on the interrelationships between the disciplines of architecture, urban design and town planning

OBJECTIVES:
➢ To understand the various components and aspects of the urban environment as well as their interrelationships
➢ To understand in specific components/issues such as public spaces, physical infrastructure, socio-cultural aspects- heritage, gender, class, dynamics of urban growth
➢ To understand people as users of the urban environment in various scales.
➢ To explore techniques of mapping and diagramming to understand the dynamic urban environment.
➢ To take design decisions in a comprehensive manner understanding their implications in the larger context.

CONTENT:
Scale and Complexity: projects involving the urban context and architecture in the urban context with a thrust on understanding interdependencies and formulating appropriate design directions.

Areas of focus/ issues:
➢ exploration of relationship between building and larger context
➢ contemporary processes in design
➢ appropriate architecture
➢ addressing issues in urban areas – transportation, sustainability, heritage, sprawl, place making, identity, collective memory
➢ Mixed use programming Typology/ project: those involving large scale urban interventions as well as large scale projects which have impact on the urban context-revitalization and renewal of urban fragments, evolving guidelines for heritage areas, adaptive reuse, urban waterfront development, transportation nodes, new communities, multi-use urban complexes.

TOTAL: 240 PERIODS

TEXT BOOKS:
2. Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999
3. I. Jawgeih, Life between Buildings, Using Public Space, Arkitektens Forleg 1987
4. Time Savers Standard for Urban Design
5. Urban design Futures

REFERENCES:
AIM:
To provide the students a general understanding of the architectural profession and the importance of ethics in professional practice.

OBJECTIVES:
- To give an introduction to the students about the architectural profession.
- To enable the students to grasp the elementary issues concerning professional practice.
- To teach the students about the role of professional and statutory bodies in the conduct of professional practice.
- To teach the students about the importance of code of conduct and ethics in professional practice.
- To expose the students some of the important legislation which have a bearing on the practice of architectural profession.

1. INTRODUCTION TO THE ARCHITECTURAL PROFESSION
Importance of Architectural Profession – Role of Architects in Society – Alternatives open on entering the profession – Registration of Architects – Architect’s office and its management (location, organization structure, responsibility towards employees, consultants and associates, elementary accounts, tax liabilities).

2. PROFESSIONAL ETHICS AND CODE OF CONDUCT
Role of Indian Institute of Architects – Architects Act 1972 (intent, objectives, provisions with regard to architectural practice) – Council of Architecture (role and functions) – Importance of ethics in professional practice (Council of Architecture guidelines) – Code of conduct for architects as prescribed by Council of Architecture, punitive action for professional misconduct of an architect.

3. ARCHITECT’S SERVICES & SCALE OF FEES
Mode of engaging an architect – Comprehensive services, partial services and specialized services – Scope of work of an architect – Schedule of services – Scale of fees (Council of Architecture norms) – Mode of payment – Terms and conditions of engagement.

4. ARCHITECTURAL COMPETITIONS

5. LEGAL ASPECTS & LEGISLATION

TOTAL: 45 PERIODS
TEXT BOOKS:

REFERENCES:

OBJECTIVE:
All the five years of architectural design culminate in the thesis Project to motivate students to involve in individual research and methodology. This is to train them in handling projects independently.

TOPICS OF STUDY
The main areas of study and research can include advanced architectural design, including contemporary design processes, urban design including urban-infill, rural settlements, environmental design, conservation and heritage precincts, landscape design, housing etc. However, the specific thrust should be architectural design of built environment.

METHOD OF SUBMISSION
The Thesis Project shall be submitted in the form of drawings, project report, models, slides and reports.

TOTAL: 510 PERIODS

TEXT BOOKS:
1. Linda Grant and David Wang, Architectural Research Methods, John Wiley Sons, 2002

REFERENCES:
2. Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999
1. HISTORY OF INTERIOR DECORATION & DESIGN
Introduction to traditional styles of decoration and the development of Interior Design trends in later part of the 20th century. Impact of different movements of architecture / design on interiors.

2. THEORY OF INTERIOR DESIGN
   A. INTERIOR SPACE  Definition of Geometric elements, transition of architectural & interior elements, shaping by structural / enclosure / environmental systems, Spatial forms & element relationships- floors, walls, ceiling, windows/ doors, stairs & ramps.
   

   C. DESIGN VOCABULARY Perception of Form, Shape, Color, Texture, Light, Proportion, Scale, Balance, Harmony, Unity & variety, Rhythm, Emphasis; relate to visual characteristics of objects & aesthetic quality of visual environments.

