Course Structure & Syllabus

of

B. Architecture

(From the Session 2015-16)

VSSUT, BURLA

FIRST YEAR

FIRST SEMESTER				SECOND SEMESTER			
Theory		Contact Hours	CR	Theory		Contact Hours	CR
Course Code	Subject	T.S.L.P		Course Code	Subject	T.S.L.P	
AR15101	Building Materials-I	2-0-0-0	2	AR15201	Building materials-II	3-0-0-0	3
AR15102	Structural Mechanics-I	3-0-0-0	3	AR15202	Structural Mechanics-II	3-0-0-0	3
AR15103	Introduction to Art and Architecture	2-0-0-0	2	AR15203	History of architecture-I	3-0-0-0	3
				AR15204	Surveying and Leveling	2-0-0-0	2
Sessionals				Sessionals			
AR15191	Basic design	0-9-0-0	9	AR15291	Architectural design-I	0-9-0-0	9
AR15192	Architectural Drawing and Graphics-I	0-4-0-0	4	AR15292	Architectural drawing and graphics-II	0-4-0-0	4
AR15193	Building Construction-I	0-4-0-0	4	AR15293	Building Construction-II	0-4-0-0	4
AR15194	Computer Applications-I	0-0-2-0	2	AR15294	Surveying and Leveling Field Work	0-0-2-0	2
AR15195	Workshop-I	0-0-4-0	4				
Total		7-17-6-0	30	Total		11-17-2-0	30

SECOND YEAR

THIRD SEMESTER				FOURTH SEMESTER			
Theory		Contact Hours	CR	Theory		Contact Hours	CR
Course Code	Subject	T.S.L.P		Course Code	Subject	T.S.L.P	
AR15301	Structural Mechanics-III	3-0-0-0	3	AR15401	Design of Structures-I	3-0-0-0	3
AR15302	History of Architecture-II	3-0-0-0	3	AR15402	History and Theory of Architecture-I	3-0-0-0	3
AR15303	Building Services-I	4-0-0-0	4	AR15403	Building Services-II	3-0-0-0	3
AR15304	Climatology	3-0-0-0	3	AR15404	Landscape Design and Site Planning	2-0-0-0	2
SESSIONALS				SESSIONALS			
AR15391	Architectural design-II	0-9-0-0	9	AR15491	Architectural design-III	0-9-0-0	9
AR15392	Architectural Drawing and Graphics-III	0-4-0-0	4	AR15492	Building Construction-IV	0-4-0-0	4
AR15393	Building Construction – III	0-4-0-0	4	AR15493	Computer Applications-II	0-0-4-0	4
				AR15494	Landscape Design and Site Planning	0-2-0-0	2
Total		13-17-0-0	30	Total		11-15-4-0	30

THIRD YEAR

FIFTH SEMESTER				SIXTH SEMESTER			
Theory		Contact Hours	CR	Theory		Contact Hours	CR
Course Code	Subject	T.S.L.P		Course Code	Subject	T.S.L.P	
AR15501	Design of Structures-II	3-0-0-0	3	AR15601	Architectural Acoustics	3-0-0-0	3
AR15502	Building Estimating Costing and Specifications	4-0-0-0	4	AR15602	Building Codes and Bye Laws	3-0-0-0	3
AR15503	History and Theory of Architecture-II	3-0-0-0	3	AR15603	Building Economics and Sociology	3-0-0-0	3
AR15504	Environmental Studies	3-0-0-0	3	AR15604	Human Settlements and Town Planning	4-0-0-0	4
				AR15605	Barrier Free Built Environment	2-0-0-0	2
SESSIONALS				SESSIONALS			
AR15591	Architectural design-IV	0-9-0-0	9	AR15691	Architectural design-V	0-9-0-0	9
AR15592	Building Construction-V	0-4-0-0	4	AR15692	Working Drawings and Details	0-6-0-0	6
AR15593	Computer Applications-III	0-0-4-0	4				
Total		13-13-4-0	30	Total		15-15-0-0	30

FOURTH YEAR

SEVENTH SEMESTER				EIGHTH SEMESTER			
Theory		Contact Hours	CR	Theory		Contact Hours	CR
Course Code	Subject	T.S.L.P		Course Code	Subject	T.S.L.P	
AR15701	Advanced Structural Systems	2-0-0-0	2	AR15801	Professional Practice	4-0-0-0	4
AR15702	Green Buildings and Infrastructure	2-0-0-0	2	AR15802	Elective-II	4-0-0-0	4
AR15703	Advanced Services	2-0-0-0	2				
AR15704	Pre-Thesis Seminar	2-0-0-0	2				
AR15705	Housing	4-0-0-0	4				
SESSIONALS				SESSIONALS			
AR15791	Advanced Construction and Materials	0-6-0-0	6	AR15891	Design Thesis	0-0-0-22	22
AR15792	Advanced Architectural Design Studio	0-12-0-0	12				
Total		12-18-0-0	30	Total		8-0-0-22	30

FINAL YEAR

NINTH SEMESTER				TENTH SEMESTER			
Project		T-S-L-P	CR	Project		T-S-L-P	CR
AR15991	Practical Training		30	AR15991	Practical Training		30
Total			30	Total			30

List of Core Subjects:

Sl No	Names
1	Building Materials-I
2	Structural Mechanics-I
3	Introduction to Art and Architecture
4	Building materials-II
5	Structural Mechanics-II
6	History of architecture-I
7	Surveying and Leveling
8	Structural Mechanics-III
9	History of Architecture-II
10	Building Services-I
11	Climatology
12	Design of Structures-I
13	History and Theory of Architecture-I
14	Building Services-II
15	Landscape Design and Site Planning
16	Design of Structures-II
17	Building Estimating Costing and Specifications
18	History and Theory of Architecture-II
19	Environmental Studies
20	Architectural Acoustics
21	Building Codes and Bye Laws
22	Building Economics and Sociology
23	Human Settlements and Town Planning
24	Barrier Free Built Environment
25	Advanced Structural Systems
26	Green Buildings and Infrastructure
27	Advanced Services
28	Pre-Thesis Seminar
29	Housing
30	Professional Practice

List of Electives-I

Sl No	Names
1	Urban Design
2	Housing
3	Building Construction and Management
4	Interior Design
5	Landscape Architecture

List of Electives-II

Sl No	Names
1	Architectural Illumination
2	Architectural Journalism
3	Furniture and Product Design
4	Disaster resistant architecture

List of Sessionals

Sl No	Names
1	Basic design
2	Architectural Drawing and Graphics-I
3	Building Construction-I
4	Computer Applications-I
5	Workshop-I
6	Architectural design-I
7	Architectural drawing and graphics-II
8	Building Construction-II
9	Surveying and Leveling Field Work
10	Architectural design-II
11	Architectural Drawing and Graphics-III
12	Building Construction –III
13	Architectural design-III
14	Building Construction-IV
15	Computer Applications-II
16	Landscape Design and Site Planning
17	Architectural design-IV
18	Building Construction-V
19	Computer Applications-III
20	Architectural design-V
21	Working Drawings and Details
22	Advanced Construction and Materials
23	Advanced Architectural Design Studio
24	Design thesis
25	Practical Training

S – Studio Class, L - Lab, T – Theory, P – Project

FIRST SEMESTER

AR 15101 BUILDING MATERIALS I (2-0-0-0) CR-02

Module I

Brick: Composition of earths, standard, market and ISI size properties as per ISI brick manufacturing processes, requirements and tests for good bricks, fire clay bricks, varieties, sand lime bricks, paving bricks, Terra-cotta-its varieties, ordinary glazed, porous, polished and fine, sun dried brick, Special types of bricks, uses and properties, Different uses of brick in construction. Building tiles, roof, floor and wall tiles, Stones, classification of stones, granite, laterite, quartzite, marble and slates, properties and uses, stone units, Kandki, rubble, black stones, stone metal, flag stones, method of quarrying of building stones, types of stone dressings, defects in stone, stones used in construction, aggregates, tool used, preservation of stone work.

Module II

Sand: Pit, river sea sand, gravel, bulk age of sand, impurities in sand their removal, tests for silt and organic contents, different grades of sand with respective to size and their application, ISI standards, use in mortar and concrete, Cement: Ingredients and properties of cement, Types of cement, Grades of cement, initial and final setting time, test of cements, ISI Standards, Puzolana material and its properties.

Module III

Mortars Types, proportioning, mixing and grinding, mortar, cement mortar, lime mortar, methods of preparing, handling and uses of mortars, surkhi-mortar, light eight mortars i.e cinder, saw dust and fibrous plaster, gypsum plaster, plaster of Paris and application, Concrete: Concrete and its constituents, aggregate, coarse and fine, properties of concrete, strength, durability etc, Effect of age on strength, Grading: Importance, fineness modulus, combined aggregate, water cement ratio, Mixing and curing

Module IV

Timber: Building timber types and its properties, sawing of timber, shrinkage and distortion, wastage, methods of sawing, Drying and seasoning, moisture contents, purpose of seasoning, natural and artificial, Defects in timber, Use and application of timber in construction, Processed woods: Plywood and Synthetic boards, properties and application, Use of alternative materials as substitute to wood ISI standards, Ferrous metals: Pig iron, cast iron, wrought iron, steel, manufacturing processes and casting, Characteristic form and uses of cast iron, wrought iron and steel, Alloys steel, stainless steel, steel-treatment, steel tempering, annealing, normalizing, oxidation and casting of metallic products, corrosion of iron and their prevention, Metallic protective coatings, Non ferrous metals: Basic idea of important ores, properties and uses of Aluminium, Zinc, Copper, Tin and Lead

Reference Books:

1. Hailey & Hancork DW, Brick work & associated studies Vol 2 MacMillan, London 1979
2. Moxley R Mitchell's Elementary Building Construction Technical Press Ltd.
3. Rangawala SC, Building Construction, 22nd ed Charotar Pub. House, Anand 2004
4. Sushil Kumar Text Book of Building Construction, 19th ed Standard Pub. Delhi 2003

Note: Students should be exposed to on site and Laboratory tests of above materials
Students should conduct market survey of above

AR 15102 STRUCTURAL MECHANICS – I (3-0-0-0) CR-03

Module I

Introduction, Forces, system of forces, resultant, equilibrant, Parallelogram law, Triangle law, Lamis Theorem, polygon law, resultant of coplanar, concurrent forces system, couple, characteristics of couple, moment, Equilibrium, Varignon's Theorem, Analysis of trusses, types of stresses, Loads on trusses, 2-D truss analysis, using method of joints (cantilever and simply supported).

Module II

Stress, strain, type of stresses, stress-strain curve for ductile material. Hooke's law, Modulus of elasticity, Bars of varying section, Bars of composite section, Shear stress, types of strain, Poisson's

ratio, Shear modulus, bulk modulus, relationship between three elastic constants, members subjected to 3 mutually perpendicular forces.

Module III

Types of beams, types of loads, calculation of reactions for simply supported beam (Using point loads & Udl's), definition of shear force and bending moment, SFD & BMD for cantilever beams., Shear force & Bending Moment diagrams for simply supported & over hanging beams for point loads & UDL, point contra flexure & its location, Relation between loading, SF & BM

Module IV

Types of joints, lap joint & butt joint, failure of riveted joints, strength of the joint, efficiency of joint, Unwins formula, chain riveting & Diamond Riveting

Reference Books

1. Khurmi R.S. Engineering Mechanics, S. Chand and Co Ltd, New Delhi 1999
2. Ramamrutham S Engineering Mechanics 7th ed Dhanpat Rai Pub. Co. Ltd. Delhi 2004
3. Timoshenko S and Young DH Engineering Mechanics McGraw hill International Editions

AR 15103 INTRODUCTION TO ART AND ARCHITECTURE (2-0-0-0) CR=02

Module I

Purpose and relevance of art, Development of art, A survey of history of art forms; pre-historic period to the present times, Changing nature of art through time in terms of content, form and material

Module II

Exploration of art forms- study of traditional and contemporary art forms- painting sculpture, architecture, decorative arts, design arts, digital art, Relationship between art and architecture from earliest times

Module III

Definition and general understanding of architecture, role of architect in a building project, The changing role of architects, his relation with other consultants, contractors and client, technical knowledge and other skills required as inputs, Various subjects to be learnt by architecture students, their relevance to practice

Module IV

Various factors influencing the architecture of a region, architecture as a response to social, technological and environment forces, Evolution of shelter forms in regions of the world and examples of vernacular architecture in the world, with particular reference to India

Reference Books

1. Craven C Roy Indian Art a Concise History
2. Kumar Raj (Ed.) Essays on Indian Art and Architecture, Discovery Pub. New Delhi 2003
3. Fisher E Robert, Buddhist Art and Architecture, Thames and Hudson, London 1993
4. Ghosh A(Ed) Jain Art and Architecture Vol 1-3 Bharatiya Jnanpith, New Delhi
5. James C Snyder Introduction to Architecture, New York, McGraw hill
6. Christopher Alexander Pattern Language New York Oxford University Press
7. Thomas Mitchell Redefining Designing: From to Experience
8. James snyder and Anthony Y catanse Introduction to architecture, McGraw hill Book Company, New York 1979
9. Rapport Amos, House form & Culture

SESSIONAL

AR15191 BASIC DESIGN (0-9-0-0) CR-09

Module I

Introduction to design- importance of design, study and appreciation of design examples from natural and manmade environments, Elements of design, point, line, shape, form, space, texture, value, colour and material, Introduction to the principles of composition, unity, balance, symmetry, proportion, scale, hierarchy, rhythm, contrast, harmony, focus etc, Application of the principles of composition in two dimensional compositions, Transformations in two dimensions, shapes and patterns, use of grids in creating repetitive patterns, principles of composition, using grids, symmetrical/asymmetrical, rule of thirds, center of interest etc, Explorative exercises in two dimensional compositions.

Module II

Developing composition in two dimensional designs like- logos, cover page, collage, mural, floor patterns, grills, railings, gates etc., Concepts of geometry- different three dimensional forms, primitive forms and understanding the behaviour when combined- Transformations in three dimensional forms, Explorative exercises in three dimensional compositions

Module III

Developing compositions in three dimensional designs like- Entrances, gateways, portal, compound walls built-in furniture etc., Colour theory, colour wheel, primary, secondary, tertiary colours, colour schemes, colour value and intensity. Theoretical inputs to be followed by exercises to develop the ability to translate abstract principles into two and three dimensional compositions.

Module IV

Study of ornament in architecture design, Different types of ornamentation in buildings, Study and evaluation of artefacts and historic examples and their applicability. Exercises in related to documentation of artefacts at historical sites and to understand them with respect to the surround environment; to transform the designs to present context or usage.

Reference Books

1. Wucius, Wong, Principles of two dimensional design, Von Nostrand Reinhold 1972
2. Maier, Manfired Basic Principles of Design Vol 1, 2, 3 & 4 Von Nostrand Reinhold NY 1977
3. Ching, Francis D.K. Architecture: Form, Space and Order, 2nd ed. Von Nostrand Reinhold NY 1996
4. Hanks A David, Decorative design of Frank LIoyd Wright, Dover Publication Inc, New York 1999
5. Hepler E Donald, Wallach I Paul, Architecture, Drafting and Design, 3rd ed. McGraw hill Book Company, New York, 1977.
6. Itten Johannes, Design and Form: The basic course at the Bauhaus, Thames and Hudson ltd, London, 1997.
7. Krier, Rob, Architectural Composition, Academy Editions, London, 1988.
8. Meiss, Pierre Von, Elements of Architecture: From form to space, E and FN Spon. London, 1992
9. Pipes Alan, Drawing for 3-Dimensional Design, Thames and Hudson Ltd. London, 1990.
10. Shibikawa, Ikuyoshi and Takashashi Yumi, Designers guide to Colour
11. Smithles KW, Principles of Design in Architecture. Chapman and Hall 1983.

AR 15192 ARCHITECTURAL DRAWING AND GRAPHICS I (0-4-0-0) CR-04

Module I

Introduction, Fundamentals of drawing and its practice, Introduction to drawing equipment, familiarization, use and handling, Drawing: Drawing sheet sizes, layouts and composition, Simple exercises in drafting, line types, line weights, dimensioning, Typography- anatomy of type, Styles, Roman and Gothic style lettering, Freehand lettering, title panels and legends.

