SYLLABUS PRESCRIBED FOR

FIVE YEAR DEGREE COURSE

BACHELOR OFARCHITECTURE

SEMESTER PATTERN

I & II SEMESTER

SEMESTER : FIRST

1SA1 BUILDING MATERIALS & CONSTRUCTION-I

Objective : The course will enable the learning in progression , starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: Introduction: General introduction of various components of building and material from foundation to roof. Study of types of soils and its load bearing capacity.

Unit II: Bricks and Clay products: Brief study on manufacturing process of bricks- its properties –suitability- types of bricks – decorative brick work and jail work.

Unit III: Mud as a building material – soil stabilization – use for walling and terracing.

Unit IV: Drawings of different types Brick bonds, end junctions, attached and detached piers, jointing and pointing. Brick foundations for wall and piers. Cavity walls & rat trap bond. DPC and its uses. Plinth filling details.

Types of arches in bricks.

Unit V: Stone: Classification of rocks- Building stones – their uses – physical properties – brief study of tests for Stone- deterioration – preservation of stone – various stone finishes – cutting and polishing of granites.

Unit Vi: Drawings of types of masonry – random rubble/Ashlar, etc. - cavity walls- flooring – copings, sills, lintels, corbels, Stone foundation for wall and piers. Types of arches in stones.

NOTE: Sessionals will be in the form of reports, drawings, and models. Construction site visits are essential for practical exposure.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.

1SA2 ARCHITECTURAL GRAPHICS-I

Objective: The objective of this course is to understand the graphic fundamentals of Architectural drawing.

Unit I: Introduction to drafting procedure, lines, lettering, Dimensioning, graphic codes and symbols.

Unit II: Construction of Architectural scales (plain scales, diagonal scale, isometric scale). Reduction and enlargement of drawings on different scales.

Unit III: Construction of basic and complex geometrical shapes and curves.

Unit IV: Principles and projection methods of orthographic projection (third angle projection).Orthographic projection of simple, complex solids and hollow object.

Unit V: Projection of straight lines, planes, solids, sections of solids and development of surfaces.

Unit VI: Introduction to Architectural plans, Elevations and Sections.

References:

1. Bhatt N.D. and Panchal V. M. Engineering Drawing,Charotar Publishing House, Gujrat,1996.
2. I. H. Morris, Geometrical Drawing for Art students-Orient Longman, Madras, 1982.

1SA3 HISTORY OFARCHITECTURE& CULTURE-I

Objective : Art and culture has supplemented architecture in the form of sculptures, paintings, murals art forms and designs. This course will enable the students to have a broad understanding of relationship between art , culture and architecture through various stages of history.

Unit I: Introduction to the course – Old Stone Age – the agricultural revolution – The New stone age- Development of shelter.

Unit II: River valley civilization and cultures – Indus, Tigris, Euphrates and Nile, its impact, Cultural and religious impact on Egyptian Architecture.

Unit III: Comprehensive survey of Indian and Western sculptures of different periods, thematic study of cultural influence.

Unit IV: Cave painting - Frescos and Murals of Ajanta, Bagh, Badami, Ellora, Hampi, etc; Mythological influence; Techniques and characteristics.

Unit V: Miniature painting – Indian and Islamic miniature paintings; Influence of changing period; Artist, subjects and techniques.

Unit VI: Impressionism/Expressionism/Cubism/Futurism/ Abstract Art. Famous works of contemporary artist, sculptors and muralist of India and abroad.

Sessional work :

Assignments and drawing on the above topics.

References:

1 Janson, H. W. History of Art, New York, 1978. .

2 Tomory Edith, A History of Fine Arts in India and the west; Orient Longman, 1995.

3 Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.

1SA4 COMPUTER GRAPHICS-I

Objective : The prime objective of this course is to introduce the fundamental concepts of computer systems; hardware and software and to develop basic skills in programming, Application of Information Technology tools and technical in Architecture.

Unit I : Introduction to computer

Technology of small computer system, computer terminology operation principles of P.C., introduction to application software, and graphic system, and use of printers, scanner, plotter, File ‘management, etc. Introduction to windows and its applications. Introduction to Microsoft, Office, word, excel. Introduction to Internet, using e-mail.

Unit II : Introduction to computer aided 2D drafting

Understanding the use of drawing tools, object editing, drawing objects, filling and setting drawing units, scales, limits that size and dimensioning, texting. Setting up of drawings of various simple architectural objects with complete text and dimensioning.

Unit III : Advance computer aided 2D Drafting

Advance command programming – transparent overlays hatching utilities, assigned colour and line type, use of multiline, style, block, symbol Library manipulation for accurate drawings, incorporating the above said utilities.

Sessional work :

Assignments and drawing on the above topics.

References:

1. V.Rajaraman, Principles of Computer Programming – Pretince Hall of India.
2. Byron S. Gottfried, Theory and problems of Programming with C.Schaum's outline series, Mcgraw Hill Publishing Co.
3. Auto CAD reference manual – Autodesk UNC, 1998
4. Auto CAD architectural users guide – Autodesk Inc. 1998
5. Sham Tickoo, Advance Technique in Auto CAD Re.14 – 1977
6. Sham Tickoo, Understanding Auto CAD – 14 (windows) – 1977

1SA5 ARCHITECTURAL COMMUNICATION SKILLS

Unit I : Comprehension Skills

1. Skimming for general ideas
2. Contextual vocabulary
3. Summarizing, note-making
4. Ability to answer factual, inference and personal response questions

Unit II : Writing Skills

1. Architectural reports, inspection reports
2. Paragraph developments

Unit III : Architectural Communications

1. Verbal and visual presentations on architectural terminology such as forum, sky-line, capital
2. Presenting architectural concepts with the help of texts, drawings, transparencies, slides, video, photographs,

   models etc.

Unit IV : Other forms of written communications

1. Job applications
2. Preparation of curriculum vitae, resume

Unit V : Public speaking and presentation skills

Non verbal communication - personal appearance, posture, gesture, facial expession, eye contact etc.

Methodology of conducting of meetings, conferences, seminars work shops and group discussions.

References Books :

1. Developing Communication Skills; Krishna Mohan, Meera Banerjee : Macmillan
2. English for Practical Purposes : Z.N.Patil, B.S.Walake, Ashok Thorat,

   Zeenat Merchant : Macmillan
3. Business Communication : V.K.Jain, Omprakash Biyani : S.Chand

   and Company

Sessional Work :

Assignments, reports, seminars and Computer-aided presentation on above topics.

1SA6 ARCHITECTURAL DESIGN -I

Objective The objective of the course is to provide an overview of the profession of Architecture and to develop a comprehensive understanding of Design fundamentals.

Introduction to Architecture

A brief summary of Architecture – its various definitions, aspects/ dimensions, approaches through different ages and factors affecting architecture of a region.

1) Introduction to elements of Design like point, line, plane, solid and void etc. with respect to their expression quality.
2) Introduction and Importance of Design principles like Balance, Harmony, Rhythm, Contrast, Symmetry, Scale, Proportions etc. leading to unity in design.
3) Creation of two and three- dimensional composition of abstract and architectural nature.

4) Introduction to external and internal form concept, their quality, concept of space, relation of space and volume
5) Relationship between basic design and Architectural Design, comprehensive understanding of space, form, order and design.

Sessional work :

Assignments and drawing on the above topics. Viva Voce by external examiner at the end of Semester.

Suggested text books:

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals
4. Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

1SA7 BUILDING MATERIALS & CONSTRUCTION STUDIO-I

Sessional work :

Assignments and drawing on the topics given in subject 1SA1 Building Materials & Construction-I.

Viva Voce by external examiner at the end of Semester.

1SA8 ARCHITECTURAL GRAPHICS STUDIO-I Sessional work :

Assignments and drawing on the topics given in subject 1SA2 Architectural Graphics-I.

Viva Voce by external examiner at the end of Semester.

1SA9 VISUAL ARTS STUDIO - I

Objective : To introduce the develop an understanding of principles of design in abstract and to introduce the student to visual arts.

Unit I : Introduction

The definition of art – the needs and meanings of the work of art – Technical language of the art – Technique of lookinan appreciation of art form.

Unit II : The Techniques of Arts

Drawing – architecture – sculpture – paintings – printing minor arts (glassware, stain glass, lithographic prints, etc.) - Industrual art (Art Nouveau, Bauhaus)

Unit III : Composition – Basic Design:

Chaos to order scale, proportion, proximity, surface tension, balance and rhythm co-ordination skills (eye-mind-hand/ perceptual) drawing and painting: drawing with both the hand-lines and geometrical shapes, plants and man made objects. Creative skills Media exploration, ideograms and art lettering.

Unit IV : Basic Design – harmony character, negative and positive space, form – space inter relation, juxtaposition, and a contrast. Co-ordination skills: (Eye-mind-hand/perpetual) drawing and painting: indoor and outdoor sketching, life drawing (Rapid sketching of man in action/motion) creative skills: Sculpture or optics or kinetics.

Sessional work :

Assignments and drawing on the above topics. Viva Voce by external examiner at the end of Semester.

References :

1. Jax Themier, B.W., “How to paint and draw”, Thames and Hudson, 1985
2. Gill, R.W., “Rendering with Pen and Ink”, Thames and Hudson, 1985
3. “Principles of three Dimensional Design” by Wucious Wong
4. “Principles of Two Dimensional Design” by Wucious Wong

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SEMESTER SECOND

2SA1 BUILDING MATERIALS & CONSTRUCTION-II

Objective : The course will enable the learning in progression, starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I : Timber and allied products

Timber – Physical properties and uses – Defects, Conversion, Seasoning, decay and preservations of timber –

Unit II : Fire retardant treatment, anti-termite treatment. Industrial timbers

– plywood, blockboard, particle borad, fibre boards. Manufacture and uses – current developments.

Unit III : Timber doors and windows

Drawings of timber joinery for windows, doors, ventilators. Types of timber doors such as ledged, braced and battened, panel, glazed, flush doors.

Unit IV : Types of windows such as Fixed, side and top hung, pivoted, louvered, ventilators and fanlights

Unit V : Timber partitions, paneling, wall paneling. Timber staircases – Designed staircase

Unit VI : Timber trusses – lean to – close couple – Kingpost – Queenpost

– Trusses.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.
3. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
4. R.Chudleu,'Building Construction Handbook', British Library Cataloguing in Publication, Data, London, 1990
5. S.C.Rangwala, Engineering Materials, Charotar Pub.House, Anand, 1997

2SA2 ARCHITECTURAL GRAPHICS - II

Objective The objective of this course is to understand the isometric view, perspective view and Sciography

Unit I: Measure drawings

Measured drawing of simple objects (like furniture, entrance gates, etc) and building components (like columns, cornice, door, window, etc.)