3. INTERIOR BUILDING ELEMENTS
Selection & manipulation of elements like Floors, Walls- forms/ articulation/ texture/ color, Ceilings- height/ scale/ forms/ lighting / acoustics, Windows- operation/ views/ day-lighting / natural ventilation / space planning, Doors- operations / space planning, Stairs & ramps,

4. INTERIOR BUILDING SYSTEMS
Design & integration of MEP systems with interior building spaces & elements- Mechanical systems like AC & fire suppression systems, Electrical lighting & switches, plumbing fittings & fixtures, furniture & interior landscaping

5. INTERIOR FINISH MATERIALS & CONSTRUCTION
Introduction to planning, design & application of materials for Residential spaces- Kitchen, toilet, bedroom & living rooms. Study of various types of materials for Flooring, walls, ceiling, doors & windows, stairs & ramps

Total : 45 PDS

TEXT BOOKS:

REFERENCES
2. Classic interior design, Henrietta Spencer-Churchill, CICO books, 2009
5. Building systems for interior designers, 2nd edition (E-BOOK), CORKY BINGELLI, 2009

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<thead>
<tr>
<th>ARC313</th>
<th>ENERGY EFFICIENT ARCHITECTURE</th>
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1. CLIMATE & SHELTER
Historic buildings – preindustrial and modern architecture – examples from different climatic zones.

2. SOLAR ENERGY & BUILDINGS

3. PASSIVE SOLAR HEATING

4. PASSIVE COOLING

5. SITE PLANNING AND DEVELOPMENTS

TOTAL : 45 PDS

TEXT BOOKS

REFERENCES:
1. INTRODUCTION TO VERNACULAR ARCHITECTURE

2. VERNACULAR ARCHITECTURE OF NORTHERN INDIA
Cultural aspects, symbolism, colour, art, materials of construction and construction techniques of Northern India
- Deserts of Rajasthan; Havelis of Rajasthan, Shekawathi Havelis
- Geographical regions of Kashmir; dwellings,
- Settlement planning of Jaipur
- Introduction to Planning features of forts in Jodhpur, Jaipur, Jaisalmer

3. VERNACULAR ARCHITECTURE OF KUTCH REGION
Wooden Houses and Mansions of Gujarat – Muslim Havelis and Hindu Havelis – Bohra Houses
Their primitive form, Materials, Ornamentation and Construction details
Banni Houses in Kutch regions - Materials and construction details

4. VERNACULAR ARCHITECTURE OF KERALA AND TAMILNADU
Introduction to Chettinad Architecture, Architectural significance of Chettinad houses and palaces in Chettinad regions. Agraharams of Tamil Nadu- settlement Planning and materials and construction details.

5. VERNACULAR ARCHITECTURE OF COLONIAL INDIA
Colonial influences on the Traditional House, Goa,
Change from Bangla & Bungalow, Bengal and Victorian Villas - Planning Principles, materials & methods of construction
House Typologies, settlement planning in Pondicherry & Cochin.

TOTAL : 45 PDS

TEXT BOOKS

REFERENCES

ARC315

<table>
<thead>
<tr>
<th>PRINCIPLES OF TRADITIONAL ARCHITECTURE – I</th>
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1. INTRODUCTION:
Definitions of traditional architecture of India, Western and Eastern countries – concept of existence and manifestation – planatory influence on earth.

2. CONCEPT OF SITE BUILDING RELATIONSHIP

3. TRADITIONAL CONCEPT OF MEASUREMENT
Units of measurements – human as a unit of measure – spatial and musical measurements – architectural applications of these measurements — examples from history.

4. INTERFACE OF TIME, VIBRATION AND RHYTHM
Theory of vibration and energy transfer – equation of time and space – manifestation in living organism – human beings – measurement of the energy – Kirlian energy of various forms- documentation of objects – filaments and streamers.

5. COSMOGRAM (CELESTIAL GRID) INFLUENCE ON SITE
Importance of orientation – building, site, layout and settlements – positive and negative energies – impact of carditional and ordinal directions – concept of energy grids – types and applications.

TOTAL- 45 PDS

TEXT BOOKS:

REFERENCES:
2. Dr. V. Ganapati Sthapati Vastu Purusha Mandalam, Dakshina Publishing House, Chennai, 1998
1. HISTORY OF STRUCTURAL DESIGN IN THE PRE INDUSTRIAL ERA

Development of monolithic and rock cut structures- trabeated construction-accurate construction vaults and flying buttresses- tents and masted structures and bridges through ancient and medieval history.