Module II

Geometrical Construction: Constructing simple and complex geometrical shapes involving various drafting technique drawing regular shapes using T-squares, set-squares, Special methods of drawing regular polygons, Regular polygons inscribed in a Circle.

Module III

Architectural Symbols: Representation of building elements, openings, materials, furniture and accessories, human postures, vegetation, vehicles, terminology and abbreviations used in architectural representation.

Module IV

Measuring and drawing to scale: Scales and construction of scales, scaled drawings of single objects, furniture, rooms, doors and windows etc, in plan, elevation and section, Reduction and enlargement of drawings. Free Hand Drawings: line stokes, light and shade techniques of simple, natural and 3D geometric forms, Study of proportion and scale, structure and axes of objects, Outdoor sketching of single building forms

Note: This is a studio subject and students should be made to prepare drawings as studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate site visits

Reference Books:

1. Moris I.H. Geometrical Drawing for art Students
2. Thomas E French Graphic science and design, New York, McGraw hill
3. Nichols TB and Keep Norman, Geometry of construction, 3rd ed, Cleaver Hume Press Ltd. London, 1959.
4. Bhatt ND and Panchal VM Engineering Drawing, plane and solid geometry, 42nd ed, Chartor Pub. Anand, 2000
5. Gill, PS, Text Book of Geometrical drawing, 3rd ed, Dewan Suhil Kumar Kataria, Ludhiana, 1986
6. Shah MG, Kale CM and Patki SY, Building drawing with an integrated approach to built environment, 7th ed Tata McGraw Hill pub Delhi 2000.
7. Bies D John, Architectural Drafting: Structure and Environment Bobbs, Merrill Educational Pub. Indianapolis
8. Nelson A John, Hand book of Architecture and Civil Drafting, Von Nostrand Reinhold New York, 1983.

AR 15193 BUILDING CONSTRUCTION I (0-4-0-0) CR-04

Module I

Brickwork, Various types of bonds, stopped ends, junctions, piers, jambs, footings, foundations, corbelling, damp proof course, window sills, thresholds, copings, mortar joints and pointing, Stone masonry, stone walls, rubble work, ashlar work, masonry joints, window sills, plinth, cornices, surface finishes

Module II

Composite masonry, Brick backed ashlar, rubble backed ashlar, concrete backed masonry, ashlar faced concrete walls, marble faced masonry, tile faced concrete, hollow block masonry, Cladding: Cladding of various materials-marble, granite, slate, tiles, metal etc

Module III

Lintels: Lintels of wood, stone, brick, Arches: arches, terms defined, various forms of arches like segmental, semi-circular, elliptical, three-centered, flat and relieving arch etc

Module IV

Ground and upper floors, solid floor, brick flooring, floor finishing and floor coverings, Basement floor, Flooring Finishes, Brick on edge, concrete, wood, Indian patent floor, granolithic terrazzo, pitch mastic, Magnesium Oxide, Chloride, flag store or shahba stone flooring etc., Flat roofs: Madras terrace, Jack arch, elementary knowledge about RCC roof and floor slabs

Note: The class work and home assignments should include appropriate site visits by the students, student will maintain field observations/record books. At least two exercises to be done in the construction ward.

Reference Books

1. Barry R. The construction of buildings Vol 2 5th ed East West Press, New Delhi 1999
2. Bindra S.P. and Arora S.P. Building Construction Planning Techniques and Methods of Construction, 19th ed, Dhanpat Rai Pub New Delhi 2000
3. Hailey and Hancock DW, Brick work and associated studies Vol 2 McMillan, London, 1979
4. Moxley R Mitchell's Elementary building construction, Technical Press Ltd
5. Rangwala SC, Building construction 22nd ed Charator Pub House Anand 2004
6. Sushil Kumar Text Book of Building Construction 19th ed Standard Pub Delhi 2003

AR 15194 COMPUTER APPLICATIONS-I (0-0-2-0) CR-02

Module I

Introduction: Introduction and history of computer, software and hardware, concepts, bits, bytes-types of languages- operating systems (windows, DOS), introduction to Word Processing Package, Toolbar, creating a new document, formatting text, inserting tables, pictures, page numbers and date/time, spelling and grammar checking, taking printouts, Spread Sheets: Introduction to Spread Sheets, Microsoft Excel, creating formulas, basic operations, boarders and shading, creating charts

Module II

Multi-media presentations: Introduction multi-media presentation (like MS, power point) Creating a Presentation, different views in Power Point, slide manipulation, slide animation, slide transitions, view slide show, navigating while in slideshow, hyper linking to various other media/application outputs, scanning of different media in different formats, setting of options, resolution settings, management of file size, integrating partial scans of large documents, Pack up a presentation for use on another computer.

Module III

Exploring Microsoft Access: , Introduction, creating new and operating existing, creating a database using a wizard, creating a database without using a wizard, tables- and their working, creating a table from scratch, Primary Keys, Switching views, entering data, manipulating data, advanced table feature examples, Relationships, linking multiple tables together, forms- and their workings, creating a form using a wizard, reports and their working, creating report and mail-merge, tables using a wizard

Module IV

Internet concepts, Introduction to Internet, use of internet, various search engines, hyper text mark-up, Language, e-mails, Photo Editing and Desktop Publishing (application)-II, Introduction, software and system requirements, preferences, workspace, graphics terminology, image depth, resolution and image size, image sources, straightening and cropping of images, basic correction of images, printing, Photoshop software, selections, choosing foreground and background colors, filling with color, options

and preferences, file browser, stepping back in time, use ram efficiently, sharpening images, working with layers, painting, color theory, image modes, channels, more advanced adjustment commands, file format categories

Reference Books

1. Adobe Creative Team, Adobe Photoshop CS (Class work book)
2. Drobas Adele Fundamental Photoshop A Complete Introduction Greenberg HTML Black Book
3. Sagman Microsoft Office for Windows, India Addison Wesley 1999
4. Woody Leon Hard Microsoft Office 2000 Prentice Hall of India New Delhi

AR 15195 WORKSHOP-I (0-0-4-0) CR-04

Module I

Introduction to model-making, Need; role of scale models in design, general practice, Digital models, Essentials of model making: understanding of various tools and machines employed, best practices involved in operating the tools and the techniques

Module II

Survey of various materials available for model making such as papers, mount boards, wood, plastics, films, plaster of Paris, acrylic, Styrofoam, wax, metals, glass, FRP, etc and exploring, Their potential in model-making, chamfering at 45 degrees in mount board, Techniques of Scale-modelling; use of different scales, templates, measuring aids, conventions followed

Module III

Techniques for preparation of presentation models, mock-ups, simulation of various materials and textures such as wood, glass, aluminium, steel, bricks, roofing tiles, flooring, corrugated sheets, upholsteries etc, Carpentry, Introduction to the use of different types of tools and different types of joints used in carpentry, Joinery details which are commonly used in timber construction, Application of surface finishes such as polish, varnish, lacquer on wood

Module IV

Photography in built models, using lighting and natural background

Assignments: At least three major assignments involving the individual students to fabricate

a. Scale model of a piece of furniture
b. Presentation of models
c. Mock-up of an everyday object
d. Three-dimensional forms etc

Documentation of the important phases of fabrication is must which shall become the basis for internal evaluation

Reference Books:

1. Bernald S and Copplence Myers History of Art
2. Craven C Roy Indian Art a Concise History
3. Krier Rob Element of Architecture Academy Editions London 1992
4. Lang Jon A concise History of Modern Architecture in India Permanent Black New Delhi 2002
5. Magnet Jacque The Assesthetic Experiences An anthropologists looks at the Visual Art
6. Preble Duame Art Forms
7. Snyder C James and Catanese J Anthony Introduction to Architecture

8. Tapert Annette, Swid Powell Objects by Architects, Rizzol New York 1990

9. Thyagarajan Basic practical photography

10. Ching Francis D.K. Architecture Form, Space and Order

SECOND SEMESTER

AR 15201 BUILDING MATERIALS II (3-0-0-0) CR-03

Module I

Laminates and Veneers Resin bonded ply wood, types of laminates, laminated wood, insulating boards and other miscellaneous boards, veneers from different varieties of timber, their characteristics and uses MDF & HDF Boards, Paints and Varnishes Protective coatings, paints, constituents of paints, their functions, water paints, distempers and cement based paints, emulsion paints, selection of paints and storage of paints, Types of Varnishes, (oil and spirit), characteristics and uses of varnishes, French polish, anti-corrosive paint, damp proofing finishes

Module II

Glass and glass products: Composition and fabrication of glass, types of glass, wired glass, fiber glass, rock wood, laminated glass, glass-crete blocks, structural glass, their properties and uses in buildings, Plastics: Polymer types, thermo setting and thermo plastics, resins, common types of mouldings, fabrication of plastics, polymerization and condensation, plastic coatings, Composite materials, classification, properties and uses, linoleum, plastic coated paper, polythene sheets, reinforced plastic, plastic laminates and PVC

Module III

Floorings: Introduction, essential requirements of a floor, factors affecting selection of flooring material, various natural as well as artificial flooring materials like brick, flag stone, tiled, cement concrete, granolithic, terrazzo, marble, shabad stones, timber flooring, timber floor supported on RSJ, flag stone floor resting on RSJ, vitrified tiles, ceramic tiles, Mosaic, rubber, Linoleum and PVC and PVA flooring, Roof Coverings Introduction, requirements of good roof technical terms, Classification, types of roof coverings for pitched roof; Roofing tiles and roofing with cement products like AC sheet roofs, GI sheets roofs, slates

Module IV

Miscellaneous materials and treatments properties and uses of Asbestos, cork, felt mica, adhesive, Bakelite, china clay, fiber glass, leather, canvass, jute, rubber, Asphalt and Bitumen, Materials for Special Treatments Fire resistant, waterproofing, thermal insulation, acoustical treatment and anti-termite treatment

Reference Books

1. Chowdary KP Engineering Materials are Used in India 7th ed Oxford and IBH Pub Ltd New Delhi 1990

2. Moxley R Mitchell's Elementary Building Construction Technical Press Ltd

3. Rangawala SC Building Construction Materials and types of Construction 3rd ed John Wiley and Sons Inc New York 1963

AR 15202 STRUCTURAL MECHANICS II (3-0-0-0) CR-03

Module I

Theory of simple bending, Introduction, pure bending and ordinary bending, assumptions derivation of flexure formula section modulus, Numerical on flexure equation., Shear stresses in beams, Introduction, derivation of shear stress formula, shear stress distribution for standard shapes like rectangle, circle, triangle I.T.L.C sections, Numerical

Module II

Direct & Bending Stresses, Introduction, stress distribution of eccentrically loaded column, middle third rule, core or Kernel of section, stress distribution for column with one axis eccentricity, two axis eccentricities, Numerical, Deflection-I, Introduction of slope & deflection, slopes and deflections for cantilever beams with point load & udl's using double integration method & moment area methods

Module III

Deflection-II, Introduction of Maculay's method, slopes and deflections, simply supported beams with point load & udl's double integration & Macaulay's method, Fixed beams: Introduction, Advantages and disadvantages of fixed beams over simply supported beams, SFD and BMD for fixed beams with combination of point loads & udl's (No formula derivations)

Module IV

Propped cantilevers Introduction, Reaction of a prop. Cantilevers with Udl's point loads, prop, at end & at intermediate positions, slope & deflection, Welded joints, Introduction, Advantages and disadvantages of welded joints, types, strength of fillet welds, design of welded joint for plates and unsymmetrical sections for axial loading

Reference Books

1. Khurmi RS, Engineering Mechanics S Chand and Co Ltd New Delhi 1999
2. Ramamrutham S Engineering Mechanics 7th ed Dhanpat Rai and sons Pub Co Ltd Delhi 2004
3. Timoshenko S and Young DH Engineering Mechanics McGraw hill International Editions

AR 15203 HISTORY OF ARCHITECTURE I (3-0-0-0) CR-03

Module I

Architectural development in the ancient civilization in Indus Valley, Egypt and Mesopotamia, Study of Pyramids, temples, Mastabas, Ziggurats, Architecture in the Classic Greek periods, different orders, optical correction and appreciation of perfection

Module II

Architecture in Roman period, Grand scale, application of Greek orders, Construction of vaults, study of different typologies of buildings, development of roads and aqueducts

Module III

Architecture in the early Christian, Byzantine, Romanesque, Gothic periods in Europe and rest of the world excluding Asia, Architecture in Renaissance and Baroque, revival in architecture, study of building typologies

Module IV

The other architecture styles preceding the advent of industrial revolution in Europe, Mannerist Architecture, Jacobean Architecture, Elizabethan architecture, Victorian architecture and Moorish architecture

Reference Books

1. Fletcher Sir Banister A History of Architecture 19th ed CBS Pub Delhi 1992
2. Yarwood Doreen A Chronology of western architecture, BT Batsford Ltd London 1967
3. Schulz Christian Norberg Meaning in western architecture 2nd ed Rizzoli Int Pub New York 1981
4. Copplistone Trewin and Others World Architecture An Illiustrated History 11th ed Hamlyn London 1979
5. Bindoo DD History of Architecture Milind P Lakshana Hyderabad 2006
6. Wittkaner R Architecture by principles in the age of Humanism Chichester Academy Editions 1998

AR 15204 SURVEYING AND LEVELLING (2-0-0-0) CR-02

Module I

Introduction, Definitions, Basic principles of surveying, classification of survey, uses of survey, scales and symbols, sources of errors in survey, linear measurement, accurate and approximate methods, duties of surveyor, Chain surveying, introduction, types of chains and tapes, Instruments for chaining and taping, ranging cross staffs, offsets, obstacles in chain surveying, errors and corrections, standardization, temperature and pull) composition of areas (trapezoidal rule, average ordinate, simpson rule)

Module II

Compass Surveying, Introduction, prismatic compass and surveyors compass, types of bearings, designation of bearings, fore bearing and back bearing, types of traverse, temporary adjustment of prismatic compass, local attraction, corrections, precautions, errors, Plane Table survey, Introduction, types of plane tables and their assessories, setting up the plane table, traversing, radiation method, intersection method, resection method (two point problem), three point problem

Module III

Leveling- Introduction, definition of terms used in levelling, principles of levelling, classifications, temporary adjustments of dumpy level, RL's by height of instrument and rise and fall method, Contouring and their characteristics, uses, errors in levelling, Theodolite- Introduction- vernier Theodolite, users of Theodolite, Temporary adjustments, Traversing

Module IV

Automated Surveying, Introduction to use of Digital Surveying, Instruments such as distomat, total station, Electronic Theodolite, GPS, Site studies, Plot, site, land and regions, size and shape of site, Analysis of accessibility, topography, Climate, land forms, Surface drainage, Soil, Water vegetation, ecology, and visual aspects

Reference Books

1. Arora KR Surveying Vol I 6th ed Standard Book Hiouse Delhi 2000
2. Lynch Kevin Site Planning MIT Press Massachussets 1962
3. Punmia BC Surveying Vol 1 13th ed Laxmi Publications Pvt Ltd New Delhi 1996

SESSIONAL

AR 15291 ARCHITECTURAL DESIGN-I(0-9-0-0) CR-09

Module I

Anthropometrics, Basic , average measurements of human body in different postures-its proportion and graphic representation, application in the design of simple household and street furniture, Use of mannequins in defining spatial parameter of design

Module II

Study of functional spaces and the issues like clearances, lighting and ventilation, furniture arrangements, Minimum and optimum areas for various functions, detailed study of space such as living, dining, bedrooms, kitchen, toilet etc

Module III

Study of the human considerations like privacy, convenience, comfort etc, Case study of a house and a critical appraisal of the spaces

Module IV

Introduction to design process, Pre-Design Studies: Preparation of design brief, the user requirement and their implications, Study of the site and the context, Design Response, Development of concept, Graphic tools like circulation diagrams, Figure ground studies etc, Integration of form and function in the design of bus shelter, milk booth, watchman's cabin, traffic police kiosk, flower stall, ATM Center, etc,

At least two major exercises and two minor design/time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems

Reference Books

1. Chiara Joseph de and Others Time Savers Standards of Building Types McGraw hill 1980

2. Kirk Paul Hayden and Sternberg D Eugene Doctors Offices and Clinics 2nd ed Reinhold Pub USA 1980

3. Neufert Ernst Ernst Neufert Architects Data, Granada Pub. Ltd. London 1970

4. Pevsner Nikolaus A history of Building types Thames and Hudson London 1976

5. Shah S Charanjit Architects Hand Book Ready Reckoner Galogotia Pub. Co. New Delhi 1996

AR 15292 ARCHITECTURAL DRAWING AND GRAPHICS II (0-4-0-0) CR-04

Module I

Building geometry, Study of points, lines and planes, leading to simple and complex solid geometrical forms, Orthographic projection-representation of 3D elements in Plan and Elevations, use of circle in mouldings, Ovolo Covetta, Ogee, Lancet, Horse shoe, Moorish, Stilted and rampant- Tudor, three centered and drop, Exercises on lonic volute, Entasts of column etc, working with models to facilitate visualization

Module II

Sciography: Simple and composite forms, shadows on horizontal, vertical planes and on their own surfaces, Study of shade and shadows of simple geometrical solids of various forms and groups of forms

Module III

Shade and shadow techniques leading to advanced practical examples, shades and shadows on buildings or parts of buildings, Relative changes in building shades and shadows with such angle, time, building height- Introduction to sciography in perspective

Module IV

Architectural Documentation: Detailed measured drawing and documentation of any interesting building- preparation of maps, plans, elevations, sections, views etc.