Unit II : Introduction to architectural presentations techniques, isometric and oblique three dimensional views, conical projections, perspectives, one point and two point.

Unit III : Perspective

Introduction to basic terms, principles, types and techniques of perspective drawing: realistic expression of ideas.

Unit IV : Two point perspective of simple objects. (drafted and free hand) presentation of interior and exterior views in one point perspective. (drafted and free hand).

Unit V : Sciography

Introduction of basic principles of sciography and it's application to the field of architecture

Sciography of two dimensional objects in plan and elevation

Unit VI : Sciography of three dimensional objects in plan and elevation

and views. (isometric, Axonometric and Perspective)

Sciography of simple building elements.

Reference:

1. Bhatt N.D. and Panchal V. M. Engineering Drawing,Charotar Publishing House, Gujrat,1996.
2. Clande Batley, Indian Architecture, D.B. Taraporevale Sons and Co. Ltd., Bombay.

3. John M. Holmes, Applied Perspective, Sir Isaac, Piotman and Sons Ltd., London 1954
4. Robert W. Gill, Basic Perspective, Thames and Hudson, London, 1974

2SA3 HISTORY OFARCHITECTURE - II

Ojbective History of Architecture exposes the student to evolution of different architectural solutions through historical periods to understand the building materials, construction techniques, planning and designing features.

Unit I : Ancient India

Indus Valley Civilization – culture and pattern of settlement. Impact of Aryan culture – Vedic village and the rudimentary forms of bamboo and wood. Wooden construction under the Mauryan rule.

Unit II : Buddhist Architecture

Hinayana and Mahayana Buddhism – Interaction of Hellenic & Indian Ideas in Northern India – Architectural Production during Ashoka's rule – Ashokan Pillar, Sarnath, Rock cut caves at Barabar, Sanchi Stupa

Salient featues of a Chaitya hall and Vihara, Rock cut architecture in the western and Eastern Ghats – Karli, viharas at Nasik, Rani gumpha, Udaigiri. Takti bhai, Gandhara.

Unit III : Hindu Architecture

Evolution of Hindu Temple – Early shrines of the Gupta and chalukyan periods – Tigawa Temple, Ladh Khan and Durga Temple, Aihold, Papanatha and Virupaksha Temples, Pattadakal.

Unit IV: Dravidian Architecture

Dravidian culture – Rock cut productions under Pallavas – Shore Temple, Mahaballipuram – Dravidian Order – Brihadeeswara Temple, Tanjore – Evolution and form of Gopuram – Complexity in temple plan due to complexity in Ritual – Minakshi Temple, Madurai.

Unit V: Indo Aryan style

Salient features of an Indo Aryan Temple – Lingaraja Temple, Bhuvaneswar – Sun temple, Konarak, Kunds and Vavs – Sabali Kund Vav – Adalaj – surya kund, Modhera.

Sessional work :

Assignments and drawing on the above topics.

References

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
2. Percy Brown, Indian Architecture (Buddhist and Hindu Period), Taraporevala and Sons, Bombay, 1983
3. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
4. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

2SA4 THEORYOFARCHITECTURE-I

Objective : This course deals with the theory of architectural design as should be understood for professional practice. The principles covered are those pertaining primarily to visual and aesthetic aspects of architecture. Comparisons with nature and other forms of visual art are intended to be understood through study of examples.

Unit I : Introduction to Architecture

Definition of architecture – elements of architecture backed by need and followed by fulfillment of need.

Unit II : Scope of Architectural Design
Architectural design – An analysis – Integration of aesthetic and function.

Unit III : Architectural space and Mass
Mass and Space, Visual and Emotional effects of geometric froms and their derivatives – the sphere, the cube, the pyramid, the cylinder and cone.

Unit IV : Aesthetic components of Design
Proportion, scale, balance, rhythm, symmetry, hierarchy, pattern and axis with building examples.

Unit V : Application of colour in architecture
Effect of colour in architecture – colour symbolism.

Sessional work :

Assignments and drawing on the above topics.

References:

1. Paul Alan Johnson – The Theory of Architecture – Concepts and themes, Van Nostrand Reinhold Co., New York, 1994

2. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Private Ltd., New Delhi, 1973
3. Francis D.K.Ching, Architecture – Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979
4. Helm Marie Evans and Caria David Dunneshil, an initiation to design, Macmillan Publishing Co.Inc., New York, 1982.

2SA5 MECHANICS OF STRUCTURE - I

Objective : The course covers the simple types of structural elements followed by determination of forces and stresses in the elements.

Unit I: Concurrent and non-concurrent coplanar forces, moment, conditions of equilibrium.

Unit II: Statically determinant plane frames, determination of forces in members of pin-jointed frames by analytical and graphical methods, wind forces on frames.

Unit III: Stress, strain, hook's law, laternal strain, Poisson's ratio, yound's modulus, modulus of rigidity, bulk modulus and their relationships.

Unit IV: Shear force and bending moment diagrams for strained beams subjected to concentrated and distributed loadings.

Unit V: Centroid and moment of inertia of plain areas, parallel axis theorem, moment of inertia, principal axis

Unit VI: Bending stresses and deflection in simply supported beams and cantilever beams.

Sessional work :

Assignments and tutorials on the above topics.

References

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.

2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990

2SA6 ARCHITECTURAL DESIGN - II

Objective : The prime objective of this course is to introduce architectural design as a process and as a final product; to understand fundamentals of space, form and order through basic perception of architectural skills.

Basic Exercises

1. Study of anthropometrics and their relationship with the dimensioning of objects of daily use viz. furniture, fixtures equipments vehicles, etc; determining space for activities, such as, living, dining, sleeping, conveniences, etc.

2. Measured drawing of a sample small building, such as a small house or office, etc.
3. Simple circulation/flow diagrams for a small house or a small school or hostel or an office to understand the functional interrelationships of various spaces in building.

4. Three dimensional organization of a variety of forms to create built forms and importance of shades and shadows in the entire composition. Layout of repetitive units within a site to create interesting and functional compositions.

5. Design exercise (Two Nos.) of very small space structures or buildings such as, compound wall, gate, milk booth, vendor stall, guard room, cycle stand, bus stop. Etc.

Sessional work

Assignments and drawing on the above topics. Viva Voce by external examiner at the end of Semester.

Suggested text books :

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).

2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals

4. Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

2SA7 BUILDING MATERIALS & CONSTRUCTION STUDIO-II
Sessional work :

Assignments and drawing on the topics given in the subject 2SA1 Building Materials & Construction-II Viva Voce by external examiner at the end of Semester.

2SA8 ARCHITECTURAL GRAPHICS STUDIO-II Sessional work :
Assignments and drawing on the topics given in the subject 2SA2 ARCHITECTURAL GRAPHICS -II. Viva Voce by external examiner at the end of Semester.

2SA9 MODELLING WORKSHOP - I

Objective The prime purpose of this course is to guide the students on model making and general principles of use of basic materials for constructional purposes for developing art skills.

Unit I: Use of clay, Plaster of Paris, metal scrap, Jute fiber etc. for study of forms.

1. Machine Drawing by N. Sidheswar, Shastri, Kanaiah, TMH

2. Machine Drawing by R.K.Dhavan, G.R. Nagpal, S. Chand & Co.

3. Graphic Science & Design by French, Vierck & Foster McGraw Hill

Publication of Bureau of Indian Standards:

1. IS 10711 – 2001: Technical products Documentation – Size and lay out of drawing sheets.

2. IS 9609 (Parts 0 & 1) – 2001: Technical products Documentation – Lettering.

3. IS 10714 (Part 20) – 2001 & SP 46 – 2003: Lines for technical drawings.

4. IS 11669 – 1986 & SP 46 – 2003: Dimensioning of Technical Drawings.

5. IS 15021 (Parts 1 to 4) – 2001: Technical drawings – Projection Methods.

SYLLABUS

PRESCRIBED FOR

FIVE YEAR DEGREE COURSE IN

BACHELOR OFARCHITECTURE

SEMESTER PATTERN

(CREDIT GRADE SYSTEM)

SEMESTER: THIRD

03AR01 APPLIED MATERIALS

Objective : To expose the students to the various types of building finishing materials.

Unit I : Different types of furnishing and finishing materials for Interior and Exterior surfaces. Special finishes like aluminum based materials , anti-corrosive and water bound paints .

Unit II: Paving and Cladding materials-natural and artificial , its types.

Unit III: Polymers and polymer based materials for walls , pipes, sanitary ware, glues and mastic. Polycarbonate and acrylic materials , its properties.

Unit IV: Manufactured timber based materials for interior such as plywood's, veneers , mica, laminates,etc. Types of materials useful for false ceiling , its properties.

Unit V: Material useful for different types of partitions. Alluminium, plastic, glass and different alloy and its application in the building industry.

Unit VI : Acoustical materials , metals used for steel cables, structural glazing and curtain walling. Sessional work: Test, assignment and Material survey report.

References :

1. S.C. Rangwala, Engineering Materials, Charotar publishing House, Anand, 1997.
2. R.K.Rajput , Engineering Materials.
3. Don. A. Watson, Construction Materials and processes, Mc Graw Hill Co. 1972.

03AR02 BUILDING MATERIALS & CONSTRUCTION- III

Objective : The course will enable the learning in progression , starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization .

Unit I : An introduction to timber floors and its specific application to various activities. Detail study of single joist, double joist and triple joist timber floors.

Unit II : Application of false ceiling materials such as asbestos sheets, soft boards, acoustic boards, plaster of paris etc; on timber, steel or aluminium framework.

Unit III : Cement and its varieties, composition, properties and uses; brief study on manufacture of Portland cement; test for cement; mortars for various work.

Unit IV : Concrete, its ingredients, manufacture & properties, ingredients suitability requirements for aggregates, grading of aggregates, role of water, reinforcement, admixtures in concrete, properties of concrete. Manufacturing of concrete and concreting , grades of concrete, mixing of proportions, placing, compactions, transporting, curing, testing of concrete, joints in concrete and concrete finishes.

Unit V : Introduction and purpose of foundation. Brief introduction to types of shallow and deep foundation. Detail study of masonary foundation & R.C.C. footing foundations and its types.

Unit VI : Formwork and its importance to R.C.C. building elements such as column footing, columns, beams, arches, slabs. Comparative analysis of timber & steel formwork.

Sessional work: Assignments, test,site visit and drawing on the above topics.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.