2. HISTORY OF STRUCTURAL DESIGN IN THE POST INDUSTRIAL PERIOD

Post Industrial modular construction of large span and suspension structures in steel and concrete- projects of Pier Nuigi Nervi, Maillart, Candella, Buckminster Fuller and Eero Saarinen.

3. CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY – I

The select case studies could include KCR Terminal at Hung Hom, Hong Kong, B3 Offices in Stockley Park, Sainsbury Centre for Visual Art, Renault Centre and Swindon UK by Normal Foster and Standsted Airport Terminal, London, UK by Fosters/Arup British Pavilion EXPO 1992, Seville, Spain and Waterloo International Terminal by Nicholas Grimshaw

4. CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY – II

The select case studies could include Inmos Microchip Factory, Centre Commercial St. Herbtain, PA Technology, Princeton and Fleetguard, Quimper UK by Richard Rogers Athens Olympic Stadium and Village, Bridges and Public Bus Stop in St. Gallen, Railway Station, Lyon, France and Stadelhofen Railway station, Zurich Schweiz by Santiago Calatrava Kansai International Airport, UNESCO Workshop, the Jean-Marie Tjibaou Cultural Center, Menil Museum, Thomson Optronics Factory, IBM Traveling Exhibition Pavilion, Columbus International Exposition, Genoa Italy and Lowara Officers, Montecchio Maggiore Italia by Reno Piano Building Workshop

5. SEMINAR

Seminar to present a study of architectural form and structural expression through select cases which will aid understanding of structural philosophy and analysis, building envelope and services and construction sequence.

TOTAL: 45 PERIODS

REFERENCES:
1. “Paper Arch” and Japan Pavilion at Expo 2000 in Hannover by Shigeru Ban
2. Greene King Draught Beer Dept and Schlumberger Cambridge Research Centre, UK by Michael Hopkins
3. Design Center, Linz, Austria and Two Family House in Pullach Thomas Herzog
4. King Abdul Aziz International Airport, Haj Terminal by SOM
5. Pavilion of the Future, Expo 92, Seville by Martorell, Bohigas & Mackay (MBM)
6. Daring Harbour Expo Center, Sydney Australia by P. COX
7. Olympic Archery Building by Enric Miralle & Carme Pinos
8. Eagle Rock House by Ian Ritchie
9. Le Grande Arche de La Defense by J O Spreckelsen

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<tr>
<th>ARC 511</th>
<th>INDUSTRIAL BUILDING SYSTEM</th>
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1. INTRODUCTION
Five year plans and thrust in housing – Issues in Urban Housing – use of modern building materials – application of modern technology – meaning of industrial building system.

2. APPLICATION OF INDUSTRIAL BUILDING SYSTEM
Feasibility of using industrial building system in Residential and Non-Residential buildings – manufacturing of building components – Technology requirements for industrial building system – use of Industrial building system as an option for disaster mitigation.

3. MODULAR CO-ORDINATION AND INDUSTRIALISED SYSTEM
Concept and definition of Modular dimensional discipline – Advantages and Limitations of modular principle – Components of residential buildings – precast elements.

4. PRE-FABRICATION SYSTEM
Objective and necessity – Off site on site prefabrication elements and construction joints – architectural and technical limitations.

5. PROCEDURES AND ORGANISATION
Equipments used – manufacturing processes – transportation of components – assembly and finishing – Structural, social and economic issues related to industrial building system.

REFERENCES:

TOTAL: 45 PERIODS

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<tr>
<th>ARC 512</th>
<th>ART APPRECIATION</th>
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1. INTRODUCTION TO ART
Definition of art - need for art – role of art – art reality, perception, representation- categories of art in terms of media and technique - appreciating art: form, content and context
2. VOCABULARY OF ART
Introducing the vocabulary of art constituted by elements (line, shape, form, space, colour, light, value, texture) and principles (unity, variety, harmony, rhythm, balance, proportion, emphasis, contrast, movement)

3. APPRECIATING ART – BEGINNINGS TO MODERN ART
Appreciating art through the study of art production in the West from the beginnings to the birth of modern art. Important works from the following art traditions will be studied and analysed in terms of their form, content and context Prehistoric Art - Egyptian and Mesopotamian art Greek and Roman art – Medieval art - Renaissance and Baroque art - Neoclassicism - Romanticism - Realism