Reference Books

1. Thoms E. French Graphic Science and Design New York McGrawhill

2. Nichols TB and Keep Norman Geometry of Construction 3rd ed Cleaver- Hume Press Ltd London 1959

3. Bhatt ND and Panchal VM Engineering Drawing Plane and Solid Geometry 42nd ed Charotar Pub. Anand, 2000

4. Gill PS Text Book of Geometrical Drawing 3rd ed Dewan Suhil Kumar Kataria Ludhiana 1986

5. Shah MG, Kale CM and Patki SY Buidling drawing with an integrated approach to built environment 7th ed Tata McGraw hill Pub. Delhi 2000

6. Claude Bailey Design Development of Indian Architecture

7. Ernest Burden Architectural Dilineation

AR 15293 BUILDING CONSTRUCTION II (0-4-0-0) CR-04

Module I

Carpentry and Joinery, Terms defined, mitring, ploughing, grooving, rebating, veneering, Various forms of joints in wood work, such as lengthening joints, bearing joints, halving, dovetailing, housing, notching, tusk and tenon etc., Doors, Definition of terms, types of doors, wooden, ledged, ledged and braced, panelled, flush door, Hinged, single and double shutters, sliding, folding, revolving, pivoted

Module II

Windows- Casement, top and bottom hung, pivoted and sliding sash, Hardware; fixtures, locks, hinges, fastening for doors and windows, Steel: windows, rolling shutters and grills, Aluminium doors and windows

Module III

Wooden ground and upper floors, Terms defined, bridging joists, binding joists, binders, beams and girders, solid and herring bone strutting, floor boards, ceiling joists, trimming floors to accommodate fire place, Details of fire place, Partition Walls, Brick partition, reinforced brick partition, brick nogged partition, lath and plaster partition, pre-cast concrete partition, glass block and glass create partition, common wooden partition, trussed partition

Module IV

Staircases; Terms defined, Tread, riser, stringer, nosing, flight, landing, head room, handrail, balusters, newel post etc, types of stairs i.e straight, doglegged, open well, geometrical, circular, spiral, bifurcated, wooden stairs, stone stairs, metal stairs and elementary knowledge of RCC stairs

Reference Books

1. Barry R. The construction of Buildings Vol 2 5th ed East-West Press, New Delhi 1999
2. Bindra SP and Arora SP Building Construction Planning Techniques and Methods of construction, 19th ed Dhanpat Rai Pub. New Delhi 2000
3. Hailey and Hancork DW Brickwork and Associated Studies Vol 2 MacMilan London 1979
4. Moxley R Mitchell's Elementary Building Construction Technical Press Ltd
5. Rangawala SC Building Construction 22nd ed Charatar Pub. House Anand 2004
6. Sushil Kumar Text Book of Building Construction 19th ed Standard Pub. Delhi 2003

AR 15294 SURVEYING AND LEVELLING (0-0-2-0) CR-02

Module I

Introduction, Definitions, Basic principles of surveying, classification of survey, uses of survey, scales and symbols, sources of errors in survey, linear measurement, accurate and approximate methods, duties of surveyor, Chain surveying, introduction, types of chains and tapes, Instruments for chaining and taping, ranging cross staffs, offsets, obstacles in chain surveying, errors and corrections, standardization, temperature and pull) composition of areas (trapezoidal rule, average ordinate, simpson rule)

Module II

Compass Surveying, Introduction, prismatic compass and surveyors compass, types of bearings, designation of bearings, fore bearing and back bearing, types of traverse, temporary adjustment of prismatic compass, local attraction, corrections, precautions, errors, Plane Table survey, Introduction, types of plane tables and their assessories, setting up the plane table, traversing, radiation method, intersection method, resection method (two point problem), three point problem

Module III

Leveling- Introduction, definition of terms used in levelling, principles of levelling, classifications, temporary adjustments of dumpy level, RL's by height of instrument and rise and fall method, Contouring and their characteristics, uses, errors in levelling, Theodolite- Introduction- vernier Theodolite, users of Theodolite, Temporary adjustments, Traversing

Module IV

Automated Surveying, Introduction to use of Digital Surveying, Instruments such as distomat, total station, Electronic Theodolite, GPS, Site studies, Plot, site, land and regions, size and shape of site, Analysis of accessibility, topography, Climate, land forms, Surface drainage, Soil, Water vegetation, ecology, and visual aspects

Reference Books

1. Arora KR Surveying Vol I 6th ed Standard Book Hiouse Delhi 2000
2. Lynch Kevin Site Planning MIT Press Massachussets 1962
3. Punmia BC Surveying Vol 1 13th ed Laxmi Publications Pvt Ltd New Delhi 1996

THIRD SEMESTER

AR 15301 STRUCTURAL MECHANICS III (3-0-0-0) CR-03

Module I

Continuous beams: Shear force and Bending moment diagrams for continuous beams using theorem of three moments (excluding derivation and sinking of supports), Moment Distribution Method: Introduction, carryover, relative stiffness, application of Moment Distribution Method to Continuous beams, single bay frame without sway (excluding sinking of supports)

Module II

Kani's method/Rotation Contribution Method: Introduction, rotational factors, application of Kani's method for beams and frames (single bay without sinking of supports)

Module III

Columns and Struts Buckling and crushing failures, types of end conditions, Euler's theory of long columns for different end conditions and equivalent length derivations, Rankine's equation, derivation and application of the basic formula, Wind pressure on chimneys, Maximum and Minimum intensities of stress at bottom of Chimneys Retaining walls subjected to earth pressure

Module IV

Torsion of Shafts Assumptions, Derivation of basic equation $T / J = G\theta / l = f_s / R$, Power Transmitted by shafts, application of basic equation to shafts, Arches: Determination of horizontal thrust, bending moment and radial shear for three-hinged parabolic and segmental arches with supports at same level and different levels

Reference Books

1. AK Jain and Punmia Strength of Materials
2. Ramamrutham S Theory of Structures 17th ed Dhanpat Rai Pub. Co. Ltd. New Delhi 2005
3. Reddy CS Basic Structural Analysis 18th ed Tata McGrawhill Pub. Co. Ltd New Delhi 1991

AR 15302 HISTORY OF ARCHITECTURE II (3-0-0-0) CR-03

Module I

Development of Vedic Architecture, Development of architecture in India and rest of Asia in Buddhist Architecture

Module II

Evolution of Hindu temple form, entry rock cut examples, early Chalukyans, Development of Hindu Architecture: Nagara style in Orissa, Kahjuraho, Gujarat etc

Module III

Development of Hindu Architecture: Dravidian style in Pallava, Chola, Pandya periods, Development of Hindu Architecture under late Chalukyas, Development of Jain Architecture

Module IV

Islamic Architecture in India: Early Saracenic School in India: Imperial school at Delhi, Islamic Architecture in India: Provincial styles at Gujarat, Deccan, Bengal, Moghul Architecture in India

Reference Books

1. Brown Percy Indian Architecture, Buddhist and Hindu periods, DB Taraporevala Sons and Co, Mumbai 2003

2. Grover Satish The Architecture of India, Vikas Pub. House Pvt. Ltd. Ghaziabad, 1980

3. Rowl Benjamin Art and Architecture of India

4. Tadgell Christopher The History of Architecture in India, from the Dawn of Civilization to the End of the Raj. Om Book Service, New Delhi 1990

5. Vistara The Architecture of India

AR15303 BUILDING SERVICES I (4-0-0-0) CR-04

Module I

Introduction to water supply and sanitation, Traditional sources of water supply and sanitation, Classification of water based on its usage, Elements of public/private water supply system, Different sources of water supply such as wells, reservoirs, etc Water and its qualities, pumping and Distribution

Module II

Types of fittings like taps, bathtubs, showers, jets, cocks, valves, electrical fixtures etc, Faucets for kitchens, bathrooms and toilets, Check valves, foot valves, sump pump check valves, and pressure test gauges., Building service connections, cold and hot water distribution systems in buildings and their design, materials, joints, fittings and valves (gate, flap, ball, flush valves etc), Direct and indirect systems, individual water supply, special installation on multi-storied buildings. Special emphasis on city level distribution of water

Module III

Conventional water treatment- sedimentation, coagulation, filtration and disinfection, Distribution system, sanitary, storm and combined sewerage system, Design of sewerage systems, Location of sewage systems, conventional waste water treatment, activated sludge, trickling filters etc, Design of drainage and vent pipes, system for low-rise and high-rise buildings, building drains, sewers, gullies, inspection chambers, manholes, connection to public sewer, cross connections, femule, water meters, stopcocks, bib cocks etc., Types of fixtures and materials, wash basins, water closets, urinals, bidets, sinks etc, Conditions of flow in building drainage pipes, traps, vents and their material specifications, Over-head and under-ground reservoirs, Details study of independent house and Apartment

Module IV

Waste-water disposal systems, septic tank and its design, soil adsorption system, alternatives, solid wastes collection and removal from buildings, On-site processing and disposal methods, Aerobic and Anaerobic decomposition, purifying capacity of water bodies, Bio-chemical Oxygen Demand, Roads and Pavements, Different types, water bound macadam, tar bitumen, asphalt and Cement concrete roads, soil stabilization, types of paving-murram, brick and stone paving, Drainage of roads, sub-drains, culverts, ditches and gutters

References

1. Hussain SK Text Book of Water Supply and Sanitary Engineering 3rd ed Oxford and IBH Pub Ltd, New Delhi 1994

2. Kshirsagar SR Water Supply Engineering 6th ed Roorkeee Pub Roorkee 1980

3. Rangawala SC, Water Supply and Sanitary Engineering Environmental Engineering 19th ed Charotar Pub. House, Anand, 2004

AR 15304 CLIMATOLOGY (3-0-0-0) CR-03

Module I

Introduction to Building Climatology: Climate and built form interaction, Global Climatic factors, elements of climate, graphic representation of climatic data, Mahoneys Tables, macro and micro climate, challenge of rapid, extreme environmental change, Tropical Climates:, Definition, classification of tropical climates, characteristics of different climatic zones, Design considerations for warm-humid, hot-dry, composite and upland climates

Module II

Thermal Comfort, Thermal comfort factors, Physiological aspects, Body heat balance, comfort range and comfort charts, Heat flow through buildings: Basic principles of heat transfer through buildings, performance of different materials, Periodic heat flow

Module III

Sun and the design process: Solar geometry, Solar charts, Sun angles and shadow angles, orientation for sun, sun control, design of shading devices, building form and heat gain, basic principles of daylighting, sunlight and glare, Natural ventilation: Air movement around and through buildings, Orientation for wind, stack effect, Induced ventilation

Module IV

Passive Cooling:: Passive methods of Cooling, roof pond, desiccant cooling, Evaporative Cooling and earth sheltered buildings etc, Site planning (including landscaping) and building planning and design considering climate factors, Detailed appraisal/analysis of climatological performance of an existing residence and or a workplace followed by redesigning or the same to improve climatological performance

Reference Books

1. Koenlgsberger OH and Others manual of Tropical Housing and Building, Orient Longman, Chennai, 2003
2. Konya Alian Design for hot Climates
3. Kukreja CP Tropical Architecture Tata McGraw hill Pub. Co. Ltd New Delhi 1978
4. Markus TA and Morris EN Buildings. Climate and Energy, Pitman Pub. Ltd, London 1980
5. Olgyay and Olgyay Solar Control and Shading Devices

SESSIONAL

AR 15391 ARCHITECURAL DESIGN II (0-9-0-0) CR-09

The design issues to be addressed:
Various functions and their spatial implications
Formulations of the concept
Anthropometry and furniture layout
Horizontal circulation
Interior volumes and space articulation through different materials
Integration of form and function
The list of suggested topics to be covered as design problems:
Balwadi, Kindergarten, School, Primary Health Centre, Doctor's Clinic, small Cafeteria, Highway Restaurant, Village post office, Bank extension counter, Police station, Architect's office, Departmental Store, School Gymkhana and Youth Club etc
Necessary theoretical inputs to be given highlighting the norms and design issues. The topics not covered as design problems will have to be covered by the Studio faculty members through lecture/slide show sessions and site visits.
At least two major exercises and two minor design/time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems.
Note: in the end exam which is a viva-voce the students have to present the entire semester work for assessment.

Reference Books

1. Chiara Joseph de and others: Time savers standards of building types McGrawhill 1980
2. Kirk Paul Hayden and Sternberg D Eugene Doctors Offices and Clinics 2nd ed Reinhold Pub. USA 1960.
3. Neufert Ernst, Ernst Neufert Architects Data Granada Pub. Ltd London 1970
4. Pevsner Nikolaus A History of Building types Thames and Hudson London 1976
5. Shah S Charanjit Architects Hand Book Ready Reckoner Galogotia Pub. Co. New Delhi 1996

AR 15392 ARCHITECTURAL DRAWING AND GRAPHICS III (0-4-0-0) CR-04

Module I

Perspective: Characteristics of perspective drawings, perspective of simple geometric solids and spaces and complex geometries, Advanced examples in one point or parallel perspective, two point or angular perspective, Introduction to three point perspective

Module II

Rendering techniques: Introduction to surfaces and media, observation, recording and basic representation techniques in different media through drawing pencil, pen, brush, charcoal, crayons etc

Module III

Introduction of rules of composition, colour study, values, tones and general approach to rendering, Entourage, Treatment of sky, clouds, landscape elements, human figures, foreground and surroundings, shadow projections in renderings

Module IV

Graphic skills and Presentation techniques: Page layout and composition grids, illustration techniques, Portfolio design and formats, Digital techniques in graphics

Reference Books

1. David E Carter, The Big Book of Design, David E Carter Books
2. Joyce Rutter Kaye Design Basics, Rockport
3. Graphics Book Rotovision
4. Elien Lopton and Jennefer Cole Phillips Graphic Design The New Basics Princeton Architectural Press
5. Atkin William W Corbelletti Raniero and Firore R Vincent Pencil Techniques in Modern Design 4th ed Reinhold Pub. Corporation New York 1962
6. Beilings Lance Bowen Perspective Space and Design
7. Burden Ernest Architectural Delineation: A photographic approach to presentation, 2nd ed McGraw hill Inc New York 1982
8. Conil Claudius Drawings by Architects
9. Hagarth Paul Drawing Architecture
10. Pranchlay H Perspective

AR 15393 BUILDING CONSTRUCTION III (0-4-0-0) CR-04

Module I

Introduction to RCC, Understanding the properties and characteristics of RCC, its advantages and disadvantages, Cast-in-situ and pre-cast constructional methods in RCC, Understanding the structural components of a typical RCC frame structure with reference to their location, junctions, load transfer and design

Module II

Substructure: RCC foundations, isolated footing (rectangular and trapezoidal footings), pile foundation, combined footing, raft foundation

Module III

Superstructure: RCC columns, different shapes, different combinations and loading conditions (axial, bending, non-axial), slenderness factor, RCC beams, Singly and doubly reinforced beams, T and L beams, continuous beams, lintels and brackets, RCC slabs, one way and two way slabs

Module IV

Miscellaneous RCC staircases and ramp, Waist slab and folded plate staircases, RCC Balconies, chajjas etc, Advanced concepts: Flat slab, coffered slab, diaphragms, retaining walls and water tanks

Note: This is a studio subject and students should be made to prepare construction drawings as studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate side visits

Reference

1. Bindra and Arora Building Construction, Planning Techniques and Methods in Construction 19th ed Dhantpat Rai Pub. New Delhi 2000
2. Foster J Stroud Mitchell Building Construction Elementary and Advanced 17th ed BT Batsford Ltd London 1963
3. McKay WB Building Construction Metric Vol I-IV 4th ed, Orient Longman Mumbai 2005
4. Sushil kumar Text Book of Building Construction 19th ed Standard Pub. Distributors, New Delhi 2003

FOURTH SEMESTER

AR 15401 DESIGN OF STRUCTURES-I (3-0-0-0) CR-03

Module I

Introduction to RCC design, Design Philosophies, working stress and limit state method, singly reinforced beam, Analysis and Design using both working stress and limit state methods, Situations

where doubly reinforced beams are used, analysis and design of doubly reinforced beam using limit state method only.