03AR03 HISTORY OF ARCHITECTURE – II

Objective : History of Architecture exposes the student to evolution of different architectural solutions through historical periods to understand the building materials, construction techniques, planning and designing features.

Unit I : Egyptian and Mesopotamian Architecture and its impact on social, economical and geographical conditions.

Unit II : Introduction to the western civilization and study of Greek civilization and its impact on Architectural development.

Unit III : Introduction to the Roman Architectural development and study of public buildings and spaces.

Unit VI : Brief study of Romansque, Gothic, Byzantine and renaissance architecture.

Unit V : Introduction to Islamic architecture. Evolution of building types in terms of forms and functions.

Unit VI : The architectural development of the mosque, the tomb, minaret, the madarasa etc; method of construction and building elements.

Sessional work; Assignments and drawing on the above topics.

References:

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
2. Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983

3. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981

4. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

03AR04 APPLIED CLIMATOLOGY- I

Objective: The prime objective of this course is to understand global environmental factors and climatic zones to be utilized for designing the spaces.

Unit I: Introduction to solar system and Earth – Sun relationship and its impact on earth surfaces.

Unit II: Thermal balance of Earth, global trade wind pattern, coriolisis effect and tropical zones on earth surfaces.

Unit III: Human comfort through body metabolism, heat gain and heat loss, thermal balance of body, clothing pattern its effect on body.

Unit IV: Climatic factors that influence climatic elements; study of climatic factors such as Altitude, longitude, latitude, seasons, water bodies, vegetation, rainfall, topography, urbanscape, sky conditions, global trade wind pattern, soil conditions etc; its impact on basic climatic elements.

Unit V: Climatic elements and data collection equipments. Air temperature, inversion of temperature, thermal diffusivity, thermal conductivity, effective temperature. humidity its types, solar radiation and its effects on building surfaces, wind – study of diurnal and seasonal variations, wind eddies, stack effect, Precipitation- rain, water vapour, fog and snow. Measurement and graphical presentation of climatic data. Use of bioclimatic and psychometrics chart.

Unit VI: Tropical climates and its types with characteristics.

Sessional work; Assignments and test on the above topics.

References:

1. O.H.keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans,London-1980
2. M. Evans; Housing, climate and comfort; Architectural press London-1980

3. B.G.Givoni; Man,climate,and architecture; Applied science, banking, Essex, 1982

4. N.K Bansal and others; Passive building design; Elsevier science-1994.
5. S.Drake; The third skin architecture,technology and environment; UNSW –press-2007.

03AR05 ARCHITECTURAL STRUCTURE-II

Objective: To understand loading, structural elements and to analyse them.

Unit I: Strain energy in tension, compression and shear; tention member under impact load.

Unit II: Theory of simple bending in beams. Distribution of shearing and bending stress on horizontal section.

Unit III: Column and struts, Euler’s theory of long column, Rankin theory.

Unit IV: Foundation design soil aspects.

a) Importance of the subject. b) Types of soil and their

properties. c) Method of compaction and consolidation. d)

Void ratio porosity, bulk density, moisture content, degree of

saturation, liquid limit, plastic limit. e)Test for assessing load

bearing capacity of soil. f) soil properties and characteristics relevant to the design of foundation. g) criteria for selection of foundation type for different soil condition. e) effect of water level, settlement of soil.

Unit V: Direct and bending stresses, eccentric loading on short column, middle third rule, chimneys.

Sessional work; Assignments and tutorials on the above topics.

References :

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990

03AR06 ARCHITECTURAL DESIGN STUDIO – III

Objective: The prime objective of this course is to introduce architectural design as a process and as a final product; to understand fundamentals of space, form and order through basic perception of architectural skills.

Basic contents:

1) Introduction to the design assignment, their aims and objectives, scope, special emphasis and limitation. Application of planning and design standards for the proposed design project.
2) Planning and design data collection, area analysis, study and evolution of plan forms for each activity, grouping of activities, case study analysis and its presentations.
3) Major design project shall include house design, clinic, elementary school, restaurant with respect to planning & design aspect.

Sessional work: One major design project and one time project with other task and assignments.

Suggested text books:

1. Ching, F.D.R. : Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals

Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

4. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.

5. Neufert,P; Architects Data; Blackwell Science, 2000.

6. Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth, 2007.

03AR07 BUILDING MATERIALS &

CONSTRUCTION STUDIO - III

Sessional work :

Assignments and drawing on the above topics given in the subject 03AR02 Building Materials & construction – III. Viva Voce by external examiner at the end of Semester.

03AR08 COMPUTER GRAPHICS STUDIO- I

Sessional work :

Assignments and 2D projects on the above topics given in the subject 01AR04 computer graphics - I in the soft and hard copies. Viva Voce by external examiner at the end of Semester.

03AR09 SURVEYINGAND LEVELLING-LAB

Objective: To impart knowledge about the basic principles of geomatics engineering for mapping and other applications.

Unit I: Importance of geomatics engineering techniques to architecture, field surveying, photogrammetry, remote sensing, geographic information system and global positioning system.

Unit II: Types of maps, scales and uses, map sheet numbering, map projection, definition of surveying, principles, importance, classification, surveying equipment namely levels, compass, theodolites, tachometer, EDM, total stations and other instruments.

Unit III: Measurement of distance, angles, and directions; determination of elevation through spirit leveling, trigonometrically leveling, tachometric surveying and contouring.

Unit IV: Method of control establishment namely traversing, triangulation, plane table surveying and mapping. Introduction to GPS survey.

Sessional work :

Assignments, test and tutorials on the above topics.

Practicals:

a) Chain and compass surveying. b) Levelling c) Plain table surveying and preparation of map. d) Determination of height of a building.

Suggested books:

1) Schofield W., Engineering surveying., Butterworth-Heinemam.,2007.

2) Chandra. A.M., Surveying., New Age publisher-2000.

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SEMESTER: FOURTH

04AR01 ARCHITECTURAL DESIGN – IV

Objective: To expose the students to the designing of multifunctional community buildings with emphasis on building bye laws, impact of culture, traditions, material and techniques.

Basic contents:

1) Introduction to the designing of multifunctional community buildings on an intermediate scale.
2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.

3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
4) Major design project may include design of library, club, gymnasium, low rise apartment, low cost housing element, office cum shop, etc.

Sessional work:

One major design project and one time project with other task and assignments.

Suggested text books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).

2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)

3. Scott: Design Fundamentals

Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

4. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.

5. Neufert,P; Architects Data; Blackwell Science, 2000.

6. Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth, 2007.

04AR02 BUILDING MATERIALS & CONSTRUCTION- III

Objective: The course will enable the learning in progression, starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: Ferrous metals, brief study of cast iron, wrought iron, pig iron and steel; its manufacturing process and properties. Anticorrosive measures for steel, market form of steel for building construction.

Unit II: Non ferrous metals and its various uses in building construction. Steel and aluminium sections for door design (sliding, revolving, openable, collapsible gates, rolling shutters) with fixtures and fittings.

Unit III: Metal casements useful for windows and ventilators.Types of metal casements windows with fixtures, fitting and method of fixing.

Unit IV: Metal casements useful for partitions , fixtures, fitting and method of fixing.

Unit V: Composition of Glass, brief study on manufacture, treatment, properties and uses of glass; special types of glass, sheet glass, safety glass, tinte coated glass, glass blocks, properties and application in the building industry and current developments.

Unit VI: Plastics: Thermoplastic and thermosets properties and architectural uses of plastics, structural plastics, reinforced plastics and decorative laminates, plastic coatings, adhesives and sealants. Primary plastic products for walls, roof, and partitions. Secondary building products for rooms, windows, rooflight,domes,gutters, handrails,etc;

NOTE: Sessionals will be in the form of reports, drawings, and models.

Construction site visits are essential for practical exposure.

Sessional work;Assignments and drawing on the above topics.Viva Voce by external examiner at the end of Semester.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997

2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.

4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.

04AR03 HISTOTY OFARCHITECTURE-III

Objective : History of Architecture exposes the student to evolution of different architectural solutions through historical periods to understand the building materials, construction techniques, planning and designing features.

UNIT-I : Delhi OR Imperial Style. Development of Architectural Style during the Rule of the slave, Khalji, Tuglag, Sayyid & Lodhi Dynastles-important examples for each period.

UNIT-II : Provincial Style: Development of the Provincial Style of different regions- Punjab, Jaipur, Bengal, Gujrat, Malwa, The deccan (bijapur, Golconda, bidar and Gulbarga) – Important Examples for each style with building construction techniques and design elements.

UNIT-III : Mughal Style : Development of the Mughal Style under the different rulers – Humayun, Akbar, Jahangir & Shahjahan-Important Examples for

each style with building construction techniques and design elements.

UNIT-IV : Industrial Revolution and it's effect on modern contemporary Architecture. Study of various school of thoughts in Architecture.

UNIT-V : Western Poineer Architects, their philosophy and work : namely Le-Carbourier, Walter Gropuies, F. L. Wright, I.M.Pei, etc.

UNIT-VI : Indian Contemporary Architects and their work, namely- Chales Corea, B.V. Doshi, Raj Rewal, Anant Raje, U.C. Jain, etc.

Sessional work : Assignments and drawing on the above topics.

References:

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.
2. Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983

3. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981

3. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

04AR04 APPLIED CLIMATOLOGY- II

Objective: The course aims to understand the various features to be considered for planning and designing of climate responsive built and un-built spaces.

UNIT-I : Introduction of planning, designing, materials and techniques considered in traditional structures with respect to climate to achieve comfortable living conditions.

UNIT-II : Impact of Micro and Macro climatic conditions on built and un-built spaces.

UNIT-III : Thermal properties of traditional and modern building materials and its comparative analysis. Appropriate planning and construction techniques to achieve comfort level in indoor and outdoor spaces.

UNIT-IV: Solar chart and its use, shadow angles, use of shadow angle protractor; types and design of shading devices. Heliodon & its use.

UNIT-V: Day light factor; effect of size and shape of opening for day light, orientation of Fenestration. Ventilation systems.

UNIT-VI: Planning and design of building by considering Passive Cooling and heating; Shadow effects, Orientation, Fenestrations, day light, micro climatic features, wind directions, sunpath diagrams, cavity walls, cross ventilations, stack effect, reverse stack effect etc. to achieve climate responsive design solutions.

Sessional work : Assignments and test on the above topics.

References:

4. O.H.keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans,London-1980
5. M. Evans; Housing, climate and comfort; Architectural press London-1980

6. B.G.Givoni; Man,climate,and architecture; Applied science, banking, Essex, 1982

7. N.K Bansal and others; Passive building design; Elsevier science-1994.
8. S.Drake; The third skin architecture,technology and environment; UNSW –press-2007.