4. APPRECIATING ART- MODERN ART AND AFTER
Appreciating art through the study of art production in the West over history from modern art till the present. Important works from the following art traditions will be studied and analysed in terms of their form, content and context : Context for new directions in art in the late 19th and early 20th century - Impressionism – post Impressionism – Fauvism- Expressionism- Cubism – Dadaism – Surrealism - abstract art – Futurism - Constructivism – Suprematism — De Stijl - Abstract Expressionism - Pop art – Op art- new forms and media of art

5. APPRECIATING ART- INDIAN ART
Appreciating art through the study of art production in India over history. Important works from the following art traditions will be studied and analysed in terms of their form, content and context Indus Valley Art - Hindu Buddhist and Jain art - Mughal and Rajput miniatures - art during the colonial period - modern Indian Art.

TOTAL: 45 PERIODS

TEXT BOOKS:
1. Fred, S. Kleiner, Gardener’s Art through Ages, Harcourt College Publishers, 2001
3. Edith Thomory- a History of Fine Arts in India and the West, Orient Longman Publisher’s Pvt. Ltd, New Delhi

REFERENCES:
3. E.H.Gombrich, Art and Illsuion, Phaidon, 2002
4. Indian Art since the early 1940s- A Search for Identity- Artsists Handicrafts Association of Cholamandal Artists Village, Madras,1974
5. A.K.Coomaraswamy, Fundamentals of Indian Art, Historical Research Documentation Programme, Jaipur, 1985
planning. Housing demand and supply – National Housing Policy – Housing agencies and their role in housing development – impact of traditional life style – Rural Housing, Public, private sector housing.

2. SOCIO-ECONOMIC ASPECTS
Social economic factors influencing housing affordability – equity in housing development sites and services/-slum upgradation community participation – Indira Awas Yojana Crime prevention, Health principles in Housing.

3. HOUSING STANDARDS

4. SITE PLANNING AND HOUSING DESIGN
4.a) Site Planning Selection of site for housing, consideration of physical characteristics of site, locational factors, orientation, climate, topography – Landscaping.
4.b) Housing design Traditional housing, row housing, cluster housing – apartments and highrise housing relating to Indian situations – case studies in India – integration all types of services, parking, incorporation of green sustainable practices – prefabration in housing.

5. HOUSING PROCESS
Various stages and tasks in project development – community participation and housing management – Environmental aspects and national calamities and disaster mitigation.

REFERENCES:
5. HUDCO publications – Housing for low income, sector model.

TOTAL: 45 PERIODS

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<tr>
<th>ARC 514</th>
<th>SUSTAINABLE PLANNING AND ARCHITECTURE</th>
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2. Eco system and food chain, natural cycles – Ecological foot print – Climate change and Sustainability.


5. Urban ecology, social and economic dimensions of sustainability, urban heat Island effects, sustainable communities – Case studies.

**TEXT BOOKS:**
2. HOK guide book to sustainable design by Mendler (S) & Odell (W) – John Willey and sons 2000.

**REFERENCES:**

### AR2077
**COMPUTER APPLICATIONS IN ARCHITECTURE**

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1. **VIDEO EDITING**
   Importing avis and mpegs, sequencing, cutting trimming, decrease and increase the speed of the movie, filters, transitions, output settings, saving the output.

2. **IMAGE EDITING & VECTOR EDITING**
   Using tools, transparency, layers, masking, effects, image adjustments, transform, text, history, gradient (fill types), cropping, image size, resolution, keyboard shortcuts, etc. image editing (pixel image types) using tools. Vector characters, bizer and grip editing, transform, fill types, text formatting, colour overlays, etc.

3. **PIXEL AND VECTOR ANIMATION**
   GIF animation and other various animation types, morphing etc. vector animation – using time line, understanding sequencing, using symbols (library), shape and motion Tweening

4. **WEB**
   Web presentations, understanding links & navigation, creating web pages, creating ‘folder tree’

5. **NON LINEAR PRESENTATION (FLASH & DIRECTOR)**
   Importing files using standard and linking options. Using scripts and behaviors, understanding stage, cast and time line, using cast library, Tweening, using SWF movie, presentation using voice over and presentation demos, creating auto run Cd-rooms
TOTAL: 60 PERIODS

TEXT BOOKS:

REFERENCES:

AR2078 CONSTRUCTION TECHNOLOGY L P C
3 0 3

1. GENERAL BUILDING REQUIREMENTS
Classification of buildings - Sites and Services - Requirements of parts of buildings.

2. CONSTRUCTION SYSTEMS
Planning - Cast in situ construction (ready mixed pumped etc.) Reinforced concrete and prestressed concrete constructions precast concrete and pre- fabrication system – Modular coordination – Structural schemes.