Module II

T-beams, introduction, analysis and design of T-beam using Limit state method only, Design of shear reinforcement for all types of beams with and without cracking (Limit State method only), Slabs, Introduction, Design of One way and two way reinforced slabs (simply supported, restrained, continuous) by limit state method only

Module III

Design of axially loaded RCC columns and columns subjected to BM about one and two axis using limit state method only, Design of stair case (Dog-legged only) using working stress method. Design of lintels and cantilever beams and slabs using limit state method only

Module IV

Design of RCC Isolated footings for columns (Square and Rectangle), working stress method only, Introduction to pre-stressed concrete, Pre-tensioning and Post-tensioning methods, Problems of beams

Reference Books

1. A.K. Jain Reinforced Concrete, Limit State Design 5th ed New Chand and Bros Roorkee 1999
2. Ramamrutham S and Narayan R Design of RCC Structures 12th ed Dhantpat Rai Pub. New Delhi 1998

AR 15402 HISTORY AND THEORY OF ARCHITECTURE-I (3-0-0-0) CR-03

Module I

Influence of industrial revolution on building materials, construction technology, evolution of new building types and increasing user requirements, Characteristic styles of modern architecture up to First World War, Steel structures, Arts and crafts movement, Art Nouveau, Vienna School, Chicago School, Monumentalism, expressionism and beginning of RCC, Theories of John Ruskin, William Morris, Henry Vande velde, Otto Wagner, Peter Behrens and Louis Sullivan

Module II

Contributions to Architecture and Theory made by pioneers-Le-Corbusier, Frank LIoyd Wright, Walter Grapius, Mises van der Rohe in the periods between the Worlds Wars, Characteristics of modern architecture after the second world war, Study of alvar Aalto, Ero Saarinen, Richard Neutra, Louis I Kahn, Philip Johnson etc.

Module III

Design theories and contributions of Engineer- architects like Pier Luigi Nervi, Felix Candela, Buckminster Fuller and Frei Otto

Module IV

Pre-independence architecture in India, Development of secular architecture from the end of the 18th Century to the middle of the 20th Century

Reference Books

1. Benevolo Leonardo History of Modern Architecture: the tradition of modern architecture Vol 1 Routledge and Kegan Paul London 1971
2. Frampton Kenneth Modern Architecture A Critical History
3. London Thomas & Hudson 1980
4. Benevolo Leonardo History of Modern architecture, the modern movement Vol 2 Roultledge and Kegan Paul London 1971
5. Curtis J.R. William Modern Architecture since 1900 Prentice Hall Inc New Jersey 2002
6. Giedion Sigfried Space, time and architecture, the growth of a new tradition 4th ed Harvard University Press, Cambridge 1962

7. Hilbersseimer L Contemporary Architecture: Its roots and trends, Paul Theobald, Chicago 1964

8. Pevsner Nicolaus Oersonem: Pioneers of Modern Design from William Morris to Walter Gropius

9. Sharp Dennis Twentieth Century Architecture A Visual History Facts on file, New York 1991

10. Norberg schul C, Principles of modern Architecture, London Andreas Papadakes 2000.

AR 15403 BUILDING SERVICES II (3-0-0-0) CR-03

Module I

Fundamental principles of electricity, voltage, amperage, wattage, generation and transmission of power, distribution in cities, HT and LT consumers, Transformers and load calculations, single and three phase connections, Indian electricity rules, types of generators, UPS

Module II

Building wiring system, service wires, metering, light and power circuits, electrical safety devices, MCB, ELCB, distribution boards, wiring methods, ISI Codes and standard materials, Conductors, switch boards, electrical points in general building, pipe earthing, plate earthing, Electric layouts, Electrical symbols, NBC, preparation of layouts for residences, offices, construction and working of at least six domestic appliances, location in buildings, Types of electric motors and pumps

Module III

Building lighting system, artificial illumination, various types of lamps, advantages and disadvantages, method of lighting, direct, semi-direct, indirect, concealed lighting, spot lighting, task lighting, decorative lighting, rope lights, neon lights, flood lighting, yard lighting, under water lighting, Lighting calculation, NBC standards, nominal illumination levels in building interiors, lux, lumen, intensity, lighting schemes

Module IV

Principles of air-conditioning, single zone, multi-zone, window air conditioners, split air conditioners, ductable air conditioners, package system and central air conditioning, All air systems and chilled water systems, a/c plant room, AHU's, Building ducting, diffusers and grills, FC units

Reference Books

1. Electrical wiring and Contracting (Vol 1 to Vol 4), London The New era Publishing Company

2. Dr. Frith Abnwos and Others Electrical Enginering Hand Book

3. William J Guinnesss Mechanical and Electrical Equipment for Buildings, New York Wiley

4. Bovay HE Handbook of Mechanical and Electrical Systems for Buildings New York McGraw Hill

AR 15404 LANDSCAPE DESIGN AND SITE PLANNING (2-0-0-0) CR-02

Module I

Introduction and History of Landscape Architecture. Introduction to landscape Architecture and Role of Landscape design in built environment, A brief review of Landscape Design and garden design in history of various regions Persian, Spanish, Italian, French, Moghul, English, Japanese Garden styles, Changing perception of mans relationship with nature in various phases of history and its influence on environment, Evolution of concepts in landscape design after the industrial revolution leading to new theories in integrating built spaces to open spaces. Increasing awareness of ecological variables in landscape design Site Studies and Site Planning: Principles of site Planning and Land use, review of definition applied in typical landscape development situations, Site survey and appraisal, understanding different site characteristics, topography, vegetation, Hydrology, Access, Surrounding etc. Documents, site characteristics and establishing relationship with design / Architecture programme requirements, Philosophical and design issues related to site development, sitting of buildings, spatial and contextual

relationships of built and outdoor space and circulation, site and its relationship to surroundings, importance of climate and social factors in development of site, Process of design development, identifying functional requirements of site, Development of site by mutual exploitation of forms and use of grading principles

Module II

Plants and design, Introduction to study of plants in relation to landscape design and architecture, an overview of use of plants in history, Study of plant material, Botanical Nomenclature anatomy and physiology of plant growth study of trees, shrubs, ground cover, indoor plants in Indian context, Design with plants, basic principles of designs, the physical attribute of plants and relation to design, Appearance, functional and visual effects of plants in landscape design and built environment, Selection and management of plant material in relation to built environment

Module III

Elements in landscape design, Use of landform, water and vegetation in landscape design, Hard landscapes, design of paths, roadways, streets, terraces etc and use of land form effectively, Soft landscapes, design of lawns, shrubs, hedges, trees, in relation to buildings and other landscape elements, Design concepts related to use of sculpture, outdoor lightings, Architectural feature, steel furniture and grouping them into meaningful compositions for visual and functional effects.

Module IV

Landscape construction and services, Study of landform, its technical expression through grading plan, sections and earthwork computations, Irrigation systems- sprinkler trickle irrigation, drip irrigation and laying irrigation networks, Constriction of structure in landscape circulation roads, parking paths, level changes, walls, steps, lamps, construction of screens, trellis, wall fences, gales decks, pools etc, Contemporary concepts and concerns, contemporary attitude to development and design of open spaces, Urban landscape, parks, rural landscape etc, Introduction to concepts of green architecture and micro climate planning, the role of landscape components in modifying micro climate with respect to temperature, humidity, precipitation and percolation

Assignments

Simple exercises in using plants and landscape elements

Studio exercise and emphasising relationship between built form and outdoor areas and site planning issues

Reference Books

1. Blake Alan Landscape Construction and detailing, BT Batsford Ltd London 1996
2. Colvin Brenda Land and Landscape
3. Hachet Brian Planting design'
4. Harris CW and Dines T Nicholas TSS for Landscape Architecture McGraw hill New York 1995
5. Laurie Michael An introduction to Landscape 2nd ed Prentice Hall New Jersey 1986
6. Lynch Kevin Site Planning MIT Press Massachussetts 1982
7. John I Mudloch Introduction to Landscape design, 2nd ed, John Wiley & Sons Inc New York 2001
8. Santapau H Common trees National Book Trust New Delhi 1981
9. Trivedi P, Pratibha Beautiful Shrubs Indian Council of Agricultural Research New Delhi 1990

SESSIONAL

AR 15491 ARCHITECTURAL DESIGN III (0-9-0-0) CR-09

The design issues to be addressed:

Organization of functional activities in relation to user requirements and the site. Relating the system of horizontal and vertical circulation, open spaces, parking etc. Responding to socio-economic factors such as income levels, privacy, territoriality, interaction etc

Considering materials, structure and services in relation to the design proposal. Integration of plan forms and three dimensional compositions Detailing for the physically handicapped and the elderly

The list of suggested topics to be covered as design problems

Large guest house, students hostel, small hostel, holiday resort, motel, row houses, block of flats and residential complexes at a small scale, housing for specific communities in urban and rural areas such as home for the aged fishermen's housing etc

Necessary theoretical inputs to be given highlighting the norms and design issues, The topics not covered as design problems will have to be covered by the Studio faculty members through lecture/slide show sessions and site visits

At least two major exercises and two minor design/time problems should be given. The final submission shall necessarily include a model for at least one of the two main problems

Note: in end exam, which is a viva-voce, the students are to present the entire semester work for assessment

Reference books

1. Chiara Joseph de and others Time savers Standards of Building types McGrawhill 1990
2. Neufert Ernst, Ernst Neufert Architects Data Granada Pub. Ltd London 2000
3. Peloquin Albert Barrier free Residential Design McGrawhill Inc New York 1994
4. Pevsner Nikolaus A History of Building types Thames and Hudson, London 1976
5. Shah S Charanjit Architects Hand Book Ready Reckoner Galogotia Pub. New Delhi 1996
6. Untermann Richard and Snall Robert Site Planning for Cluster Housing

AR 15492 BUIDLING CONSTRUCTION IV (0-4-0-0) CR-04

Module I

Structural steel work: General principles and terms defined, standard sections (i.e beams, joints, angles, channels, tees, bolts, rivets and welding, Steel work connections, Bolt connections, Riveting and welding methods

Module II

Steel members: Columns and stanchions, stanchions or column bases, beam and girders, column and beam connections plate girders, lattice or warren girder

Module III

Steel roof Trusses: Steel trusses, types for various spans, tubular steel roofs, monitor roof, north light roof truss, details of steel- roof trusses

Module IV

Lantern light, dome light, structural steel practice and drawings as per IS code, Portal frame, Geodesic principles, cable net and tensile structures

Note: This is a studio subject and students should be made to prepare construction drawings as studio exercises along with the theoretical inputs. The studio work should be supplemented with appropriate site visits.

Reference Books

1. Bindra and Arora Building Construction, Planning Techniques and Methods in Construction 19th ed Dhantpat Rai Pub. New Delhi 2000
2. McKay WB Building Construction Metric Vol IV 4th ed, Orient Longman Pvt Ltd, Mumbai 2002
3. Mitchell Advanced Structures

4. Rangawala SC, Engineering Materials, Material Science, 31st ed., Charotar Pub. House, Anand, 2004

AR 15493 COMPUTER APPLICATIONS II (0-0-4-0) CR-04

Module I

Staring Auto CAD Introduction to the menu, starting drawings from scratch, creating and using templates starting drawings with setup wizards, saving and closing a file, Using coordinate system: The UCS, Working with Cartesian and polar coordinate systems using displays with key shortcuts

Module II

Setting up the drawing environment, setting the paper size, setting units, setting grid limits, drawing limits, snap controls, use of paper space and module space

Module III

Basic commands dealing with drawing properties, layer control, change properties, line weight control etc, Inquiry methods, Using database information for objects, calculating distance and angle, areas etc

Module IV

Dimensioning commands and blocks, Dimensioning the objects in linear, angular fashions along with quick time dimensioning etc. Creating and working with clocks, creating symbols, use of blocks in creating a layout of a residential are as one exercise to be done as lab assignment.

Reference Books

1. Teyapoovan T Engineering Drawing with AUTO CAD 2000 Vikas Pub. House Pvt Ltd New Delhi 2000
2. Parker Daniel and Rice Habert Inside Auto CAD Daniel 1987
3. Georgeomura Auto CAD Release 2000
4. Auto CAD 2010 Textbook AutoCAD 2010 A Problem solving approach Customizing AutoCAD 2010
5. Beginning Auto CAD 2007 by Bob Mcfarlane Robert Mcfarlane

AR 15494 LANDSCAPE DESIGN AND SITE PLANNING (0-2-0-0) CR-02

Module I

Introduction and History of Landscape Architecture. Introduction to landscape Architecture and Role of Landscape design in built environment, A brief review of Landscape Design and garden design in history of various regions Persian, Spanish, Italian, French, Moghul, English, Japanese Garden styles, Changing perception of mans relationship with nature in various phases of history and its influence on environment, Evolution of concepts in landscape design after the industrial revolution leading to new theories in integrating built spaces to open spaces. Increasing awareness of ecological variables in landscape design Site Studies and Site Planning: Principles of site Planning and Land use, review of definition applied in typical landscape development situations, Site survey and appraisal, understanding different site characteristics, topography, vegetation, Hydrology, Access, Surrounding etc. Documents, site characteristics and establishing relationship with design / Architecture programme requirements, Philosophical and design issues related to site development, sitting of buildings, spatial and contextual relationships of built and outdoor space and circulation, site and its relationship to surroundings, importance of climate and social factors in development of site, Process of design development, identifying functional requirements of site, Development of site by mutual exploitation of forms and use of grading principles

Module II

Plants and design, Introduction to study of plants in relation to landscape design and architecture, an overview of use of plants in history, Study of plant material, Botanical Nomenclature anatomy and physiology of plant growth study of trees, shrubs, ground cover, indoor plants in Indian context, Design with plants, basic principles of designs, the physical attribute of plants and relation to design,

Appearance, functional and visual effects of plants in landscape design and built environment, Selection and management of plant material in relation to built environment

Module III

Elements in landscape design, Use of landform, water and vegetation in landscape design, Hard landscapes, design of paths, roadways, streets, terraces etc and use of land form effectively, Soft landscapes, design of lawns, shrubs, hedges, trees, in relation to buildings and other landscape elements, Design concepts related to use of sculpture, outdoor lightings, Architectural feature, steel furniture and grouping them into meaningful compositions for visual and functional effects.