04AR05 ARCHITECTURAL STRUCTURE-II

Objective: Understanding of Basic Theory and principles of structural analysis and structural properties of elements.

UNIT-I : Fixed beams with concentrated load and uniformly distributed load (over complete span.)

UNIT-II: Continuous beams (without settlement) with uniform sections by three moments. Only vertical load and uniformly distributed load over whole span by theorem of three moments.

UNIT-III: Moment distribution method for symmetrical portal frames with symmetrical load. Only point load and uniformly distributed load over whole span.

UNIT-IV: Understanding and identification of location of forces, bending moment and bending stress in fixed beam, over hanging beams, continuous beams, Portal frames etc.

UNIT-V: a) Design procedures for simple load bearing foundations.

b) Failure of foundations systems.

c) Improvement of soil properties.

Sessional work :

Assignments and tutorials on the above topics.

Reference :

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990.

04AR06 ARCHITECTURAL DESIGN STUDIO – IV

Sessional work :

Assignments and drawing on the above topics given in the subject 04AR01 ARCHITECTURAL DESIGN – IV. Viva Voce by external examiner at the end of Semester.

04AR07 BUILDING MATERIALS &

CONSTRUCTION STUDIO - IV

Sessional work :

Assignments and drawing on the above topics given in the subject 04AR02 Building Materials & construction – IV. Viva Voce by external examiner at the end of Semester.

04AR08 COMPUTER GRAPHICS STUDIO- II

UNIT-I: Productivity tools : Introduction to tools of productivity – blocks, slide facilities, scriptfiles, attributes Understanding concepts of V.port, concept of object linking, and editing session.

UNIT-II: Introduction to 3D Drafting : Introduction to 3D modeling technique and construction planes, drawing object, 3D surfaces setting up elevation and thickness, and use of dynamic projections. Solid modeling, with driving primitive command and Boolean operation. Use of region modeling solid modife.

UNIT-III: 3D Rendering and setting : Rendering and scene setting to create a photo realistic picture understanding material mapping, environment setting and image filing. Construction of any object or building using above said utilities.

Sessional Work : It includes assignments incorporating the use of CAD in form of drawings. Conversion of 2D drawing of previous semester to 3D using softwares like, Autocad, Sketchup, revit, 3D Max. etc. and presentations through photoshop, Power Point etc.

Viva Voce by external examiner at the end of Semester.

04AR09 WORKING DRAWING-I

Objective : The students shall impart the knowledge of construction details for the execution of building from foundation to roof level.

Contains : Working drawing of load bearing masonary structure for design project done during third semester. The drawing should be in an appropriate scales.

The working drawing should include from foundation level to roof level as follows :

a) Muncipal drawing and detail of all level plans.

b) Detail section showing toilets, Staircase and levels of floors.

c) Working detail of toilet, staircase.

d) Working details of any interesting features in the plan, sections & elevation.
e) Site plan showing drainage layout, landscape layout, internal roads etc.

f) Working details of water supply & electrical layout plan's.

Sessional Work : Assignments and drawing plates on the above topics.

Viva Voce by external examiner at the end of Semester.

Suggested text books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)

3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

4. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert,P; Architects Data; Blackwell Science, 2000.

6. Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth,.

SYLLABUS PRESCRIBED FOR

FIVE YEAR DEGREE COURSE IN

ARCHITECURE

SEMESTER PATTERN (CREDIT GRADE SYSTEM)

FIFTH & SIXTH SEMESTER

SEMESTER: FIFTH

05AR01 &05AR07

BUILDING MATERIALS & CONSTRUCTION-V

Objective : The course will enable the learning in progression , starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: Structural steel members with connections of girders, stanchions and grillage foundations.

Unit II: R.C.C frame structures and advantages over load bearing masonary constructions. Detailing of R.C.C. work with reinforcement for one way & two way slabs, R.C.C. beams , columns, footings and its types. Flat plate slab and its purpose.

Unit III: R.C.C. cantilevers and reinforcement details in chajjas, balcony, canopy, lofts,etc.R.C.C. staircases and its reinforcement details.

Unit IV: Shallow foundations and its types. Detail study of raft foundations , its types and uses.

Unit V: Appropriate cost effective construction techniques and materials to be useful to conserve energy.

Unit VI: Special concrete and concreting methods such as light weight, high density, fibre reinforced, polymer concrete- outline of manufacture, properties and uses. Ready mix concrete and current developments in concrete product.

Sessional work: Assignments, test,site visit and drawing on the above topics.

References:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.

3. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.

4. R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk,1978.
5. J.H.callender,Time saver standard for Architectural Design Data, McGraw-Hill,1994.

05AR02 BUILDING SERVICES AND EQUIPMENTS.

Objective: To impart knowledge of various aspects of water supply systems,drainage and solid waste disposal from building.

Unit I: General ideas of types of water impurities. Systems of water supply of low rise buildings and high rise buildings.

Unit II: Computing water demands for various uses - hot water supply system-solar water heater- geysers.

Unit III: Water supply pipes and fittings, material, size and classifications. Types of taps , toilet and kitchen fittings.

Unit IV: Water storage reservoir, their types and importance in water supply scheme.

Electrical wiring systems and electrical appliances.

Unit V: Drainage systems, conservancy and water carriage systems.Types of traps and sanitary fittings.

Unit VI: Sewage disposal systems from building.

Sessional work: Assignments, test,site visit and drawings on the above topics.

References:

1) Manual of Water supply and treatment , second edition, CPHEEO, Ministry of Works and housing, New Delhi, 1977.
2) Manual of Sewerage and sewage treatment, CPHEEO Ministry of Works and housing, New Delhi, 1980.
3) S.C.Rangwala, water supply and sanitary Engineering,Charotar publishing House , Anand 1989.

05AR03 ARCHITECTURAL STRUCTURE-IV.

Objective: Understanding of Basic Theory and principles of structural

analysis and structural properties of elements.

Unit I: Concrete technology- types of cements, fine and coarse aggregates, water cement ratio, formwork (visit to construction sites).

Unit II: Mild steel and tor steel reinforcement , bending and fixing, placing of concrete and methods of compacting , expansions and constructions joints in concrete, durability of concrete with respect to honeycomb free, cold joint, role of admixtures in concrete.

Unit III: Use of I.S. Code for R.C.C. member, I.S.456, I.S.800, I.S.875.

Unit IV : R.C.C. theory - Introduction to limit state method.

Unit V : Column, beam and slab design in limit state method.

Unit VI: R.C.C. footing and staircases design by limit state method.

Sessional work: Assignments and tutorials on the above topics.

References:

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990

05AR04 SPECIFICATION

Objective: To impart knowledge of specification of materials and its importance.

Unit I: Art of writing specifications of material along with emphasis on the quality of the materials and proper sequence of construction works.

Unit II: Importance of specification in the building activities, method of writing correct order and sequence of use of materials. Use of Indian Standard specification and P.W.D. specification.

Unit III: Primary considerations for selections of materials for various operations .

Unit IV: Specifications of basic materials required in residential buildings such as bricks, concrete, r.c.c., plastering, various finishes, timber work, flooring materials, glazing, metals, etc.

Unit V: Specification of works for residential building-load bearing masonary type and R.C.C. framed type, steel structures,ceiling and partitions, paneling , insulation and waterproofing. Specification for services such as drainage, water supply, electrical installation.

Unit VI: Specifications for demolitions work , temporary constructions like sheds, exhibition stalls, gateways etc.Study of proprietary building materials along with manufactures specifications, trade name of such materials.

Sessional work: Assignments, tests, and tutorials on the above topics

References:

10. W.H.King and D.M.R.Esson,Specification and quantities for Civil Engineers, The English university Press Ltd.

11. P.W.D. Standard specifications, Govt. Publications.

12. Dutta, Estimating and Costing, S. Dutta and Co., Lucknow.

05FEAR05 FREE ELECTIVE

(1) FUNDAMENTALS OF ARCHITECTURAL DESIGN

Objective: The prime objective of this course is to introduce architectural design as a process and as a final product , to understand fundamentals of space, form and order through basic perception of architectural skills.

Unit I: Introduction to Architecture. Definition of Architecture, design art, fine art, visual art.

Unit II: Principles of two dimensional design elements, such as point, line, direction, shape, size, colour and texture, levels, light, fenestrations.

Unit III: Aesthetic components of design- proportions, scale, balance, rhythm, symmetry, asymmetry, hierarchy, pattern and axis with building examples.

Unit IV: Harmony and contrast in 2D and 3D design, interplay of light and shade on building blocks and their effects.

Unit V: Form and functions in Architecture, use of building materials, construction techniques and engineering services for different functions.

Unit VI: Architectural design process- an analysis- integration of aesthetic and functional utility of spaces.

Sessional work: Assignments, tests, and tutorials on the above topics

Suggested text books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).

2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)

1. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

2. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
3. Neufert,P; Architects Data; Blackwell Science, 2000.

4. Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth, 2007.

05FEAR05 FREE ELECTIVE

(2) LANDSCAPE ARCHITECTURE

Objective: To expose students the role of landscape elements in the planning of parks, gardens, open fields, etc.

Unit I: Introduction to Landscape Architecture. Understanding man and nature , land and landscape, relationship of Architecture and Landscape Architecture.

Unit II : History of the art of garden design of India, China, Persia, Japan, Italy, France and England.

Unit III: Garden design of the modern world.

Unit IV: Ecological and environmental aspects of Landscape Design.

Unit V: Basic principles of landscape design , elements and its applications.

Sessional work :Assignments, tests, and tutorials on the above topics

References:

2 Sylvia Crowe Sheila Haywood, The Gardens of Mughal India , Vikas Publishing House, Pvt. Ltd, India, Delhi,1973.
3 Garrett Eckbo, The Art the Home Landscaping, McGraw-hill Book Co., London, 1956.
4 Testsuro Yoshida, Gardens of Japan, Jr. Marcus G. Sims, 1963.

5 Sir Banister Fletcher, A History of Architecture , University of London, The Antholone press, 1986.
6 Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983tt
7 Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981
8 Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

05AR06 : ARCHITECTURAL DESIGN STUDIO - V

Objective : To expose the students to the architectural design process of multifunctional building with emphasis on topography, climatic consideration, materials and techniques.

Basic contents:

1. Introduction to the designing of multifunctional community buildings on an intermediate scale.
2. Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.
3. Importance of culture, tradition, topography, climate and building bye laws in generating built form.
4. Major design project may be based on commercial, institutional, Hotel, Luxurious apartment, Hospital etc. at appropriate level.
5. Architectural study tour relevant to design project.