3. CONSTRUCTION PRACTICE
Manufacture, storage, transportation and erection of precast component forms, moulds and scaffoldings in construction - safety in erection and dismantling of constructions.

4. CONSTRUCTION EQUIPMENT
Uses of the following: Tractors, bulldozers, shovels draglings, cableways and belt conveyors, batching plants - Transit mixers and agitator trucks used for ready mix concrete pumps Guniting equipments - Air compressors - welding equipment - cranes and other lifting devices Choice of construction equipment for different types of works.

5. CONSTRUCTION MANAGEMENT
Overview of construction management topics including estimating, cost control, quality control, safety, productivity, value engineering, claims, and legal issues - planning and scheduling

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCES:
1. INTRODUCTION TO URBAN DESIGN
Components of urban space and their interdependencies - outline of issues/ aspects of urban space and articulation of need for urban design - scope and objectives of urban design as a discipline

2. HISTORIC URBAN FORM

3. THEORISING AND READING URBAN SPACE
Ideas of Imageability and townscape: Cullen, Lynch - place and genius loci - collective emory historic reading of the city and its artefacts: Rossi - social aspects of urban space: life on streets and between buildings, gender and class, Jane Jacobs, William Whyte

4. ISSUES OF URBAN SPACE
Understanding and interpreting of urban problems/ issues - place-making and identity, morphology: sprawl, generic form, incoherence, privatized public realm - effects/ role of real estate, transportation, zoning, globalisation - ideas of sustainability, heritage, conservation and renewal - contemporary approaches: idea of urban catalyst, transit metropolis, community participation.

5. BEST PRACTICE IN URBAN DESIGN
Contemporary case studies from developing and developed economies that offer design guidelines and solutions to address various issues/ aspects of urban space

TOTAL: 45 PERIODS

TEXT BOOKS:
2. Edmund Bacon, Design of Cities, Penguin, 1976
4. Michelle Provoost et al., Dutchtown, NAI Publishers, Rotterdam, 1999
5. Time Saver Standards for Urban Design
6. Kevin Lynch, Image of the City

REFERENCES:
4. Urban Design Futures
5. Geoffrey Broadbent, Emerging Concepts in Urban Space Design
1. Fundamentals of earthquakes
   a) Earth's structure, seismic waves, plate tectonics theory, origin of continents, seismic zones in India.
   b) Predictability, intensity and measurement of earthquake
   c) Basic terms- fault line, focus, epicentre, focal depth etc.

2. Site planning, performance of ground and buildings
   a) Historical experience, site selection and development
   b) Earthquake effects on ground, soil rupture, liquefaction, landslides.
   c) Behaviour of various types of building structures, equipments, lifelines, collapse patterns
   d) Behaviour of non-structural elements like services, fixtures in earthquake-prone zones

3. Seismic design codes and building configuration
   a) Seismic design code provisions – Introduction to Indian codes
   b) Building configuration- scale of building, size and horizontal and vertical plane, building proportions, symmetry of building- torsion, re-entrant corners, irregularities in buildings like short stories, short columns etc.

4. Various types of construction details
   a) Seismic design and detailing of non-engineered construction- masonry structures, wood structures, earthen structures.
   b) Seismic design and detailing of RC and steel buildings
   c) Design of non-structural elements- Architectural elements, water supply, drainage, electrical and mechanical components

5. Urban planning and design
   a) Vulnerability of existing buildings, facilities planning, fires after earthquake, socioeconomic impact after earthquakes.
   b) Architectural design assignment- Institutional masonry building with horizontal spread and height restriction, multi-storeyed RC framed apartment or commercial building.

TOTAL: 45 PERIODS

TEXT BOOKS:
1. Guidelines for earthquake resistant non-engineered construction, National Information centre of earthquake engineering (NICEE, IIT Kanpur, India)
2. C.V.R Murthy, Andrew Charlson. “Earthquake design concepts”, NICEE, IIT Kanpur India.