Module IV

Landscape construction and services, Study of landform, its technical expression through grading plan, sections and earthwork computations, Irrigation systems- sprinkler trickle irrigation, drip irrigation and laying irrigation networks, Constriction of structure in landscape circulation roads, parking paths, level changes, walls, steps, lamps, construction of screens, trellis, wall fences, gales decks, pools etc, Contemporary concepts and concerns, contemporary attitude to development and design of open spaces, Urban landscape, parks, rural landscape etc, Introduction to concepts of green architecture and micro climate planning, the role of landscape components in modifying micro climate with respect to temperature, humidity, precipitation and percolation

Assignments

Simple exercises in using plants and landscape elements

Studio exercise and emphasising relationship between built form and outdoor areas and site planning issues

Reference Books

1. Blake Alan Landscape Construction and detailing, BT Batsford Ltd London 1996
2. Colvin Brenda Land and Landscape
3. Hachet Brian Planting design'
4. Harris CW and Dines T Nicholas TSS for Landscape Architecture McGraw hill New York 1995
5. Laurie Michael An introduction to Landscape 2nd ed Prentice Hall New Jersey 1986
6. Lynch Kevin Site Planning MIT Press Massachussetts 1982
7. John I Mudloch Introduction to Landscape design, 2nd ed, John Wiley & Sons Inc New York 2001
8. Santapau H Common trees National Book Trust New Delhi 1981
9. Trivedi P, Pratibha Beautiful Shrubs Indian Council of Agricultural Research New Delhi 1990

FIFTH SEMESTER

AR 15501 DESIGN OF STRUCTURES II(3-0-0-0) CR-03

Module I

Design of simple beams including check for shear and deflection for laterally supported and unsupported conditions, analysis of simple beam from strength and stiffness considerations, Design of built-up beams with flange plates only, introduction to plate girders (No design calculations)

Module II

Axially loaded tension members, introduction, net effective areas, analysis and design of tension members including rivet and welded connections (L-angle and T-section only), Columns, analysis and

design of axially loaded steel columns using single I-section, 2. Channels placed back to back and toe to toe, 4 angles etc including lacing system

Module III

Design of slab base amd gusseted base for axial loads (without moments) for different columns, Design of grillage foundation for isolated columns only

Module IV

Purlins, introduction, dead load, live load and wind loads, design of angle purlin and I-section purlin, Bracket Connections Riveted and welded connections design of joints

Reference Books

1. Ram Chandra Design of Steel Structures Vol 1 10th ed Standard Book House Delhi 1999
2. Dayaratnam P Design of steel structures Wheeler Pub. Allahabad 1992
3. Ramamrutham S and Narayanan R Design of Steel Structures 4th ed Dhanpat Rai and Sons Delhi 1995

AR 15502 BUILDING ESTIMATING COSTING AND SPECIFICATIONS (4-0-0-0) CR-04

Module I

Quantity surveying: Introduction, definitions and terms used, principles, units of measurements, methods of preparing approximate estimates (plinth area and cubic content method), basic differences and advantages, Detailed Building Estimation, Method of obtaining detailed quantities of building items (center line method, long wall and short wall method), PWD System to be followed

Module II

Detailed estimation for load bearing structures framed structure (ground floor only), Example and exercise in obtaining all terms from excavation to finishes

Module III

Preparing approximate estimates for services like water supply, plumbing electrical work, mechanical equipment and air conditioning (for residential building), Rate analysis, cost of materials and labour for various works, data sheet for different items of works, different methods of execution i.e piece work, daily basis, lump sum, labour rates and percentage etc

Module IV

Valuation- Introduction, state the purposes of valuation of building explain the terms, market value, book value, capital cost, capitalized cost, year's purchase, list out various methods of s=estimating the depreciation of building properties, calculate the value of the property by different methods, Specifications: Definition, purpose and importance of specifications, General or brief specifications, Detailed specifications, writing of specifications, for items like earthwork excavations, foundation, CRS masonry, DPC, PCC, RCC, brickwork, doors and windows (wooden), mortars, plaster, painting, flooring like terrazzo flooring and tiles, ceramic tiles, marble, granite, distemper, snowem, glazing, specification. writing to include materials, tests pre and post installation, modes of measurements

Reference Books

1. Datta BN Estimating and costing in civil engineering theory and practice 23rd ed UBS Pub. Distributors Ltd New Delhi 1993
2. Bride GS Estimating and Costing 2nd ed Dhanpat Rai and Sons Delhi 1982
3. Rangawala SC, Valuation of real properties 6th ed Charotar Pub. 6 House Anand 2003
4. Standard Specification and rates Government of Odisha, Government Press, Bhubaneswar

5. Indian Standards Institution National Building Code of India 1983 Indian Standards Institution New Delhi 1984

6. Lerrs Jack Engineering Construction Specification

7. Macey W Frank Specification in Detail 5th ed Technical Press Ltd London 1955

8. Lewis R Jack Building Construction Specifications Prentice Hall Inc New Jersey 1975

AR 15503 HISTORY AND THEORY OF ARCHITECTURE II (3-0-0-0) CR-03

Module I

Contemporary trends in architecture of India after Independence, Influence of the Corbusier and Louis I Khan, Theory and works of Achyut Kanvinde JA Stein Habib Rehman etc

Module II

Contributions made by Pioneers- Cahrles Correa and BV Doshi, Anant Raje, Raj Rewal, Design theories and works of contemporary architects, Uttam Jain, Hasmukh Patel, including Chandravarkar and Thecker, Jaisim, Anil Laul, Shirish Beri, Romi Khosla, Ranjit Sabiki, Shashi Bhoosan and Sanjay Mohe

Module III

Familiarisation of architecture at Auroville and Laurie Bakers's work in Kerala, Contemporary trends in the rest of the world architecture, Theory of Post Modernism

Module IV

Design theories and works of Charles Moore, Michael Graves, Richard Meyer, Aldo Rossi, Cesar Pelli, LM Pei, Yamasaki, Peter Eisenmann etc, Design theories and works of Hassan Fathy, Geoffery Bawa, Norman Foster, renzo Piano, Richard Rogers, Frank Gehry, Zaha Hadid, Santiago Calatrava, Tadao Ando etc.

Reference Books

1. Bahga SS Post Independent Architecture

2. Bhatt Vikram and Scriver Peter Contemporary Indian Architecture After the Masters, Mapin Pub. Pvt. Ltd. Ahmedabad 1990

3. Cutis JR William Modern Architecture since 1900 Prentice Hall Inc New Jersey 2002

4. Jencks Charles The language of post-modern architecture 4th ed Academy editions London 1984

5. Frampton K Tad Ando-buildings Projects Writings New York Rizzoli 1984

AR 15504 ENVIRONMENTAL STUDIES (3-0-0-0) CR-03

Module I

Environmental studies- Introduction- definition, scope and importance, measuring and defining environmental development indicators, Environmental and natural resources Renewable and non-renewable resources, natural resources and associated problems, forest resources, use and over-exploitation, deforestation, case studies, timber extraction, mining, dams and other effects on forest and tribal people, water resources, use and over utilization of surface and ground water, floods, drought, conflicts over water, dams, benefits and problems, mineral resources, use and exploitation, environmental effects of extracting and using mineral resources, case studies, food resources, world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies, energy resources, growing energy needs, renewable and non-renewable energy sources use of alternate energy sources, case studies, land resources, land as a resource, land degradation, man induced landslides, soil erosion and desertification, role of an individual in conservation of natural resources, equitable use of resources for sustainable lifestyles

Module II

Basic principles of ecosystems functioning Concept of an ecosystem, structure and function of an ecosystem, procedures, consumers and decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids, introduction, types, characteristics, features, structure and function of the following ecosystem

a. Forest ecosystem b. Grassland ecosystem c. Dessert ecosystem

d.. Aquatic ecosystem (ponds, streams, lakes, rivers, oceans and estuaries)

Biodiversity and its conservation: Introduction, definition, genetic, species and ecosystem diversity, Bio-geographical classification of India, Value of biodiversity consumptive use, productive use, social, ethical, aesthetic and option values, Biodiversity at global, national and local levels, India as a mega-diversity nation, Hot-spots of bio-diversity, threats to biodiversity, habitat loss, poaching of wild life, man-wildlife conflicts, endangered and endemic species of India- Conservation of biodiversity, In-situ and ex-situ conservation of biodiversity

Module III

Environmental pollution: Definition, cause, effects and control measures of a. Air pollution b. Water pollution c, Soil pollution d. Marine pollution e. Noise pollution f. Thermal pollution g. Nuclear hazards, Solid waste Management: Causes, effects and control measures of urban and industrial wastes, Role of an individual in prevention of pollution, pollution case studies, disaster management, floods, earthquake, cyclone and landslides, Social issues and the Environment: From unsustainable to sustainable development, urban problems related to energy, water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people. Its problems and concerns, Case studies, environmental ethics, issues and possible solutions, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies, wasteland reclamation, consumerism and waste products, environment protection act, air (prevention and control of pollution) act, water (prevention and control of pollution, act, wildlife protection act, forest conservation act, issues involved in enforcement of environmental legislation, public awareness

Module IV

Human population and the environment, population growth, variation among nations, population explosion, family welfare programme, environment and human health, human rights, value education, HIV/AIDS, Women and child welfare, role of information technology in environment and human health, case studies, Field work, visit to a local area to document environmental assets River/forest grassland/hill/mountain, Visit to a local polluted site-Urban/Rural/Industrial/Agricultural Study of common plants, insects, birds, study of simple ecosystems, pond, river, hill slopes etc

Text Book

1. Erach Bharucha A Text Book of Enviornmental studies for undergraduate courses University Grants Commision

SESSIONAL

AR 15591 ARCHITECTURAL DESIGN IV (0-9-0-0) CR-09

The following issues relating to institutional design will be addressed to:

- Nature of contemporary institutions, correlation to urban structure
- Development control and urban infrastructure affecting design
- Various attitudes to building in urban context
- Integration of function, movement, climate, acoustics, structure and services into the group of buildings
- Landscaping and site planning

- Institutional character from abstract to detail
- User behaviour and requirement pertaining to the physically handicapped

Necessary theoretical inputs to be given highlighting the norms and design issues
The topics not covered as design problems may be covered by the studio faculty members through lecture/slide shows. And site visits
The topics to be covered as design problems may include:

- Institution of learning- colleges with its various departments such as medical, engineering, law, business, music and dance colleges, vocational training institutions etc
- Institutions of health such as hospitals, reformatories and rehabilitation institutes of the disabled
- Institutions of research in various disciplenes
- Administrative and legal institutions such as high courts, secretariat, development authorities, directorates etc

At least two major exercise (one problem should be pertinent to the urban fabric) and two minor design/time problems should be given and the final submission shall necessarily include a model for at least one of the two main problems
Note: in the end exam which is a viva-voce the students have to present the entire semester work for assessment

Reference Books

1. Chiara Joseph de and Others Time Savers Standards of Building Types McGraw hill 1990
2. Handbook of planning and design data
3. Kirk Paul Hayden and Stemberg D Eugene Doctors Offices and Clinics 2nd ed. Reinhold Pub. USA 1960
4. Konya Allan Libraries: A Briefing and Design Guide The Architectural Press London 1986
5. Neufert Ernst Ernst Neufert Architects Data Granada Pub. Ltd London 2000
6. Pevsner Nikolaus A History of Building Types Thames and Hudson London 1976
7. Rosenfield Isadore Hospital Architecture and Beyond Van Nostrand Reinhold New York 1969
8. Stone G Louis Institutional Buildings Architecture of Controlled Environment
9. Tergsone WR Practical Laboratory Planning
10. Wild Friedemann Libraries for Schools and Universities Van Nostrand Reinhold New York 1972

AR 15592 BUILDING CONSTRUCTION V (0-4-0-0) CR-04

Module I

Failures: Introduction to building failures, causes of decay and damage in old buildings, issues of maintenance and repair, Preliminary inspection and general observation, decayed elements difference between decay and damage

Module II

Timber: Moisture content, treatment prior to installation, factors reducing strength of timber, approach to repair and to the timber roofing system

Module III

Bricks: Strength reducing factors in brick work, effect of ageing, weathering, temperature variation of brick-work, joints and cracks, construction defects, repair and maintenance, RC Concrete; Mixing methods at site, structural design for repairs, causes of failure in concrete structures, pressure-grouting,

Module IV

Methodical approach to Repairs: Cracks over openings, sinking and sagging balconies, repairs to decayed floors and floor joints, example, jack arch, madras roof terrace, foundation sinking, repairs to walls, Propping, strutting and under pinning, Unusual problems: Repairs to large span rooms, water proofing the roof terraces, leakages from toilets, case studies and site visits

Note: This is a studio subject and students should be made to document the problems in old buildings through inspections and propose remedial measures by preparing construction drawings as studio exercise with the theoretical inputs given through lectures

Reference Books

1. Feilden M Bernard Conservation of Historic Buildings Butterworth Scientific London 1992
2. McKay WB Failures and repair of concrete structures Vol IV
3. Raikar RN Learning from failures deficiencies in design: Construction and Service, R and D centre, New Bombay 1987

AR 15593 COMPUTER APPLICATIONS III (0-0-4-0) CR-04

Module I

Introduction to digital theory and this unit equips students with an understanding of the territory of computational design through its theoretical vocabulary and relevant histories, Making of architectural vector diagrams to explore design and for digital communication using vector applications like CorelDraw, illustrator etc , 3d modelling and different types of methods in 3 modeling like polygonal modelling, NURBS modelling, subdivision surface modelling and building information modelling etc to design and test, Architectural built environments virtually

Module II

Scene setup involves arranging virtua; objects, lights, cameras and other entities on a scene which will later be used to produce a still image or an animation, Image processing and video editing to create Architectural walkthroughs, Digital solar studies

Module III

Building information modelling: using 3 dimensional, real time, dynamic, building modelling software to increase productivity in building design and construction, The process produces the Building information model (also abbreviated BIM) which encompasses building geometry, spatial relationships, geographic information and quantities and properties of building components, Design and documentation using building information modelling application like Revit Architecture, ArchiCAD, Bentley Architecture etc

Module IV

Introduction to Organic modelling and 3d printing to explore biomimetics and emergent concepts in the field of architecture and design by using advanced computational technologies

References

1. Catalytic Formations: Architecture and Digital Design, Ali Rahim
2. BIM Handbook, A guide to building information modelling for Owners, Managers, Designers, Engineers and Contractors, Chuck Eastman
3. Building Information Modelling Willem Kymmell

SIXTH SEMESTER

AR 15601 ARCHITECTURAL ACOUSTICS (3-0-0-0) CR-03

Module I

Ned to study acoustics, pioneers and their works, Acoustics examples from the past, methods used for good acoustics, Basic theory, generation, propagation, transmission, reception of sound, frequency, wave length and velocity of sound, sound intensity, inverse-square law, decibel scale, decibel addition, small numerical examples in intensity of sound

Module II

Human ear, Loudness perception, subjective effects, characteristics of sound in speech and music, A-weighted sound levels, Room acoustics, behaviour of sound in enclosed spaces, Ray-diagrams, sound paths, effect of geometry and shapes, sound adsorption, sound absorption, coefficients, Sabine's formula and resonant panels

Module III

Acoustic design process and different types of buildings, Auditoriums, concert halls, cinema halls, seminar rooms, lecture halls, class rooms and open offices, case study of an auditorium with a report containing drawings and calculations of reverberation time etc Detailed acoustic design for any one type of building

Module IV

Noise reduction, sound isolation, transmission loss TL, TL for walls, vibration isolation guidelines, characteristics of duct system, noise in AC ducts, vibration isolation of pumps and generators, Speech privacy, annoyance, background noise, communication in open plans, electronic sound systems, load speaker's layout

Reference Books

1. Poella L Lestie Environmental Acoustics
2. Moore JE Design of Good Acoustics The Architectural Press London 1961
3. Burris Harlod Acoustics for the Architect
4. Lord Peter and Templetion Duncan The Architecture of Sound Designing places of assembly Architectural Press Ltd London 1986
5. Egan David Architectural Acoustics McGraw-hill Book Company New Architectural Acoustics McGraw-hill Book Company New York 1988