Sessional work: One major design project and one time project with other task and assignments.

Viva Voce by external examiner at the end of Semester.

Suggested text books:

4. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
5. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
6. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
7. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
8. Neufert,P; Architects Data; Blackwell Science, 2000.
9. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategis: experimental architectural design”. Wasmuth, 2007.

05AR07 BUILDING MATERIALS & CONSTRUCTION STUDIO -V

Sessional work:

Assignments and drawing on the above topics given in the subject 05AR02 Building Materials & construction – V.

Viva Voce by external examiner at the end of Semester.

05AR08 INTERIOR DESIGN - I

Objective : To Impart the knowledge of interior design as an integral part of Architectural Design process and the study of latest interior materials.

Unit - I: History of interior design

Introduction to history of furniture and importance of styles related to furniture. Vernacular design in India with reference to interior design and decoration.

Unit – II: Introduction to Interior Design

Definition of interior design, Interior design process, introduction to the design spaces as related to function, themes, concept, study and design.

Unit - III:Interiors in residence

Space organization in interiors , surface treatment in interiors viz. on walls , floors, ceilings etc. Different type of materials that are available and their uses in interiors. Interior Design Project of any small residence.

Sessional work:

One major interior design project and one time project with other task and assignments

Viva Voce by external examiner at the end of Semester.

Suggested Books:

- Chiara, J.D., Panero, J., Zelnik, M., "Time Saver Standards for Housing and Residential Development", 2nd Ed., McGraw-Hill.
- Neufert, P., "Architects Data", 3rd Ed., Blackwell Science.
- Watson, D.(Editor), "Time-saver Standards for Architectural Design: Technical Data for Professional Practice", McGraw-Hill
- Ballard Bell, Victoria and Rand, P., "Materials for Architectural Design", Laurence King

05AR09 WORKING DRAWING - II

Objective : The students shall impart the knowledge of construction details for the execution of building from foundation to roof level.

Contains : Working drawing of RCC structure for design project done during fourth semester. The drawing should be in an appropriate scales.

The working drawing should include from foundation level to roof level as follows :

5. Study of building byelaws

6. Municipal drawing and detail of all level plans.

7. Details center line plan of columns

8. Working details of any interesting features in the plan, sections & elevation.
9. Site plan showing drainage layout, landscape layout, internal roads etc.
10. Working details of water supply & electrical layout plan's.

Sessional Work : Assignments and drawing plates on the above topics.

Viva Voce by external examiner at the end of Semester.

Suggested text books:

ii) Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
iii) Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
iv) Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
v) Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
vi) Neufert,P; Architects Data; Blackwell Science, 2000.

vii) Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth, 2007.

SEMESTER : SIXTH

06AR01 ARCHITECTURAL DESIGN - VI

Objective : To expose the students to the architectural design process of multifunctional building with emphasis on topography, climatic consideration, materials and techniques.

Basic contents:

1) Introduction to the designing of multifunctional community buildings on an intermediate scale.
2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.

3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
4) Major design project may be based on commercial, institutional Hetel, Luxurious apartment, Hospital etc. at appropriate level.
5) Architectural study tour relevant to design project.

Sessional work: One major design project and one time project with other task and assignments.

Suggested Text Books:

5) Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).

6) Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
7) Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
8) Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
9) Neufert,P; Architects Data; Blackwell Science, 2000.

10) Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth, 2007.

06AR02 BUILDING MATERIALS & CONSTRUCTION-VI

Objective : The course will enable the learning in progression , starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I : Structural steel frame work & trusses for various spans , design consideration, advantages, connection of various members supported on R.C.C. column, brick piers , fixing, wind bracing etc.

Unit II: Steel north light roof trusses, connections Gutters, patented glazing etc.

Unit III: Patent glazing for skylights, lanterns, steel Monitor roofs, methods of fixing, fixtures and fastenings.

Unit IV : Introduction to precast building elements, comparative study with cast in situ constructions. Appropriate use of various types of precast building elements and its construction details.

Unit V : Study of Deep foundation. Details study of Pile foundation , types and its purpose.

Unit VI : Shoring, purposes and types . Underpinning its purposes and types.

Sessional work:

Assignments, test,site visit and drawing on the above topics.

References :

(R) S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
(S) HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.

& W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.

& Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
& R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk,1978.
& J.H.callender,Time saver standard for Architectural Design Data, McGraw-Hill,1994.

06AR03 ARCHITECTURAL STRUCTURE-V

Objective: Understanding of Basic Theory and principles of structural analysis and structural properties of elements.

Unit I : Introduction to pre cost concrete.

Unit II : Application of thumb rules for beams, columns, slab for fixing & sectional properties.

Unit III : Water tanks resting on ground with flexible and rigid base by I.

S. code method.

Unit IV : Understanding types of joints in steel structures, riveted, welded and bolted joints. Types of steel section and their properties.

Unit V: Simple welded and riveted connection (without moments) only axial loads.

Unit VI: Design of simple tension and compression member of trusses.

Sessional work:

Assignments , tutorials and site visit on the above topics.

References:

1) P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.
2) S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3) W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4) R.K.Bansal – engineering Mechanics and Strength of Materials – Lakshmi Publications, Delhi, 1990

06AR04 ESTIMATE AND COSTING

Objective: To impart knowledge of cost estimation of building construction work as per specification of materials and its importance.

Unit I : Types of estimates. Data required for framing estimate method of preparing estimates , method of preparation of estimate.

Unit II : Standard mode of measurement, schedule of rates and its use

, Administrative approval, Technical sanction. Competent authority, issue rate , interest, indent of wish etc. .

Unit III: Method and procedure of working out abstract and bill of quantities.

Unit IV: Examples and exercise for working out quantities for items from excavation to the final finishing of load bearing and R.C.C. items viz. slab, beams , columns etc.

Unit V: Rate analysis, factors affecting the rate of an item , rate analysis of advance equipments use in buildings. Cost of materials and labour for various works, detailed rate analysis of important items of construction work. Measurement of work for interim and final certificate of payment.

Unit VI: Detail estimate of project given and use of computers for the same.

Sessional work: Assignments, tests, and tutorials on the above topics

References:

1. W.H.King and D.M.R.Esson,Specification and quantities for Civil Engineers, The English university Press Ltd.
2. P.W.D. Standard specifications, Govt. Publications.
3. Dutta, Estimating and Costing, S. Dutta and Co., Lucknow.
4. Singh, S.C. and Sofat, C.G., Ed., "Handbook on Building Economics and Productivity", Central Building Research Institute
5. Birdie, G.S., "Text Book of Estimating and Costing (Civil Engineering)", Dhanpat Rai Publishing Company (P) Ltd.

06FEAR05 FREE ELECTIVE .

(1) CLIMATE RESPONSIVE ARCHITECTURE.

Objective: The course aims to understand the various features to be considered for planning and designing of climate responsive built and un-built spaces.

UNIT-I : Introduction of Sun – Earth relationship and its impact on earth surfaces. Thermal balance of Earth, Tropical Zones on earth surfaces.

UNIT-II : Human comfort through body metabolisms, heat gain and heat loss , thermal balance of body, clothing pattern its effect on body.

UNIT-III : Climatic factors and climatic elements. Importance of climatic factors to create micro and macro climatic conditions.

UNIT-IV: Introduction of planning, designing, materials and techniques considered in traditional structures with respect to climate.

UNIT-V: Solar charts, types of shading devices, shadow angles and its use.

UNIT-VI: Planning and design of building in hot and dry climates.

Sessional work ; Assignments and test on the above topics.

References:

1. O.H.keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans,London-1980
2. M. Evans; Housing, climate and comfort; Architectural press London-1980
3. B.G.Givoni; Man,climate,and architecture; Applied science, banking, Essex, 1982
4. N.K Bansal and others; Passive building design; Elsevier science- 1994.
5. S.Drake; The third skin architecture,technology and environment;UNSW –press-2007.

06FEAR05 FREE ELECTIVE

(2) SUSTAINABLE ARCHITECTURE.

Objective: To sensitize students about the importance and need for Sustainable Planning concept with respect to conservation of Environment.

UNIT-I : Introduction to the ideas, issues and concepts of Sustainable Architecture, global environment and the built environment, principles of environmentally and ecologically supportive architecture.

UNIT-II: Study of sustainable architecture in context with resource efficiency viz. Land , Water, Energy, Materials, Human resources,. Biodiversity , health and global environment related to constructions and operation of buildings.

UNIT-III: Appropriate materials and constructions to maintain sustainability. Eco friendly construction practices – sustainable campuses and case studies.

UNIT-IV: Sustainable and conservation practices, water conservation, sewerage treatment, solid waste treatments, economics and managements.

UNIT-V: Low energy design, hybrid system, modeling and simulation of energy system, integration of P.V. and wind system in the building, wind, solar and other non-conventional energy systems.

UNIT-VI: Climatic factors and sustainability.

Sessional work : Assignments and test on the above topics.

References:

1. O.H.keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans,London-1980
2. M. Evans; Housi ng, climate and comfort; Architectural press London- 1980
3. B.G.Givoni; Man,climate,and architecture; Applied science, banking, Essex, 1982
4. N.K Bansal and others; Passive building design; Elsevier science- 1994.
5. S.Drake; The third skin architecture,technology and environment;UNSW–press-2007.

To enable the students understand the articulation of sound within and around building, fundamentals of sound propagation and lighting requirements in buildings.

UNIT-I :

Fundamentals - sound waves , frequency, intensity , wave length, measure of sound, decibel scale, speech and music frequencies, human ear characteristics.

Sound transmission and absorption – outdoor noise levels, acceptable indoor noise level, sonometer. Sound absorbing materials, absorption co-efficient and measurements, resonance reverberation time , sound levels and their calculations.

UNIT-II:

Acoustical defects and remedies. Structure borne and air borne noise, their effects and control.

Site selection, shape, volume, treatments for interior surfaces, basic principles in designing open air theatres, cinemas , broadcasting studio, concert hall , theaters, lecture Halls.

UNIT-III:

Principles of Illumination- Visual tasks - factors affecting visual task – Modern theory of light and colour - synthesis of light - luminous flux - candela – solid angle illumination – Utilizations factor- Depreciation factor – MSCP – MHCP Laws of illumination. Application of laws in lighting calculations using point by point method.

UNIT-IV:

Lighting Design – Classification of lighting – Artificial light sources - spectral energy distribution – luminous efficiency. Design of modern lighting for stores, offices, schools, hospitals and houses lighting.