REFERENCES
1. Ian Davis (1987) Safe shelter within unsafe cities” Disaster vulnerability and rapid urbanisation, Open House International, UK
2. Socio-economic developmental record- Vol.12, No.1, Jan-Feb 2005
3. Learning from Practice- A review of Architectural design and construction experience after recent earthquakes- Joint USA-Italy workshop, Oct.18-23, 1992, Orvieto, Italy.
1. INTRODUCTION TO CONSERVATION

2. CONSERVATION IN INDIA
Museum conservation – monument conservation and the role of Archeological Survey of India – role of INTACH – Central and state government policies and legislations – inventories and projects- select case studies of sites such as Hampi, Golconda, Mahabalipuram -craft Issues of conservation

3. CONSERVATION PRACTICE
Listing of monuments- documentation of historic structures- assessing architectural character – historic structure report- guidelines for preservation, rehabilitation and adaptive re-use of historic structures- Case studies of Palaces in Rajasthan, Chettinad and Swamimalai dwellings, seismic retrofit and disabled access/ services additions to historic buildings-heritage site management

4. URBAN CONSERVATION
Over view of urban history of India and Tamil Nadu- understanding the character and issues of historic cities – select case studies of towns like Srirangaram, Kumbakonam and Kanchipuram - historic districts and heritage precincts.

5. CONSERVATION PLANNING
Conservation as a planning tool.- financial incentives and planning tools such as Transferable Development Right(TDR)-urban conservation and heritage tourism-case studies of sites like for Cochin, Pondichery French town.- conservation project management

TOTAL: 45 PERIODS

TEXT BOOKS:

REFERENCES:
1. B.K. Singh, State and Culture, Oxford, New Delhi
1. SAFETY REQUIREMENTS
Minimum safety requirements for a building, particularly for a high rise building as per the National Building Code.

2. FIRE ALARM SYSTEMS
Objectives of a Fire Alarm System, Essential components of a Fire Alarm System, Technology of detection, Type of Statutory Standards followed in direction, Explanation on the essential clauses, various types of technologies employed in the Fire Alarm System, basic knowledge on how a Fire Alarm System is designed and installed.

3. FIRE SUPPRESSION SYSTEMS
Objectives of a Fire Suppression System, Explanation on fire triangle, Essential components of a Fire Suppression System, different types of Fire Suppression Systems, Type of Statutory Standards followed in Suppression, Explanation on the essential clauses and basic knowledge on how a Fire Suppression System is designed and installed.

4. SECURITY SYSTEMS
Introduction to different types of Security Systems and why they are required. Introduction to Access Control, CCTV, Intruder Alarm and Perimeter protection Systems, Essential components of each system, various types of technologies employed in these Systems, basic knowledge on how they are designed and installed.

5. INTEGRATED BUILDING MANAGEMENT SYSTEM
The objectives of the Integrated Building Management System (IBMS), the list of utility, safety and security systems that are generally monitored and controlled through IBMS, the various components of IBMS, types of integration with the utility, safety and security systems and the basic knowledge on how they are designed and installed.

TOTAL: 45 PERIODS

TEXT BOOKS:
1. Building Automation Systems – A Practical Guide to selection and implementation – Author : Maurice Eyke
2. National Building Code of India 1983 (SP 7:1983 Part IV) – Published by Bureau of Indian Standards
3. IS 2189 – Selection, Installation and Maintenance of Automatic fire Detection and Alarm System – Code of Practice (3rd Revision) – Published by Bureau of Indian Standards.

REFERENCES:
1. The Principles and Practice of Closed Circuit Television – Author: Mike Constant and Peter Turnbull
3. Fire Suppression Detection System – Author : John L. Bryan
4. Design and Application of Security/Fire Alarm system – Author: John E. Traister.
5. CCTV Surveillance – Author: Herman Kruegle

**ARC 523  LANDSCAPE AND ECOLOGY**

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**1. INTRODUCTION**
Introduction to landscape architecture, ecology, ecological balance, landscape conservation, reclamation and landscaping of derelict lands, environmental impact assessment.

**2. ELEMENTS IN LANDSCAPE DESIGN**
Hard and soft landscape elements; Plant materials - classification, characteristics, use and application in landscape design; Water and Landform,

**3. GARDEN DESIGN**
Landscape and garden design in history - Japanese, Italian Renaissance and Moghul gardens in India, Study of notable examples, Spatial development in landscape design.

**4. SITE PLANNING**
Organisation of spaces - circulation, built form and open spaces, site planning and micro climate, site planning for neighbourhood parks, children’s play area and campus development.

**5. LANDSCAPING OF FUNCTIONAL AREAS**
Urban open spaces and principle of urban landscape; Street landscaping, landscape design for waterfront areas and functional areas in urban centers; green roofs

**TOTAL: 45 PERIODS**

**TEXT BOOKS:**

**REFERENCES:**