AR 15602 BULIDING CODES AND BYELAWS (3-0-0-0) CR-03

Module I

Introduction to building codes and norms; Need and nature of building codes, standards and regulations, overview of basic terminologies, nature of building codes in special regions like heritage zones, air tunnels, environmentally sensitive zones, disaster prone regions, coastal zones, hilly areas etc , Study of building regulations: Overview of administrative processes for obtaining building permits at various stages, General land use, building classifications and permissible uses, norms for exterior and interior open spaces, setbacks and margins, norms for building projections in open spaces, considerations in FAR, guidelines for open green areas

Module II

Norms for Vehicular Areas: Means of access, norms for access widths for various types of buildings, requirements of parking spaces, standards for turning radius, access to service areas, Norms for fire

protection: Overview of fire protection norms for various building classifications, norms for fire exit ways and building materials, concept of fire zoning, doorways, stairways, passages and corridors, fire escapes etc

Module III

Norms for building services: Norms for lighting and ventilation, Introduction to basic terminologies, components of daylight factor, general principles of opening for good lighting, considerations in artificial lighting, general principles for natural and mechanical ventilation, overview of norms for acoustical and electrical installations

Module IV

Requirements for parts of buildings: Plinth, Habitable rooms, kitchen, wet areas, mezzanine. store rooms, elevated parts like chimneys, parapets etc, Introduction to local building byelaws: Study of local administrative provisions for obtaining building permits, architecture control and provision of building services, regulations for super structures, building height regulations, regulations for multi-storied buildings etc

Reference Books

1. Buch N Mahesh Planning the Indian city
2. Chand Mahesh and Puri Vinay Kumar Regional Planning in India Allied Pub. Ltd Bombay 1990
3. Gallion B Arthur and Eisner Simon Urban Pattern City Planning and Design 5th ed Van Nostrand Reinhold New York 1986
4. Khosla RK Urban and Rural development in India Delhi Indian Publishers and Distributors
5. Patterson T William Land use planning technique of implementation
6. Rangawala SC and Others Town Planning 18th ed Charotar Pub. House Anand 2003
7. Singh Alok Kumar and Others (ed) Strategies in Development Planning
8. Indian Standards Institution National Building Code of India 1983, Indian Standard
9. Institutions New Delhi 1984
10. Scott G James Architectural Building Codes New York Van Strand Reinhold

AR 15603 BUILDING ECONOMICS AND SOCIOLOGY (3-0-0-0) CR-03

Module I

Brief introduction of general economics through an introductory survey of concepts in micro and macro economics as applicable to building industry as follows. Micro Economics The market, budget constraint, choice, demand and supply, uncertainties, equilibrium, technological constraints, profit maximisation and cost minimization, monopoly and oligopoly, production welfare and public good. Macro economics GNP, NNP, demand and supply, inflation, interest rate, employment, saving and investment, monitory and fiscal systems and policies, General discussions on various economic issues such as public versus private participation, Equity, labour intensive versus capital intensive projects

Module II

General economies of the basic inputs into building construction, land, labour, capital and Materials, Financing for projects, sources costs and utility in financing, agencies and institutions directly and indirectly influencing economic aspects of project

Module III

Family as the basic unit of 'Society', Differences in life styles due to regional background, religion, caste, income group etc and their implication in Architectural design of the housing units, Sociological aspects in the history of the evolution of housing/shelter forms

Module IV

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

Reference Books

1. Amos Rappoprt House Form and Culture
2. Wallis Wilson D and Willey MM Text Book of Sociology 1st ed Khel Sahitaya Kendra New
3. Delhi 2001
4. Charon Joel M The Meaning of Sociology 6th ed Prentice Hall New Jersey 1999
5. Thio Alex Sociology, a brief introduction 4th ed Allyn and Bacon Boston 2000
6. Schaefer Richard T Sociology, a brief introduction 4th ed McGraw-hiil Boston 2002
7. Bilton Tony and Others Introductory sociology 3rd ed Palgrave New York 1997
8. Stone PA Building Economy Design Production and Organisation a synoptic view 2nd ed
9. Pergamon press, Oxford 1976
10. Koutsoyiannis A Modern microeconomics 2nd ed ELBS with McMillan Press 1994
11. Nobbs Jack and Hopkins Ian Economics a core text 4th ed McGraw-hill London 1995
12. Teck Hoon Hian and Others Economics: Theory and applications, McGraw-hill Taiwan 1998
13. Dewett KK Modern Economic Theory Shyam Lal Charitable Trust New Delhi 2005

AR 15604 HUMAN SETTLEMENTS AND TOWN PLANNING (4-0-0-0) CR-04

Module I

Historic evaluation; brief review of the origin of early human settlements, factors responsible, development of various settlement forms, types of settlements (urban and rural) classification of areas within the urban settlements in terms of types of land uses, densities, administrative division, building types etc, land use and factors influencing it in urban and rural settlements, Sociological aspects, essential elements of society rural and urban communities, growth of socio-cultural thought through the ages Influence of religion and culture on domestic and civil architecture

Module II

Urbanization, Facts, theories, socio-spatial problems of migrants, slums, high and low density housing, high rise living such as isolation, alienation, accessibility, conflicts etc as related to planning and design of buildings in different areas of the city, Social survey and social research, Transportation and Communication, potential and limitations of roadways, railways, airways and waterways in the development of a settlement, Principles of Ekistics, brief introduction to the theory of 'Ekistics'. Introduction to the concepts of green belts, satellite towns, neighbourhood, roads in solving some of the problems in urban development, Indian context, Growth pattern of urban and rural settlements, problems and potentials

Module III

A brief introduction to the implication of town forms in urban planning and development processes, national, regional, urban, rural, local etc emphasizing the difference and relationships among them, A general and introductory study of inputs, objectives, preparation and outputs of Master plan for a city, land-use classification, features, relationships with transportation, meaning and use or implication of O-D surveys, desire line diagrams trip generation, attraction, distribution and modal split

Module IV

Introduction to housing and community facilities, role of F.S.I. densities in housing, Basic methodology for planning of industrial areas and recreation areas, Brief introduction to redevelopment schemes and urban renewal, problem of slum and shanty areas and a review of the concepts regarding solutions clearance, rehabilitation and improvement' At least one exercise related to the preparation of a layout for residential neighbourhood of about 5000 populations

Reference Books

1. Buch N Mahesh Planning the Indian city
2. Chand Mahesh and Puri Vinay Kumar Regional Planning in India Allied Pub. Ltd Bombay 1990
3. Doxiadis CL Ekistics: Introduction to the science of Human Settlement
4. Gallion B Arthur and Eisner Simon Urban Pattern City Planning and Design 5th ed Van Nostrand Reinhold New York 1986
5. Khosla RK Urban and Rural development in India Delhi Indian Publishers and Distributors
6. Patterson T William Land use planning technique of implementation
7. Rangawala SC and Others Town Planning 18th ed Charotar Pub. House Anand 2003
8. Rappoport Amos House, Form and Culture
9. Singh Alok Kumar and Others (ed) Strategies in Development Planning

AR 15605 BARRIER FREE BUILT ENVIRONMENT (2-0-0-0) CR-02

Module I

Introduction to Provisions of persons with Disabilities (Equal opportunities, protection of rights and full participation) Act 1995. Type of disabilities, Orthopaedic, hearing, visual impairments, national policy for provisions for elderly persons, concept of equal opportunity, human rights, social justice and empowerment of physically challenged persons Introduction to similar effects in other countries, initiatives at global and international level for protection of rights of disabled and also elderly person, American disabilities Act 1990 etc

Module II

Information on various types of national institutes, agencies and professional bodies involved in disabled welfare, associated norms and standards thereof. The role of NGO's, professional and outreach Design principles in architecture for creating environments friendly for various types of physically challenged persons, Educational institutions, hospitals, transportation terminals such as bus, railway stations and airports for barried free spaces, Study of standards as given in TSS, TCPO, CPWD, ADA etc and others

Module III

Provisions in public spaces and site planning, parks, play grounds, public transportation, parking lots, Details of sidewalks, road intersections, access to public toilets

Module IV

Provisions of design of public buildings, details in ramps, guide rails, lifts, dimensions of wheel chairs, accessibility in public buildings, signage, audio visual facilities etc Design of Toilets and interiors spaces for use of physically challenged exercises in design of user friendly spaces for physically

challenged persons, term paper on certain type of disability and requirements thereof for making environs barrier free or any other exercise appropriately framed by the subject faculty

Reference Books

1. Micheal J Bednar Barrier free environments Dowdem Hutchinson and Ross Ive 1977
2. Ministry of Urban Affairs and Employment, Central Public Works Department India Guidelines and Space Standards for Barrier Free Environment for Disabled and Elderly Person 1998
3. Unnati Design manual for a barrier free built environment Handicap International December 2004

SESSIONAL

AR 15691 ARCHITECTURAL DESIGN-V (0-9-0-0) CR-09

Design issues should address the following

- Environmental and micro climate
- User behaviour and requirements
- Utility and space enhancement
- Form and function
- Circulation: horizontal and vertical
- Site planning and landscape detailing
- Structural details such as beam framing, building services/HVAC etc.
- Design detailing considering the barrier free environment
- Socio-economic profile of user group
- Parking details and standards

Topics considered for design are:

Passive Recreation buildings such as:

- Infotainment center
- Civic centre
- Convention centre
- Cultural centre
- Community centre

Public Buildings- large span structures

- Bus terminals
- Multiplex
- Auditorium Complex
- Museum and Art gallery
- Kalyana Mandapam

At least two major exercises and one minor project/time problem need to be covered. Design proposal along with a scale model/digital model must be submitted for the two main problems, sufficient theoretical inputs need to be given highlighting the norms and standards of design parameters

Note: In end examination which is a viva-voce the students have to present the entire semester work for assessment

Reference Books

1. Chiara Joseph de and others Time savers standards of building types McGraw-hill 1980
2. Dawes John Design and Planning for swimming pools The architectural press London 1979
3. Ruknitein M Harvey Central City Malls

AR 15692 WORKING DRAWING & DETAILS (0-6-0-0) CR-06

Module I

Preparation of working drawings, suitable scales of drawings, methods of giving dimensions, on plans, sections, elevations and other standards, Preparation of Plans Building marking plan, centreline plan, foundation plan, column centrelines drawings, floor plans, terrace floor plan

Module II

Elevation and Sections: Detailed elevations, detailed sections, at least one through staircase and one through toilet, typical wall profile sections and elevations, Details Layout for Sanitation and detailed plans, Electrical layout, plans and details, details of staircases. Toilets and kitchens

Module III

Detailing for walls, floors, ceilings through detail drawings to large scale in the form of plans, sections, elevations, surface treatment, cladding, texture treatment. Detailing of architectural elements such as staircase, balcony, veranda, shading devices Vertical and horizontal components of buildings

Module IV

Detailing of Doors, windows, storage shelves for frames, shutters, joinery of frame to shutter, shutter to panelling etc and other fixing details. Design details appropriate for creating Barrier free environment

Note: Students shall prepare at least two working drawing sets, one for a small residence and one for a large building

Reference Books

1. Lerrs Jack Engineering Construction Specification
2. Liebing W Ralph and Raul Ford Mimi Architectural working drawings 2nd ed John Wiley and Sons New York 1983
3. Macey W Frank Specification in Detail 5th ed Technical Press Ltd London 1955
4. Shah MG and Others Building drawing with an integrated approach to build environment 3rd ed Tata McGraw-hill Pub. Co. Ltd New Delhi 1996
5. Lewis R Jack Building Construction Specifications Prentice Hall Inc New Jersey 1975
6. Datta BN Estimating and Costing in Civil Engineering Theory and Practice 23rd ed UBS Pub New Delhi 1993
7. Wakita Osamu A & Linde Richard M The professional practice of architectural detailing 2nd ed New York Wiley 1987
8. Robert C Mc Hugh Working Drawing Hand Book New York VNR 1977

SEVENTH SEMESTER

AR 15701 ADVANCED STRUCTURAL SYSTEMS (2-0-0-0) CR-02

Module I

Construction and form, Structure and Form Equilibrium under simple tension or compression, the catenary and the arch, the simply supported beam, the domical shell, Structural elements: Beams and slabs Arches and catenaries, vaults, domes and curved membranes, Trusses, Portal frames and space frames

Module II

Relation between structure and architecture, Geometry of form and structural function, Aesthetic theories of the expression of structural function in architectural form

Module III

Structural Systems: single and double layer grids, braced domes, ribbed domes, plate type domes, Network domes, Lamella domes, Geodesic domes, Grid domes, Braced and folded structures

Module IV

Space frames, folded plates, shells, cyclonical shells, Hyperbolic paraboloids, free forms, Cable structures, Simply curved suspended roofs, combination of cables and struts, Curtain walls, Types of curtain walls and their components structural problems, construction and erection

Reference Books

1. Candela Felix Architectural and Structuralism 1963
2. Lane Allen Developments in Structural Form Penguin Books Ltd London 1975
3. Macdonald J Angus Structure and Architecture 2nd ed Architectural Press Oxford 2003
4. Michaels Leonard Contemporary Structures in Architecture 1950
5. Schall Rolf Curtain Walls Design Manual Reinhold Pub New York 1962
6. Siegel Curt Structure and Form in Modern Architecture Crosby Lockwood and Son Ltd London 1962
7. Subramanian N Principles of Space Structures Wheeler and Co Allahabad 1983
8. Zannos Alexander Form and Structure in Architecture The role of statical functions Van Nostrand Reinhold Co New York 1987

AR 15702 GREEN BUILDING AND INFRASTRUCTURE (2-0-0-0) CR-02

Module I

Introduction to Macro Environment; Elements of climate, weather, Water cycle, Carbon cycle, Environmental quality, Deforestation, climatic change, Ozone depletion and implications, Micro-environment, Natural environment Vis a Vis built environment, living environment characteristics and components of Urban Ecosystem solar radiation, heat flow, air-movement, land-use, drainage and sanitation

Module II

Concepts of green field development, Brown field development, environmental impact and ecological balance, FAR, layouts, sustainable site development, vegetation, landscape elements, alternative services and technologies, rain water harvesting, on site sewerage retention, treatment, recycle and reuse

Module III

Building Resources; Passive energy system design, building envelope, orientation and components of building fabric and shading, high rise buildings, modular building construction, curtain walls, sourcing and recycling of building materials, alternative calcareous, metallic and non-metallic, materials, Building infrastructure, active energy systems in buildings, utilities and services, building automation,

electro-mechanical systems, lifts and transportation, captive power plant and equipment, operation and maintenance

Module IV

Indoor air quality, fresh air requirements standards, Sick building Syndrome, VOC and pollutants, Introduction to building rating systems, building auditing, points system, components and weight age, agencies and institutions, GBC, TERI etc, green buildings in the context of Indian sub continent

Reference Books

1. Green Building Green Congress (web)
2. Koenigsberger OH and Others Manual of Tropical Housing and Building Orient Longman Chennai 2003
3. Odum P Eugene Ecology and Environment 2nd ed Oxford and IBH Pub New Delhi

AR 15703 ADVANCED SERVICES (2-0-0-0) CR-02

Module I

Special services in High rise buildings, Types of lifts, Passenger, Capsule, Hospital bed lift, good lift etc, Working and operation of lifts, parts of lifts, industry standards and capacity calculations, Provision to be made in buildings for installation, Introduction to working and design of escalator, Electronic Systems in Buildings: Telephone and communication, networks in buildings EPABX, Security systems, Burglar alarms, video surveillance, access control, design of computer labs, access flooring, server rooms

Module II

Fire safety in buildings, portable fire fighting equipment, NBC standards, built in wet riser system, sprinkler system, fire hydrant, class of fire and occupancy, cooking gas distribution in buildings, piped gas supply, bottled gas supply, kitchen stoves, burners

Module III

Swimming pools, pool tank design, patio, finishes, water circulation, cascades, channels, filtration and water treatment, water quality and disinfection, balancing tank, Hotel services, specially services required for hospitality industry, Laundry services, Kitchen services, Channelled Music, Internet

Module IV

Environmental services, waste generation in industrial buildings, various types of waste, solid, liquid, gas, treatment and disposal facilities, waste generation in hospital buildings, design provision for its disposal. Alternative energy sources for buildings, hot water solar energy system, applications of photo voltaic cells, biomass digesters, wind energy

Reference Books

1. Faber Oscar and Kell JR Heating and Air-conditioning of building, Architectural Press, Surrey 1945
2. Prasad Manohar Refrigeration and air-conditioning 5th ed New age Intl Pub. New Delhi 1996
3. Tiwari Satish Water and Energy resources

AR 15704 PRE THESIS SEMINAR (2-0-0-0) CR-02

Module I

Introduction to architectural thesis project, Difference between design thesis and design studio, selection of topics for architectural design thesis, design thesis topics based on building typologies, preparation of synopsis, Methodology of design thesis

Module II

Emerging concepts in architecture due to changes in social, economic, technological variables, Review of design projects related to real world instances and relevant to community at large, Review of projects of design complexity, involving themes, sub themes and architectural expression

Module III

Research in architecture, Tools and Methods required to handle a design project, Scientific methods of research with special emphasis on architectural research methods, architectural enquiry visual, observations, questionnaire formats of enquiry, literature review and case studies, data analysis techniques interpretation of data

Module IV

Thesis report writing and presentation:

- Formats for presentation of data, case studies and analysis
- Formats for presentation of thesis design- media approaches in the architectural profession such as two dimensional drawing, physical models, three dimensional computer models
- Report writing; Techniques in report writing, presentation of contextual information relevant to interpretation of the data collected and design, reporting the design development from concept to design solution, explain the relation of the design to existing knowledge on the topic in the form of coherently written thesis report

The inputs to the students on various design issues would be in the form of Expert/Guest Lectures
Each student in consultation with the faculty shall choose a thesis topic, collect necessary data, review literature on the chosen topic and present a written paper and seminar at the end of the semester.