06FEAR06 (1) ACOUSTICS AND ILLUMINATION

References:

1. Indian Standard (732)– Electrical Wiring Installation
2. Indian Standard (3646)– Interior Illumination Part I, II, III
3. Indian Standard (3043)– Earthing
4. Taylor E. O., “Utilisation of Electric Energy (in SI units)”, Orient Longman, Revised in S.I. units by Rao, V.V.L
5. Dr. V. Narasimhan – An Introduction to Building Physics – Kabeer Printing Works, Chennai – 5 – 1974

6. Thomas D.Northwood–ArchitecturalAcoustics–Dowden, Hutchinson and Ross Inc.- 1977

06AR07 ARCHITECTURAL DESIGN STUDIO - VI

Objective : To expose the students to the architectural design process of multifunctional building with emphasis on various building services such as lighting , ventilation, movement, fire safety, security , water supply, sewage etc.

Basic contents:

1) Introduction to the designing of multifunctional community buildings on an intermediate scale.
2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning, etc; in the Architectural design process.
3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
4) Major design project may be based on commercial, institutional Hetel, Luxurious apartment, Hospital etc. at appropriate level.
5) Architectural study tour relevant to design project.

Sessional work: One major design project and one time project with the other task and assignments. on the above topics given in subject Assignment & drawing 06AR 01.

Viva Voce by external examiner at the end of Semester.

Suggested text books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)

Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.

3. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
4. Neufert,P; Architects Data; Blackwell Science, 2000.
5. Agkathidis, A, Hudert, M and Schiling, G., “Form defining strategis: experimental architectural design”. Wasmuth, 2007.

06AR08- BUILDING MATERIALS & CONSTRUCTION STUDIO -VI Sessional work:

Assignments and drawing on the above topics given in the subject 06AR02 Building Materials & construction – VI.

Viva Voce by external examiner at the end of Semester.

06AR09 INTERIOR DESIGN - II

Objective : To Impart the knowledge of interior design as an integral part of Architectural Design process and the study of latest interior materials.

Unit- I : Introduction to various elements in interiors like floors, ceilings, walls, staircase, openings, interiors services, incidental elements etc. and

various methods of their treatment involving use of materials and methods of construction in order to obtain certain functional , aesthetic and psychological effects.

Unit - II: Visual perception of interiors spaces, functions, form, scale proportions , balance, harmony and rhythm. Market survey of recent Interior materials and their application, case studies of outstanding interior design examples. .

Unit - III: Ergonomics in interior Design with respect to human comfort, interior design of furniture for specific types of recreational, educational, office and commercial activities.

Sessional work: One major interior design project on the above topics with assignments.

Viva Voce by external examiner at the end of Semester.

Suggested Books :

1. Chiara, J.D., Panero, J., Zelnik, M., "Time Saver Standards for Housing and Residential Development", 2nd Ed., McGraw-Hill.
2. Neufert, P., "Architects Data", 3rd Ed., Blackwell Science.
3. Watson, D.(Editor), "Time-saver Standards for Architectural Design: Technical Data for Professional Practice", McGraw-Hill.

presence of External Examiner. The H.O.D. Department of Architecture, and student's teacher Guide would act as internal examiners.

The Seminar topic can be related to any of the following subject – Architectural theory , history, design determinates, design language , design evaluation, building types, urban planning and design, housing, interior design, landscape design, building technology and environmental sciences, professional practice and any other related field, accepted and approved by the Department.

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SYLLABUS PRESCRIBED FOR

BACHELOR OF ARCHITECTURE

SEMESTER PATTERN (CREDIT GRADE SYSTEM)

SEMESTER : SEVENTH

07AR01 ADVANCE CONSTRUCTION - I

Objective : The course will enable the learning in progression , starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: Analysis of different type of foundation as per load bearing capacity of soils, types of soil and building loading conditions. Caisson foundation its types and purposes. Combined foundation its purposes types.

Unit II: Earthquake resistant structure.

a) Introduction of earthquake, types of earthquake, origin and causes of earthquake.
b) Failure mechanism of structures due to earthquake. Analysis of earthquake affected load bearing masonary and framed structures

Unit III: a) Remedial measures in terms of planning , designing , materials and techniques for earthquake resistant structure.

b) Retrofitting of earthquake affected buildings.

Unit IV: a) General study of standardisation of building elements its uses for various construction.

b) Study of Modular co-ordination and its multipurpose functional application.

Unit V: Concept of curtain wall and structural glazing material and construction techniques, fixing details of various metal casements.

Unit VI: Architectural glass system.

Sessional work: Assignments, test, site visit and drawing on the above topics.

REFERENCE BOOKS:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.

5. R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk,1978.
6. J.H.callender,Time saver standard for Architectural Design Data, McGraw-Hill,1994.

07AR02 ENVIRONMENTAL SERVICES – I

Objective:To impart knowledge of various aspects of city level water supply systems, drainage and solid waste disposal.

Unit I: Sources of water supply their types, water collection, water treatment, distribution of water from various sources.

Unit II: Rain water disposal and roof drain and rain water harvesting system.

Unit III: Water pollution and preventive measures.

Unit IV: Sewage treatment plant and its locational factor..

Unit V: Garbage disposal and recycling methods. Concept of recycling of solid and liquid waste in building. Vermicomposition, Biogas production.

Unit VI: Sewage disposal systems in unsewered location viz. septic tank, soak pit, acqua privy.

Sessional work: Assignments, test, site visit and drawings on the above topics.

REFERENCE BOOKS:

1. Manual of Water supply and treatment , second edition, CPHEEO, Ministry of Works and housing, New Delhi, 1977.
2. Manual of Sewerage and sewage treatment, CPHEEO Ministry of Works and housing, New Delhi, 1980.
3. S.C.Rangwala, water supply and sanitary Engineering,Charotar publishing House , Anand 1989.
4. Bureau of Indian Standards.
5. Pachauri, A.K., "Water Supply and Sanitary Installations, Design, Construction and Maintenance", New Age International Ltd.
6. Manas Handbook of Plumbing, Manas Publishers

07AR03 PROFESSIONAL PRACTICE

Objective: The objective of the course is to expose the students to the present trends of architectural practice and valuation.

Unit I: Role of professional bodies such as The Indian Institute of Architects, working, byelaws, categories of membership, election procedure and code of conduct; The Architects Act of 1972 and the Council of Architecture.

Unit II: Professional responsibilities of the architect, copyrights, scale of charges, variation of charges, mode of payment, termination of services, specialized building services.

Unit III: Techniques of valuation, elements of valuation and factors affecting valuation. Methods, valuation of landed and building property, comparable cost of sale, purchase and mortgage.

Unit IV: Valuation for compensation on acquisition, compensation under central and state legislation, relevance of the Town Planning Act.

Unit V: Valuation for renewal or lease/extension of lease, standard rent, easement rights, dilapidation, insurance, estate development and advice on investment policy.

Unit VI: Arbitration, arbitrators, umpire and nature of arbitration.
Sessional work: Assignments, test, site visit and drawings on the above topics.

REFERENCE BOOKS:

1. Rangwala, S C , "Valuation of Real Properties", Charotar Book Stall.
2. Piotrowski, A. and Williams, Julia, "The Discipline of Architecture", University of Minnesota Press. 3. Eldred, G.W., "The Beginners Guide to Real Estate Investing", John Wiley & Sons

4. Publications of COA, IIA Hand Book on Professional Practice, The Architects publishing Corporation of India, and Bombay 1987.

Objective: The objective of the course to develop the understanding of urban planning process through surveys, analysis, alternative planning strategies and urban planning issue.

Unit I: Need and study of Urban planning interrelationship between urban planning, urban design, urban landscape design and Architecture planning as a team work and role of urban planner in planning team. Hierarchical levels of planning.

Unit II: Planning during Medieval and renaissance period in western and Indian context.

Unit III: Evolution of modern planning concepts. Impact of industrial revolution on planning process. Planning theories developed by Patric Geddis, Ebenzer Howard, Lewis Mumford, C. L. Doxiadis, Patric Abercrombie.

Unit IV: Introduction to TPS, master plans, structure plan, regional plans,

land use planning , Neighbourhood Planning, zoning.

Unit V: Recent trends in urban planning, New towns development, SEZ, JNNURM, Green cities, ISHDP, Urban renewal process.

Unit VI: National habitat and housing policy. Slum improvement scheme, ISHDP, DCR relevant to housing.

Sessional work: Assignments, test, site visit and drawings on the above topics.

REFERENCE BOOKS :

1. Gallion Arthur B & Eisna Simon, The Urban Pattern, City Planning and Housing.
2. C. L. Doxiadis, Ekistics, An introduction to the Science of Human Settlements, Hutchinson, London, 1968
3. John Ratchiffe, An Introduction to Town and Country Planning.
4. Gupta, V., "Energy and Habitat: Town Planning and Building Design for Energy Conservation", Wiley Eastern.
5. Rangwala, S.C., "Town Planning", Charotar Publishing House.
6. Eleanor, S.M., "British Town Planning and Urban Design: Principles and Policies", Longman.
7. Randall, A., "Crossroads, Hamlet, Village, Town: Design Characteristics of Traditional Neighbourhoods, Old and New", American Planning Association.

Objective: Understanding of Basic Theory and principles of structural analysis and structural properties of elements.

Unit I : Design and detailing of simple G + 1 structure.

Unit II: Walls and chimneys subjected to kind pressure.

Unit III: Introduction to flat slabs, combined and eccentric footings selection criteria for above structures. (only Theory no Design)

Unit IV: Failure of structured

a. Types of failure in various structure.
b. Causes of failure.
c. Evaluation of damage
d. Non destructive testing techniques .
e. Techniques to prevent collapse failure of structures.
f. Repaired and rehabilitation of structures.

Unit V: Simple welded and riveted connection (without moments) only axial loads .

Unit VI: Design of simple tension and compression member of trusses.

Sessional work:

Visit to construction sites to study R.C.C. Structures and steel fabrication work and preparing report.

REFERENCE BOOKS:

1. P.C.Punmia, Strength of Materials and Theory of Structures; vol I, Laxmi Publications, Delhi 1994.

2. S.Ramanmurtham, Strength of Materials – Dhanpatrai & Sons, Delhi 1990
3. W.A.Nash, Strength of Materials – Schaums Series – McGraw Hill Book Company, 1989
4. R.K.Bansal – engineering Mechanics and Strength of Materials

– Lakshmi Publications, Delhi, 1990

07AR06 ARCHITECTURAL DESIGN STUDIO - VII

Objective: To enable the student to design the large scale housing and housing project in an urban environment with emphasis on advanced building services and systems, urban development regulations, building byelaws.

BASIC CONTENTS:

1) Introduction to the designing of multifunctional community housing project on an appropriate scale.
2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.
3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
4) Planning and designing of large scale housing and building projects in an urban environment, advance building services, energy conservations, cost effective techniques and materials, building bye laws, housing schemes etc.

5) Architectural study tour relevant to design project.

Sessional work: One major design project and one time project with other task and assignments.

Viva Voce by external examiner at the end of Semester.

Suggested text books:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)

3. Scott: Design Fundamentals ,Edward d Mills- Planning the

Architects Hand Book – Bitterworth, London, 1985.

4. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.

5. Neufert,P; Architects Data; Blackwell Science, 2000.

6. Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth, 2007.

07AR07 ADVANCE CONSTRUCTION STUDIO - I Sessional work;

Assignments and drawing on the above topics given in the subject 07AR01 Advance construction – I.

Viva Voce by external examiner at the end of Semester.

07AR08 URBAN PLANNING STUDIO

Sessional work;

Assignments and drawing on the above topics given in the subject 07AR04 Urban Planning.

Viva Voce by external examiner at the end of Semester.

SEMESTER : EIGHTH

08AR01 ARCHITECTURAL DESIGN - VIII

Objective : To expose students for designing of large scale urban design projects with emphasis on modern material, techniques , architectural styles advanced services, sustainable architecture, green architecture, climate responsive architecture etc.

Basic contents:

1) Introduction to urban design project planning and design consideration.
2) Importance of case studies, data collection, area analysis, evolution of plan forms, climatic oriented planning and design features, space utilization, building & site services, site analysis and site planning ,etc; in the Architectural design process.
3) Importance of culture, tradition, topography, climate and building bye laws in generating built form.
4) Major design project may include high rise/tall buildings viz. apartment and commercial mixed used complexes, five star Hotel, multifunctional complex, community centers, super specialty hospital, institutions etc.
5) Architectural study tour relevant to design project.

Sessional work:One major design project and one time project with other task and assignments.

SUGGESTED TEXT BOOKS:

1. Ching, F.D.R.: Form, Space and Order, Van Nostrand Rheinhold, New York (1979).
2. Parmar V.S.: Design Fundamentals in Architecture, Somoiya Publications, Bombay (1973)
3. Scott: Design Fundamentals Edward d Mills- Planning the Architects Hand Book – Bitterworth, London, 1985.
4. Watson,D (editor) Time –saver standards for Architectural Design: Technical data for professional practice, McGraw-Hill, 2005.
5. Neufert,P; Architects Data; Blackwell Science, 2000.
6. Agkathidis, A, Hudert, M and Schiling, G., "Form defining strategis: experimental architectural design". Wasmuth, 2007.

08AR02 ADVANCE CONSTRUCTION - II

Objective: The course will enable the learning in progression , starting from simple building elements, components, materials and construction techniques to develop strong sense of visualization.

Unit I: General introduction to large span structures and high rise structures, planning features and its construction aspects. Chronological development of large span structural framework such as lamella, laminated portal frame , R.C.C. & steel portal frames.

Unit II: A) R.C.C. and steel space frame structures. B) Study of shell structures and its construction techniques from historical perspective. C) Shell structures such as Geodesic Schwedeler and Gitter Kuppel and its construction aspect.

Unit III: Constructions aspect consider in temporary structures which are in portable nature for various short terms events. Use of modular techniques and materials.

Unit IV: Ferrow cement techniques and its appropriate various uses for building construction elements.

Unit V: Introduction to prestressed concrete, principle and method of prestressing, advantages and disadvantages.

Unit VI: Types of elevators – Electric, hydraulic, passenger, hospital, capsule, freight etc., details of lift shaft and other mechanism

escalators and conveyors. Parallel and criss cross escalators,

horizontal belt conveyors , horizontal moving walkway's.

Sessional work:

Assignments, test, site visit and drawing on the above topics.

REFERENCE BOOKS:

1. S.C. Rangwala, Engineering Materials, Charotar Publishing House, Anand,1997
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub, New, Delhi, 1989.
3. W.B. Mckay Building Constrution, vol. 1,2,3, Longmans, U.K.1981.
4. Don A Watson, Construction Materials and Processes, McGraw Hill Co.,1972.
5. R. Chudley, Construction technology, Richard Clay (Chaucer Press) Ltd.,Suffolk,1978.
6. J.H.callender,Time saver standard for Architectural Design Data, McGraw-Hill,1994.

08AR03 ENVIRONMENTAL SERVICES – II

Objective: To expose the students specialized services in buildings.

Unit I: Natural and artificial ventilation system in buildings. Air conditioning methods equipments and ducting.

Unit II: Refuse disposal system in high-rise buildings, viz. – refuse chute, purpose of service floor and other services.

Unit III: Lift , escalator, different type and use their lay out , lighting conductors, building automation system.

Unit IV: Energy construction, low energy systems, hybrid systems, integration and P. V. and wind system in the building, wind , solar and other non-conventional energy systems, solar thermal application for heating and cooling, electricity generation in building.

Unit V: Fire safety – general provisions. Causes of fire in buildings, Fire protection standards – safety regulation – NBC – planning consideration in building like non- combustible material, construction , stair cases and lift lobbies , fire escapes and A.C. system. Special features required for physically handicraft and elderly in building types.

Unit VI: Fire detectors and fighting installation. Type of detectors and usage. Alarm system, Fire fighting pumps , fire tank , dry and wet risers, automatic sprinkler, fire drill , refuge areas.

Sessional work:

Assignments, test, site visit and drawings on the above topics.

REFERENCE BOOKS:

1. Manual of Water supply and treatment , second edition, CPHEEO, Ministry of Works and housing, New Delhi, 1977.
2. Manual of Sewerage and sewage treatment, CPHEEO Ministry of Works and housing, New Delhi, 1980.
3. S.C.Rangwala, water supply and sanitary Engineering,Charotar publishing House , Anand 1989.
4. Bureau of Indian Standards.
5. Pachauri, A.K., "Water Supply and Sanitary Installations, Design, Construction and Maintenance", New Age International Ltd.
6. Manas Handbook of Plumbing, Manas Publishers

08AR04 SUSTAINABLE ARCHITECTURE

Objective: To sensitize students about the importance and need for Sustainable Planning concept and appropriate Architectural design concept as an emerging thrust area.

UNIT-I : Introduction : Planning concept – Environmental Impact Analysis

– Ecological foot prints – Essential ingredients of sustainable development apart from social and economical – environment , stake holder, participation , institutional mechanism.

UNIT-II: Development in Historical Context - Early settlement pattern – Climate Responsive Planned Layouts – orientation of Streets and Buildings, Creation of Habitable Environment , Early Planning Methods.

UNIT-III: Resource Efficiency – Land , Water, Energy, Human Resource, Biodiversity – Suitable practices at settlement, Campus and Building Level.

UNIT-IV: Sustainable Architecture – Appropriate materials and construction – review of their properties workability, Eco Friendly construction practices – sustainable campuses and case studies..

UNIT-V: Sustainable Planning and Policies – Awareness programme at National, International levels Rio de Jenero agenda – Earth summits – agenda involved – their realization.

Sessional work: Assignments and test on the above topics.

REFERENCE BOOKS:

1. O.H.keonigsberger; T.G. Ingersoll and others; Manual of tropical housing and building- Part-I; Longmans,London-1980
2. M. Evans; Housing, climate and comfort; Architectural press London- 1980
3. B.G.Givoni; Man,climate,and architecture; Applied science, banking, Essex, 1982

4. N.K Bansal and others; Passive building design; Elsevier science-1994.

5. S.Drake; The third skin architecture,technology and environment;UNSW–press-2007.
6. Manik & Girish Komisva, IIPA, keeping Cities Clean and Green, Uppal Publishing House, 1997.
7. Beer, Environment Planning for Site Development.

08AR05 LANDSCAPE DESIGN

Objective: To enable students realize that architectural design could enhance and enrich built environment through a study and understanding of plants and vegetation historical achievements and techniques of application in the overall context of ecology.

UNIT-I: Introduction : Landscape Architecture. Understanding man and nature land and landscape. Relationship of architecture and Landscape Architecture.

UNIT-II: History of the art of garden design of India, China, Persia, Japan, Italy, France and England.

UNIT-III: Garden Design of the modern world.

UNIT-IV: Basic Principles of landscape design and element. Types of landscape elements and its various uses.

UNIT-V: Plant classification and nomenclature, plant identification. Characteristics of various types of plants and their suitability of landscaping, plant selection criteria, planting design and visual aspects of plant form.

UNIT-VI: Methodology and process of site analysis, data collection, compilation , Presentation and analysis techniques. Preparation, interpretation and evolution of landscape plans site planning.

Sessional work:

Assignments, tests, and tutorials on the above topics

REFERENCE BOOKS:

1. Sylvia Crowe Sheila Haywood, The Gardens of Mughal India , Vikas Publishing House, Pvt. Ltd, India, Delhi,1973.
2. Garrett Eckbo, The Art the Home Landscaping, McGraw-hill Book Co., London, 1956.
3. Testsuro Yoshida, Gardens of Japan, Jr. Marcus G. Sims, 1963.

4. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone press, 1986.

5. Percy Brown, Indian Architecture (Islamic period), Taraporevala and Sons, Bombay, 1983tt

6. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981

7. Christopher Tadgelli, The History of Architecture in India from the Dawn of Civilization to the end of Raj, Longman group, U.K.Ltd., London, 1990

08AR06 PROFESSIONAL ELECTIVE – I (1) HOUSING

Objective: To sensitize students about the need for , demand and supply of housing in India, to expose the role or function of various housing agencies, the typologies of housing with basic environmental issues.

UNIT-I : Housing Issues – Indian Context. Housing as Architecture – basic need – demand and supply of housing – Housing Agencies and their role in housing development.

UNIT-II : Social factors influencing housing design, affordability , economic factors and influence of traditional housing and planning features.

UNIT-III: Housing surveys and standards. Sources of Data and information, methods and techniques of housing survey, housing standards etc.

UNIT-IV : Housing Design – Traditional Patterns – Row housing and cluster housing – layout concepts – use of open spaces – utilities and common facilities.

UNIT-V: Case studies of housing schemes designed by eminent architects.

High Rise Housing.

UNIT-VI: National habitat and housing policy slum improvement scheme, ISHDP, DCR relevant to housing.

Sessional work :

Assignment and case studies of above topics.

TEXT BOOKS :

1. Joseph de chiara and others – Time Saver Standards for Housing and Residential Development McGraw-Hill Co., New York, 1995

2. Karnataka state Housing Board – MANE – Publication - 1980

08AR06 PROFESSIONAL ELECTIVE – I

(2) ENVIRONMENTAL PLANNING

Objective: To Provide advanced knowledge on how all issues and concerns of environment can integrate to architectural design process.

UNIT-I : Introduction to the ideas, issues and concepts of sustainable Architecture, Global Environment , Principles of environmentally and ecologically supportive Architecture.

UNIT-II : Early Settlement Patter – Climate Responsive Planned Layouts – Orientation of streets and buildings. Creation of Habitable Environment, Early Planning Methods.

UNIT-III: Quality of Urban Environment and Living – Past , Present and Future Trends role of Urban Design in Urban Environment, Planning for Quality Living in Urban Areas.

UNIT-IV: Conservation of Water, Land, Energy its methods. Environmental impact assessment.

UNIT-V: Solid & Liquid Waste from residential & Commercial Buildings – Environmental significance – Segregation and treatment of waste-degradation of environment due to wast .

UNIT-VI: Salient Features of environmental laws – Rain Water Harvesting Techniques. Biological and Thermal Energy Options – Biogas Production – Liquid Waste, Recycling Methods & Practices.

Sessional work :

Assignment and case studies of above topics.

TEXT BOOK :

1. Gosling and Maitland – Environmental Planning – St. Martin's Press, 1984

08AR06 PROFESSIONAL ELECTIVE – I

(3) CONSTRUCTION MANAGEMENT

Objective: To establish and develop construction management skills network techniques, construction equipments and methods along with quality control in construction.

UNIT-I : Introduction to project management concepts – background of management, purpose, goal and objectives. Traditional management system, Gantt's approaches, load chart, progress chart, bar charts, merits and limitation schedule time estimates units.

UNIT-II: Project management, resources balancing, phasing of activities, programmes, scheduling project control, reviewing, updating and monitoring.

UNIT-III: Introduction to modern management concepts. Introduction to PERT and CPM network concepts, inter relationship , information, data sheets and development of network. CPM for management, CPM network analysis, identification of critical path floats computation result sheets.

UNIT-IV: PERT Network, introduction to the theory of probability and statistics, probabilistic aim estimates for the activities of PERT Network.

UNIT-V: Financial management. Introduction to two dimensional network analysis activity cost information. Cost time relationship, crashed estimates for the activities, project direct cost and indirect cost.

UNIT-VI: Construction quality control and inspection, significance of variability and estimation of risks , construction cost control, crashing of networks.

Sessional work :

Assignment and case studies of above topics.

TEXT BOOKS :

1. Dr. B. C. Punmiya and K. K. Khandelwal – Project Planning and Control with PERT/CPM Laxmi Publications, New Delhi, 1987.
2. S. P. Mukhopadyay, Project Management for Architects and Civil Engineers, IIt, Kharagpur.
3. Ahuja H. N. “Construction Performance Control by Networks”, Wiley Inter science Publication.
4. Peurifoy, R. I. “Construction Planning Equipments and Methods” McGraw Hill Book Co. Inc.
5. Srivastva, U. K. “Construction Planning Management” Galgotia Publisher.

08AR07 ARCHITECTURAL DESIGN
STUDIO - VIII Sessional work:

Assignments and drawing on the above topics given in the subject 08AR01 Architectural Design Studio – VIII.

Viva Voce by external examiner at the end of Semester.

08AR08 ADVANCE CONSTRUCTION
STUDIO - II Sessional work:

Assignments and drawing on the above topics given in the subject 08AR08 Advance construction Studio – II.

Viva Voce by external examiner at the end of Semester.

08AR09 LANDSCAPE DESIGN STUDIO - II Sessional work:

Assignments and Sketches, Case Studies of contemporary period, Landscape Proposals for Residential, Public , Institutional Buildings on the above topics given in the subject 08AR09 Landscape Design Studio – II.

Viva Voce by external examiner at the end of Semester.

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SEMESTER : NINTH

09AR01 PRACTICAL TRAINING

Each candidate shall have to prepare a detail report along with necessary drawing, sketches, measurement, record, reading, observations, survey analysis, log sheets and modes, if necessary on the following siz aspects which are concerned with the poetical training. This report shall be submitted for the Viva-Voce examination duly certified by the Principal of the College.

1. Critical appraisal - of any building that he/she-'or his/her employer has designed and executed. The building shall be used and the students may record the reactions of the users to support his/her appraisal in addition to photographs, drawing etc.

Marks (Sessional)- 25

2. Site Supervision and Practice-A detail report of any major part of a small building that has been personally supervised by the candidate. It may include checking site measurement preparation of a bill, site instructions and checking of the executed work.

Marks(Sessional)- 25

3. Field Observation - A report on architectural use of the site conditions. For example, Electric poles, Water tanks, slope of the site etc.

Marks (Sessional)- 25

4. Log sheet and office certificate - A student shall fill the log sheets as a record of his every day work aid shall submit the same along with the certificate from his/her employer.

Marks (Sessional)- 25

5. Working drawing and complete estimate of small project - A student shall submit all die working details prepared by him/her during his/ heir practical training along with estimate of small project.

Marks (Sessional)- 100

6. Viva-Voce Each candidate shall be individually interviewed and questioned on any of the sublet mentioned above by a Principal,

Head of Department of Architecture and Two external examiner appointed by the University.

Marks(Viva-Voce)-100

Total Marks - 300

Pass Marks - 150

SEMESTER: TENTH

10AR01 PROFESSIONAL ELECTIVE – II

(1) INDUSTRIAL ARCHITECTURE

Objective: To impart knowledge of planning and design features, materials and techniques useful in industrial structures.

UNIT -I : Meaning of industrial architecture, scope , context. Impact of industrial revolution – origin in the context of Britain and the United States – Impact of materials and technology.

UNIT-II : Automation techniques & its impact, circulation and area requirement, influence on design – Internal & External Environment Control – Precaution at site.

UNIT-III : Pioneers and Architects role in industrial design. Study of examples of pioneer to include Peter Behrens, Max Berg, Hans Poelzig's and P. L. Nervi – impact of expressionism and international style.

UNIT-IV : Responsibilities of architect in innovative corporate image, understanding industrial environments through Indian case studies.

UNIT-V : Zoning principle, Factories Act and Rules (1948) in India – Role of Pollution Control Boards, organizing principles. Environmental Control & Waste Management.

Sessional work :

Assignments and drawing on the above topics given in the subject 10AR01 Climate Responsive Architecture .

10AR01 PROFESSIONAL ELECTIVE – II

(2) CLIMATE RESPONSIVE ARCHITECTURE

Objective: To sensitize students about the importance and need for Climate Responsive Architecture Design concept.

UNIT -I : Introduction to the ideas, issues and concepts of sustainable Architecture, related to types of climates. Global Environment & Principles of Environmentally and supportive Architecture.

UNIT-II: Non- conventional Energy Systems, Solar Thermal Application for heating and cooling.

UNIT-III : Low Energy design Hybrid Systems, Integration of PV and wind systems in the buildings.

UNIT-IV : Day Light principles , Glare amount of daylight, daylight factor, orientations and sizes of opening to achieve diffused lights.

UNIT-V: Application of Climatic Principles – Evolution of Plan Form to minimize Heat Gain in Tropical Climates, Orientation of Building with respect to sun , wind, sizes of fenestration & its orientation, Use of evaporative cooling, ground coiling, cavity walls, topography , water bodies, vegetation. Landscape elements, cross ventilation system to achieve natural comfort level in indoor & outdoor spaces.

UNIT-VI: Planning and Design features to be considered with respect to various Climate.

Sessional work :

Assignments and drawing on the above topics given in the subject 10AR01 Climate Responsive Architecture .

10AR01 PROFESSIONAL ELECTIVE – II

(3) VERNACULAR ARCHITECTURE

Objective: To impart knowledge about various manmade and natural forces behind the evolution of traditional architecture.

UNIT -I : Approaches and Concepts to the study of vernacular architecture

– Aesthetics – Anthropological – Architectural – Developmental

– Geographical – Historical – Spatial – Folkloristic.

UNIT-II : Traditional Principles of Planning in Western & Northern India – Primitive Forms, Symbolism, Colour, Folk Art etc. in the Architecture of the Deserts of Kutch and Gujrat State – Wooden Houses & Mansions (Havelis) Gujrat & Rajsthan – House boats (Dhugas) Kashmir – Material of Construction & Construction details.

UNIT-III: Vernacular Architectural of South India – Wooden Houses, Palaces & Theatres in Kerala, Palaces in Tamilnadu, Principles of Planning, Proportions, Elements, Beliefs & Culture, Material of construction and construction detail.

UNIT-IV : Western influences on Vernacular Architecture – Colonial influence on the traditional House, Bangla & Bungalow, House typologies, settlement planning, Pondicherry & Cochin.

UNIT-V : Secular Architecture – Medieval Period – Citadels, Palaces, Towers, Gateways, Public Buildings etc. in the medieval towns

of Jodhpur, Jaipur, Jaisalmer, Gwalior etc.

Sessional work;

Assignments and drawing on the above topics given in the subject 10AR01 Climate Responsive Architecture .

10AR02 ARCHITECTURAL PROJECT / THESIS

Objective: Develop any chosen architectural design project, emphasis being on integration of all technical, human & aesthetic aspect in the Architectural design solution.

The topic would be selected by students, subject to approval by the department. The topic selected may be a live design project or research oriented but essentially concluding in its application in architectural design project. The work progress evaluation would also be based on intermediate reviews of the study in presence of panel of teachers and experts from professional field.

The Viva-voce would be in the form of final Review on the basis of sessional submission in presence of two External Examiners. The H.O.D. Department of Architecture and student's teacher Guide would act as Internal Examiners.

The students would be required to explain and defend their study and design. The submission would consist of proper Presentation of Drawings, Thesis Report and Model.

The candidate shall carry out thesis considering the following aspect – Research analysis and data collection, site selection & justification, user requirements & justification, climatic conditions, socio-economic problems, communication, Transportation, Landscape & Urban Planning.

10AR03 SEMINAR

Objective: Seminar is intended to evaluated the student's ability to explore in the field of architecture and make in depth investigation in the chosen area.

The students are expected to choose topics which are of special interest to them and prepare a Report and Drawings to show analysis of investigation. The Review of work would be done in presence of H.O.D. Department of Architecture, and nominated teacher guide, and other teachers.

The Viva-voce would be in the form of proper presentation of the Drawings, Information/ Data and Report. The Viva-voce would be in