Reference Books

1. Mukhi HR Technical report writing: specially prepared for technical and competitive examinations, New Delhi, Satya Prakasan 2000
2. Barrass Robert Writing At Work \b a guide to better writing in administration business and management; London, Routledge 2003
3. Seely John The Oxford guide to effective writing and speaking 2nd ed Oxford New York Oxford University Press 2005
4. Jo Ray McCuen, Anthony Winkler Readings for writers 9th ed Fort Worth Harcourt Brace College Publishers, 1998.
5. Treece Malra Effective reports 2nd ed Boston, Allyn and Bacon 1985

AR 15705 HOUSING (4-0-0-0) CR-04

Module I

Evolution of Housing:, Brief review of the historical development of housing in various contexts, Housing situation in India, Housing need and Demand: Housing and Habitat policy and perspective at the national level, problems and Issues in urban and rural housing, housing agencies and their role in housing development

Module II

Housing Standards; Issues involved in formulating housing standards for rural and urban areas, desirable and minimum standards, residential densities, Housing strategies: Review of different forms of housing globally- particularly with reference to the third world countries, brief acquaintances with some strategies such as sites and services upgrading existing shelter, stimulating private- sector production, developing building materials and alternative technologies, improving architectural design, protecting inner-city renters, land sharing, resettlement etc.

Module III

Housing Layouts and Design: Traditional pattern of housing design, Row Housing, Cluster Housing Apartment Housing, Low Rise Versus High Rise Housing, Incremental Housing, Neighbourhood unit, Case studies of housing projects

Module IV

Housing Process: Managing and financing of housing projects, People's participation, Technology transfer, development control rules and environmental aspects

Reference Books

1. Alexander Christopher Pattern Language Towns, Buildings, Construction Oxford University Press, New York
2. Chiara De Joseph and Others Timesavers standard for Housing and Residential development 2nd ed McGraw hill Inc New York
3. Desai AR and Pillai Devadas Slums and Urbanization Popular Prakashan Pvt Ltd
4. Poulose K Thomas Reading material on Housing Institute of Town Planners New Delhi
5. Cedric Prgh(1990) Housing and Urbanisation Sage Publication New Delhi

SESSIONAL

AR 15791 ADVANCED CONSTRUCTION & MATERIALS (0-6-0-0) CR-06

Module I

Advanced construction methods in RCC, pre-stressed concrete beam slabs frames, lift slab construction post tensioning, multi-storeyed building frames, circular slabs and beams, uses of rapid-hardening cement, ready mix concrete (RMC) light weight concrete surface finishes of cement, Folded plates like prismatic, V-type, through type, pyramidal, prismatic and RCC folded plate and geometrical staircases, shell structures, cyclonical shells, hyperbolic paraboloids

Module II

Construction techniques for erection of space frames, suspended roofs, membrane structures, cable structures

Module III

Curtain walls, types of curtain walls, components, structural solutions, construction and erection, glass wall system-glass, sheet metal wall systems, sheet metal cladding

Module IV

Advanced Building Materials plastic, PVC, metals, synthetic boards, fire proof resistance boards/files, acoustic materials, glass, composite panels and their applications, non-load bearing system/blocks

Reference Books

1. Jams Ambrose Building Construction Enclosure System 1990
2. Andrea deplazes (ED) Constructing Architecture, Materials Processes Structures A Hand Book Second Extended Edition
3. Robert E Fischer Engineering for Architecture 1989
4. R Barry The Construction of Buildings Volume 4 4th Edition
5. Schall Rolf Curtain Walls Design Manual Reinhold Pub New York 1962

AR 15792 ADVANCE ARCHITECTURAL DESIGN (DESIGN STUDIO) (0-12-0-0) CR-12

Module I

Urban Design: issues to be addressed

- Issues of urban structure, urban space and form

- Issues of conservation
- Issues of zoning, land use, density, development control
- Issues of building in context, urban infill

Module II

Design exercise related integration of diverse functional needs, access systems, parking, services etc Design detail shall comprise of (at least one example each) using

1. 'Hi-tech' materials/construction
2. Conservation of related materials/construction

Module III

Housing Design: Issues to be addressed for the design project pertaining to housing design:

- Density, mixed, land use, ground coverage, development controls
- Urban systems, services and their integration with the project
- User requirements (derived from surveys)
- Issues in appropriate technology and costs
- Issues of hierarchy, identity of space, public and private scales of space, Integration of community institutions etc
- Detailing for the disabled and the elderly
- Indian/local architectural responses to climate, culture, traditional values, building elements, symbols motifs and special character

Design exercise related to housing design for specific target groups

Module IV

Campus Design: Issues to be addressed for the design project pertaining to campus design

- Issue in preparation of Master Plan for Institutions: academic, administrative, staff housing, student hostels etc
- Environmental considerations
- Phases of development
- Scope for expansion for future developments
- Safe and comfortable vehicular and pedestrian movement
- Issues of character and landscaping
- Details pertaining to the disabled

Students would need to undertake one of the design subjects for the studio exercise. Students may be required to develop a brief, translate it into requirements and design.

One major design exercise and one Time problem/minor design exercise should be given

The evaluation shall be through periodic internal reviews. The final submission will include a brief report of about 1000 words explaining the concept and design proposals for main portfolio. It will also include a model.

Note: In end examination, which is a viva-voce, the students have to present the entire semester work for assessment

Reference Books

1. Christopher Alexander Pattern Language, Towns, Buildings, Construction, New York Oxford University Press
2. Richard D Dober Campus Architecture, Building in the Groves of Academy McGraw-hill New York 1996
3. Chiara Joseph de and Others Time Savers Standards for Housing and Residential Development, 2nd ed, McGraw hill Inc, New York
4. Nweman Oscar and Others, Defensible Space, People and Design in The Violent City, Architectural Press, London, 1972

AR URBAN DESIGN (ELECTIVE – I)

Module I

Discussion on Architecture, Urban design, Town Planning Interface, Urban Morphology and Elements of Urban Design, Nature of urban design projects in public and private developments. Classical cities, medieval towns, neoclassic cities and industrial towns, Characteristics of towns built by Hindu and Muslim rulers in India. Colonial inheritance, growth of post towns, civil lines, cantonments, railway and resort towns and design in New Delhi

Module II

Modern movements in city design such as city beautiful and garden city movements, utopian model towns in the west, changing structure of cities, sectors, blocks, streets, squares, buildings and open spaces

Module III

Role of planning agencies such as development authorities, Urban Arts Commission in the design of cities, Influence of city development policies namely Master plans, zoning regulations on Urban Design, Built-form and space requirement in residential, commercial, industrial and recreational land uses activities, Patterns of subdivision and land-development

Module IV

Elements of urban spaces, squares and streets, Use of landscape in urban design such as tree avenues, street fencing, sidewalks etc. Lighting and illumination of cities, methods of lighting, signage and elements of utility services in the city, Urban conservation and its role in urban design, Past and present trends in urban conservation, role of architectural control in urban conservation and city character and style

Reference Books

1. Bacon N Edmund Design of Cities Penguin Books New York 1975
2. Benevolo Leonard History of the City
3. Krier Rob Urban Space 3rd ed Academy Editions London 1984
4. Moughtin Cliff and Others Urban Design: Ornament and Decorations Butterworth-Heinemann London 1995
5. Moughtin Cliff Urban Design Street and Square
6. Mumford Lewis City in History its origin transformation and its prospects

7. Sprelregen Paul Urban Design; The architecture of towns and cities

8. Lynch Kwin The image of the city Cambridge mass MIT Press 1965

AR BUILDING CONSTRUCTION MANAGEMENT (ELECTIVE I)

Module I

Introduction: Construction in India, its role in development, importance of management in Construction, role of construction manager, Construction team, responsibilities and authorities of construction manager organizations, Management Techniques: Planning for construction projects, principles, objectives, advantages of planning, stages of planning, Scheduling: definition, advantages, Methods of scheduling: bar chart, ,milestone chart, controlling, life cycle cures, job layout, work break down structure, Project Management through networks, Introduction, objectives, advantages, terms and definitions, types of networks, rules for drawing a network, Fulkar son's rate of numbering the events, Introduction to PERT,CPM, difference between PERT and CPM, finding critical path

Module II

Introduction to construction equipments, performance, characteristics and usages of equipment used in large scale projects, Human resources management manpower estimation at various stages, recruitment, training, under and over manning, Materials management: materials of construction, classification codifications, ARC analysis, estimation of materials procurement, inventory/stock control, purchase procedure, stores management, Quality control in construction: importance of quality, elements of quality, organization for quality control, quality assurance techniques Labour legislations pertaining to construction industry, payment of wages act, migration act, factories act, contract labour act, labour welfare fund act, workmen's compensation act, construction safety management, importance of safety causes of accidents safety measures, safety benefits to employees, employees and customers

Module III

Economics of Project Management; Economic analysis of projects, economic studies, sensitivity analysis, cost estimating principles, parameter estimation, detailed estimates, cost concepts, classification of costs, elements of costs and cost analysis for control

Module IV

Budgetary control systems: types of budgets, new approaches for budgeting, responsibility of accounting, profit centre approach, Financial management, meaning and scope, financial statement analysis, ratio analysis, funds flow analysis, Working capital management, meaning, policy for working capital, estimating working capital needs, capital investment decision, long term financial working of financial institutions in India and abroad, self financing, financing mechanisms, Value engineering: definition, value engineering job plan, life cycle casting, value engineering applications, Introduction to linear programming, transportation problem, sensitive analysis

Reference Books

1. Gupta BL and Gupta Amit Construction management Machinery and Accounts 3rd ed Standard Pub 2005

2. Loraine RK Construction Management in Developing Countries Thomas Telford London 1993

3. Srinath LS PERT and CPM Principles and Applications 3rd ed Affiliated East West Press New Delhi 2003

4. Singh Harpal Construction Management and accounts 14th ed Tata McGraw-hill Pub New Delhi 1981

5. Gould E Frederick and Joyce E Nancy Construction Project Management Prentice Hall New Jersey 2000

6. Shrivastava UK Construction Planning and Management 3rd ed Galgotia Pub. New Delhi 2004

AR INTERIOR DESIGN (ELECTIVE-I)

Module I

The profession of Interior Design, Role of an interior designer, past and present, scope of services, Interior design process, interior design and concepts, elements and principles of design, an overview and their applications in interior designing, Interior space planning and human dimensions, focuses on physical, psychological behavioural and human factors, study of proxemics, behavioural settings

Module II

Introduction to the fundamentals of interior design such as lighting, furniture, space, materials, furnishing, art etc, Colours in interiors, colour theory, effect of light on colour, various colour schemes like analogues, complementary, triadic etc, colour symbolism, psychology of colour, industrial colour codes, international standards

Module III

Introduction to furniture and accessories, an overview of historical perspective of furniture and styles, accent pieces and accessories from Egyptian period to the present, Basic furniture vocabulary, styles of interiors, Italian, English, French, Japanese styles etc

Module IV

Interior lighting: direct and indirect lighting, location and light grid systems, types of luminaries, quality of lighting, ambient, task and accent lighting, exposure to eminent interior designer's works, Indian and international, Business perspectives of interior design, an overview of practice of interior design in India.

Reference Books

1. Friedman, Arnold and Others Interior design an introduction to architectural interiors Elsevier New York 1979
2. Miller E William Basic drafting for interior designers Van Nostrand Reinhold New York 1981
3. Kurtich John and eakin Garnet Interior architecture, van Nostrand Reinhold New York 1993
4. Rao M Pratap Interior design, principles and practice 3rd ed Standard Pub. 2004

AR LANDSCAPE ARCHITECTURE (ELECTIVE-I)

Module I

Study of landform its technical expression through grading plan, section, profiles layout plans and earthwork computations. Principles of soil mechanics and landscape drainage and their application to surface and subsurface drainage of small scale projects

Module II

Basic principles of outdoor lighting, types of fixtures and their use in varying situations Introduction to irrigation systems sprinkler trickle irrigation, drip irrigation and laying irrigation networks

Module III

Factors related to construction, of structures and systems Materials and techniques of landscape construction with emphasis on appropriateness for intended use Construction of structure in landscape Circulation roads, parking, paths, level changes, walls, steps, ramps, construction of garden, landscape feature such as screens, trellis, wall fences, gates decks, fountains and pool construction.

Module IV

Painting and establishment of woody plants, installing time, covers and herbaceous plants Planting principles- bed preparation, mounding, application of fertilizers, roll preparation, pruning and maintenance.

Reference Books

1. Landphair C harlow Landscape Architecture Construction 2nd ed Elsevier New York 1988
2. Motioch L John Introduction to Landscape Design 2nd ed John wiley and sons inc New York 2001

3. Moorhead Steven (Ed) Landscape architecture Rockport Pub. Massachusetts 1997

4. Pregill, Philip and Volkman Nancy Landscapes in History Design and Planning in the western Tradition, Van Nostrand reinhold New York 1993

AR BUILDING CONSTRUCTION MANAGEMENT (DESIGN STUDIO) ELECTIVE-I

Preparation of working drawings in detail for large building project (building more than 5000 sq. mts) covering the following aspects, Implementation scheduling, resource planning time, labour, material, equipment and personnel requirements, estimation scheduling, control and procurement

Preparation of network charts and flow charts with control mechanism in place including quality and cost control sticking to budgetary estimates and forecasting any disturabances in scheduling, devise resilience and adaptive measures

Report of Construction Management- Preparation of Project Report on any live, ongoing or completed large scale project

Reference Books

1. Gupta B.L. and Gupta Amit Construction Management, Machinery and Accounts 3rd ed Standard Pub, 2005

2. Loraine RK Construction Management in Developing Countries Thomas Telford London 1993

3. Srinath LS PERT and CPM Principles and Applications 3rd ed Affiliated East-West Press New Delhi 2003

4. Singh Harpal Construction Management and Accounts 14th ed Tata McGraw-hill Pub. New Delhi 1981

5. Gould E Frederick and Joyce E Nancy Construction Project Management Prentice Hall, New Jersey, 2000

6. Shrivastav UK Construction Project and Management 3rd ed Galgotia Pub. New Delhi 2004

7. Chitkara KK Construction Project Management Planning, Scheduling and Controlling, Tata Mc-Grawhill Pub. New Delhi 1999

8. Sharma SC Construction Equipment and its Management 4th ed Khanna Pub New Delhi 2004

AR LANDSCAPE ARCHITECTURE (DESIGN STUDIO) (ELECTIVE I)

- Emphasis on form and spatial relationships leading to open space order and frame work
- Concerns for social, psychological considerations of the individual and large groups of people, their interaction and resultant forms of environment
- Issues related to functional requirement and design strategies
- Microclimate and environmental consideration
- Issues related to health, welfare, safety and enjoyment
- Issues related to zoning, density and develop controls
- Issues related to services and site development
- Issues related to visual and aesthetic and contextual consideration

Students would need to undertake one small and one medium scale designs in site planning
The exercises taken up shall deal the issues comprehensively from general understanding a providing complete landscape design solutions. The exercise can be split into different stages such as Data collection, Case studies, Synthesis and Design development

Reference Books

1. Southerland Designing the new landscape
2. Hacket Brian Planting Design
3. Laurie Michael An introduction to Landscape 2nd ed Prentice Hall, New Jersey, 1986
4. Lynch Kevin Site Planning MIT Press, Massachusetts 1962
5. Jellico Man and Landscape

AR INTERIOR DESIGN (DESIGN STUDIO) (ELECTIVE I)

Interior requires that students have a full understanding of the interior design field and have mastery of the design process, presentations, project administration and business skills
Two interior schemes of different functional types, Residential/commercial at different scales will form the major design assignments
Focus is on Portfolio creation by producing a complete and correct set of working drawings, from plans through details and specifications and sample boards
Portfolio preparation
The student will create a portfolio that clearly expresses his/her ability to design by using detailed drawing rendering and Model Making, Usage photography and graphic design in preparing a professional portfolio is also encouraged

Reference Books

1. Archi World Interior Best Collection: Residence, Commerce, Office, Restaurant Asia I-IV Archi World Co. Korea 2003
2. Friedmann, Arnold and Others Interior Design, An introduction to Architectural interiors, Elsevier New York, 1979
3. Miller E William Basic Drafting for Interior Designers Van Nostrand Reinhold,New York 1981
4. Kurtich John and Eakin Garret Interior Architecture, Van Nostrand Reinhold.New York 1993
5. Rao M Pratap Interior Design Principles and Practice 3rd ed, Standard Pub, 2004

EIGHTH SEMESTER
AR 15801 PROFESIONAL PRACTICE (4-0-0-0) CR-04

Module I

Role and responsibility of architect in society, architectural profession as compared to others professions, difference between profession and business, architect's registration, COA, IIA and other organizations related to architectural professions, Architects approach to works; ways of getting works;

types of works; works partly executed by other architect, various precautions to be taken before taking up the work; conditions of engagement between the architect and client; commencement of work

Module II

Architect's duties, drawings to be prepared, Architects relation with other parties connected with works such as client, contractor, sub-contractors, consultants, municipal and public authorities, Code of professional conduct, COA Architects Professional conduct Regulations 1989, Scale of charges, units and mode of measurements, clerk of work and his duties, Inspection of work, during construction, certificate of payment to contractor, bill of quantities, Schedule of rates, tenders, public, limited and negotiated tender documents and allied formalities

Module III

Contracts, types of contracts, such as item rate, lump sum, cost plus percentage etc General principles of Indian contact act, building contracts, conditions and forms of contract, study of standard contract of the Indian Institute of Architects, Administration of contract, Principles of arbitration, Indian arbitration act 1940., Powers and duties of arbitrators, revoking authority, umpire, reward cost fixed fee, cost with penalty, labour day work, piece work daily Easement: definition, various types of easements, Dominant and servient owners, essential conditions for enjoyment of easement, Fire insurance's definition, cover note, insurance for new work and additions, insurable value of property, claim for damage due to fire, Insurance of completed and pied building

Module IV

Preliminary knowledge of transfer of property act; registration, stamp duty under registration and govt power, income tax, wealth, land acquisition acts, general information and land acquisition procedures Accidents during progress of work and after completion, damage to persons and properties affected, workmen's compensation act with regards to the affected persons and properties Consumer protection act and related acts on architects (AIC 20 of 1942) Architects Act 1972; Professional Practice Regulation and architectural education regulations under the architects act Types of offices for architectural practice, staff structure, filing of records, correspondence and drawings, maintenance of accounts, presentations in meetings, recording minutes of Meeting. A small report to be prepared by each student after visiting an architect's office. Role of consultants and coordination between different contacts on a big project Study of building byelaws to enable to design and prepare drawings for submission to concerned bodies National building code: Fire prevention and safety measures

Reference Books

1. Banerjee DN Principles and practice of valuation 5th ed eastern law house Calcutta 1998
2. Dalton J Patrick Land law 4th ed Pitman Pub London 1996
3. Indian Institute of Architects Hand Book of Professional Practice The Architects Pub. Bombay
4. Indian Standards Institute National Building Code of India 1983 Indian Standards Institution, New Delhi, 1984
5. Namavati H Roshan Professional Practice 8th ed Lakshani Book Depot Bombay 2001
6. Namavati H Rosan Theory and Practice o Valuation 2nd ed Lakshani Book Depot, Bombay 1991
7. M Dedbhkth Architectural Practice in India by Prof M Dedbhktha
8. V S Apte Arch Practice Procedures

AR ARCHITECTURAL ILLUMINATION (ELECTIVE II)

Module I

Light and vision, basic units, photometry and measurement, quality and quantity of light of different sources of light, Daylight, incandescent lamps, halogen lamps, electric gas discharge lamps, fluorescent lamps, high discharge lamps, a market survey of lamps with cost and technical specifications, Design of lighting, lumen method, point by point method, design tools, design documentation, simple numerical

Module II

Specific lighting design requirement of different buildings such as homes, offices, industrial hospital, art galleries, museums and exhibitions, case study of at least one type of the building by each student, Outdoor lighting, road lighting, high mast lighting, tunnel lighting, landscape lighting, decorative lighting, facade lighting, spot lighting

Module III

Lighting as determinant of form for architecture with graphic examples, Day lighting, advantages of day lighting, design tools in day lighting, case studies and various examples, behaviour of day lighting in an interior spaces, Potentials of day lighting as an energy resource

Module IV

Integration of day lighting with artificial lighting, lighting controls, intelligent building systems for lighting, Conservation of energy in lighting use of daylight, optical fiber lighting, LED in lighting and emerging trends in lighting

Reference Books

1. Moore Fuller Concepts and Practice of Architectural Day Lighting Van Nostrand Reinhold New York 1985

2. Valia Anil Designing with light: A Lighting Hand Book International Lighting Academy Mumbai 2002 Architecturi Physics Lighting

3. Hopkinson RG Her Majestrip Stationery Office London

4. David Egan M Concepts in Architectural lighting McGraw Hill Book Company New York 1983

AR ARCHITECTURA;L JOURNALISM (ELECTIVE II)

Module I

Definition of Photo Journalism, Brief History, Photographs as social Documentaries Birth of Modern Photo Journalism Since 1950 s visual awareness visual survey, EDFAT methods in using the camera, Equipment required for photo Journalism., Development of writing skills, Usages of languages and vocabulary and grammar- introduction to methodology of writing essays, news writing, précis writing, writing in architectural blog, listening comprehension, analyze talks and information gathered and to edit gathered information to build an article, Originality of topic, collecting clippings from articles, blogs and books

Module II

Photo Journalism in perspective, snap shots, advance amateur photography, art photography, photo journalism, approach to photo Journalism, News papers and magazine design elements, page make up, layout, colour scheme, font, blurb, pictures, ads etc, other magazines, documenting of places, rural, urban, public relations

Module III

Key texts concerning architectural journalism and journalists to critically contrast their outputs in terms of production, content and/or presentation, to develop an ability to critically appraise selected individual pieces of journalism, awards for architectural journalism and some of the important recipients, People journalism and law-legal boundaries issues libel and invasions of privacy ethics the photo journalist on scene

Module IV

Production of contemporary architectural journalism, building pictures, instant report, editing, editorial thinking, the picture editor, editing practices, creating drama, photo editing, documentary evolution of the word document methods and techniques, Assignments should include an article based on ability to originate plan , research, present and produce a piece of architectural journalism. The techniques and processes used in the production should be identified by the student.

AR FURNITURE AND PRODUCT DESIGN (ELECTIVE II)

Module I

Understanding of the functional and formal issues in design, study and evaluation of popular dictums such as “Form follows function” form and function are one”, “less is more” “God is in details” etc, Evaluation of visual design for functional objects, Gestalt theory of design, Law of closure, law of proximity, law of continuity etc, Evolution of furniture through ages till present day

Module II

Human factors engineering and Ergonomics considerations. Principles of Universal design and their application in furniture and product design., An introduction of various manufacturing processes most frequently adopted in furniture and product design such as injection moulding., investment casting, sheet metal work, die casting blow moulding vacuum forming etc

Module III

Signage and Graphics Environmental graphics, signage categories and materials

Module IV

A detailed study involving the design aspects of any one of the following lifestyle accessories, Lumina ire design, a piece of furniture, Point of purchase design, signage

References

1. Hector Roquete Product design London te Neues 2002
2. Morley John The history of furniture: twenty five centuries of style and design in the Western tradition, Boston, Little, Brown and Company 1999
3. Aronson Joseph, The encyclopaedia of furniture 6th printing New York Crown Pub 1944
4. Savile Laurel Design secrets furniture Gloucester Mass Rockpert Publishers, 2006
5. Datschehski Edwin The total beauty of sustainable products, Hove Rotovision 2001
6. Papanek Victor J The green imperative natural design for the real world New York Thames and Hudson 1995

AR DISASTER RESISTANT ARCHITECTURE (ELECTIVE II)

Module I

Building safety from natural Hazards: earthquake, fire safety in buildings, cyclone effects, high winds, storm surge and safety aspects in buildings, related to cyclones, floods, landslides, Elementary seismology:, Occurrence of earthquake in the world, plate tectonics, faults, earthquake hazard maps of India and the states, Causes of earthquake, seismic waves, magnitude, intensity, epicentre and energy release, characteristics of strong earthquake ground motions, Seismological Instruments, seismograph, Accelerograph, Seismoscope/ Multi SAR, Introduction to Theory of Vibrations:, Single degree undamped and damped systems, resonance, response to earthquakes, elastic response, concepts of response spectrum, Flexibility of long and short period structures

Module II

Site Planning, Building Forms and Architectural Design Concepts for earthquake Resistance, Historical experiences Site selection, Site development, Building forms: Horizontal and vertical eccentricities, mass and stiffness distribution, soft storey etc, Seismic effects related to building configuration, plan and vertical irregularities, redundancy and setbacks, Special aspects, torsion, appendages, staircases, adjency, pounding, contemporary international approaches, Performances of Ground and Buildings in Past Earthquakes:, Earthquake effects; on ground, soil rupture, liquefaction, landslides, behaviour of various types of buildings, structures, power plants, switch yards, equipments, lifelines and collapse patterns, behaviour of non structural elements like services, fixtures, mountings, social and economic consequences of earthquakes, Lab simulations of models, Seismic Design Principles, Concept of seismic design, stiffness, strength, period, ductility, damping, hysteric energy dissipation, center of mass, center

of rigidity, torsion, design eccentricities, Ductility based design, Design of energy absorbing devices, seismic base isolation and seismic active control.

Module III

Structural detailing; Innovations and selection of appropriate materials; IS Code provisions for the buildings- IS 1893-2002, IS4326-1993 Horizontal and vertical seismic coefficients, valuation of base shear, distribution of shear forces in multi-storey building, Seismic detailing provisions, masonry and wooden buildings (Is 4326, IS 13828) Adobe houses (IS 13827) Seismic designs and detailing of RC and steel buildings IS 1893-2002, IS13920-1993, IS 456-2000, IS 800-2004, Special reinforcing and connection details in structural drawings, Earthquake resistance Construction Details:, Various types and construction details of: Foundations, soil stabilization, retaining walls, plinth fill, flooring, walls, openings, roofs, terraces, parapets, boundary walls, underground and overhead tanks, staircases and isolation of structures, local practices, traditional regional responses

Module IV

Construction quality Control, Sequences of construction: Good supervision practices, critical check points and certification at certain stages, reporting, maintenance of records, testing, Vulnerability assessments and seismic strengthening of buildings, Seismic vulnerability evaluation of existing buildings, weakness in existing buildings, aging, weathering development of cracks, concepts in repair, restoration and seismic strengthening, materials and equipments for restoration of masonry and concrete structures, methodologies for seismic retrofitting

Reference Books

1. Abbott L Patidc Natural disasters
2. Arhold Christopher and Others Building configuration and Seismic design
3. Disasters and development
4. National Geographic restless earth, disaster of nature
5. Singh PP and Sharma sandhir Modern dictionary of natural disasters

SESSIONAL

AR 15891 DESIGN THESIS (0-0-0-22) CR-22

Each student is expected to prepare a design thesis based on the preliminary work undertaken in the Pre Thesis Seminar, under an approved guide/advisor by the department

The design thesis shall comprise of Architectural design proposals, structural design for a component of architectural design proposal. The component of design for which structural design is to be provided will be chosen with the help of faculty in charge of structural design subject. The student will also be required to produce a project feasibility report for the specific design undertaken for the design thesis.

Thesis should reflect the knowledge gained from the course learnt in the previous semesters.

The particulars of schedule content presentation format etc is to be decided by the department, from time to time and shall be strictly followed.

At the end of the semester, each student is expected to submit all original drawings prepared as per the department's specifications. Three copies of the report in the specified format along with a model submitted to the department after obtaining the approval of the respective guides/advisors

The department shall schedule the final viva-voce at its convenience only after the receipt of the thesis submission by a student. The performance sheet submitted by the advisor and thesis committee should be the basis for allowing the student to appear for the final viva-voce.

For End exam, viva-voce is to be conducted by a jury comprising of an external examiner, one internal examiner and head of the department or his nominee.

For the structural design project and project feasibility report a separate external viva-voce will be conducted. A total of 50 internal marks (30 and 20 respectively) and 50 external marks (30 and 20 respectively) shall be allotted for the same out of total 300 marks.

References

1. Mukni HR, Technical Report Writing Specially prepared for Technical and Competitive Examinations, New Delhi, Satya Prakashan 2000

2. Barrass Robert Writing at work \b a guide to better writing in administration business and management London Routledge 2003

3. Seely John The Oxford guide to effective writing and speaking 2nd ed Oxford New York Oxford University Press 2005

4. Jo Ray McCuen, Anthony Winkler Readings for writers 9th ed Fort Worth Harcourt Brace College Publishers 1998

5. Treece Maira Effective reports 2nd ed Boston Allyn and Bacon 1985

FINAL YEAR (NINTH & TENTH SEMESTER)
AR 15991 PRACTICAL TRAINING- CR-30

Every student must work in an Architect's Office as a full-time trainee for a period of 40 calendar weeks in one year (excluding Viva-voce) from the date of commencement of training. The chief Architect in the firm should be registered with the Council of Architecture and have a minimum of five years of practical/professional experience after her/his graduation. The student should involve herself/himself in various aspects of work in an office like working drawings, presentation drawings, quantity and cost estimation, site supervision, municipal drawings etc

Note: Detailed instructions given by the University regarding the training, the frequency of reporting to the department etc will be issued at the end of the Eighth Semester, which the student must strictly follow.

After completion of training, every student will have to submit a detailed report with a set of drawings on at least four projects on which she/he has worked during the forty calendar weeks of the practical training period.

Evaluation:

- The internal assessment shall be evaluated at the end of 40 weeks (Tenth Semester) and shall be conducted by the faculty deputed by the department in the institute.

- The detailed report and drawings prepared during practical training by students will be evaluated at a viva-voce by a jury consisting of one external one internal and head of the department or his nominee.

After submission of the report the department at its convenience will arrange for the conduct of the viva-voce examination.

: