

Annexure - I

**SYLLABUS & SCHEME
OF EXAMINATION
REGULATION 2012**

FACULTY OF ARCHITECTURE

DETAILED SYLLABUS FOR B.ARCH

STAGE I

I SEMESTER

ARC 101 COMMUNICATION SKILLS

MODULE 1

Verbal Communication: received pronunciation; how to activate passive vocabulary; technical/non-technical and business presentations; questioning and answer skills; soft skills for professionals; role of body postures, movements, gestures, facial expressions, dress in effective communication; Information/ Desk/ Front Office/Telephone conversation; how to face an interview/press conference; Group discussions, debates, elocution.

MODULE 2

Reading Comprehension: skimming and scanning; factual and inferential comprehension; prediction; guessing meaning of words from context; word reference; use and interpretation of visuals and graphics in technical writing.

MODULE 3

Written Communication: note making and note taking; summarizing; invitation, advertisement, agenda, notice and memos; official and commercial letters; job application; resume and curriculum vitae; utility, technical, project and enquiry reports; paragraph writing: General – Specific, Problem – Solution, Process – Description, Data – Comment.

MODULE 4

Short essays: description and argument; comparison and contrast; illustration; using graphics in writing: tables and charts, diagrams and flow charts, maps and plans, graphs; how to write research paper; skills of editing and revising; skills of referencing; what is a bibliography and how to prepare it.

Text Books:

1. Adrian Doff and Christopher Jones: *Language in Use* – Upper intermediate, self-study workbook and classroom book. (Cambridge University Press)[2000]
2. Sarah Freeman: *Written Communication* (Orient Longman)[1978]
3. Mark Ibbotson: *Cambridge English for Engineering* (Cambridge University Press) Nov 2008
4. T. Balasubramanian: *English Phonetics for Indian Students: A Workbook* (Macmillan publishers India) 2000

References:

1. Chris Mounsey: *Essays and Dissertation* (Oxford University Press) February 2005.
2. Sidney Greenbaum: *The Oxford English Grammar* (Oxford University Press) March 2005

3. Krishna Mohan and Meera Banerji: *Developing Communication Skills* (Mac Millan india Ltd)[2000]
4. Krishna Mohan and Meenakshi Raman: *Effective English Communication* (Tata Mc-Graw Hill)[2000]

ARC 102 MATHMATICS

MODULE 1

PLANE AND LINES

Direction ratios and cosines of a line - Equations of a plane and intersecting planes – Symmetric form of a straight line - Angle between lines and planes - Coplanar lines - skew lines - shortest distance.

MODULE 2

CURVED SURFACES

Equations of sphere - section by a plane – Tangent plane - standard equations of cone, cylinder and conoid - properties

MODULE 3

MATRICES

Characteristic equation, Eigen values and Eigenvectors of a real Matrix, Cayley - Hamilton Theorem without proof; Reduction of a real symmetric matrix to diagonal form.

MODULE 4

ORDINARY DIFFERENTIAL EQUATIONS AND INTEGRATION

Linear second order and higher order Differential equations with constant coefficients. Differential equations with variable coefficients of Euler type. Integration of rational, trigonometric and irrational functions, properties of definite integrals, Reduction formulate for trigonometric functions.

MODULE 5

FUNCTIONS OF TWO VARIABLES

Partial differentiation, total derivative, approximations, Taylor's Theorem with remainder Maxima and Minima, envelope.

References:

1. B.S.Grewal, Higher Engineering Mathematics, Khanna Publishers, Delhi, 1998.
2. P.Kandasamy, K.Thilagavathy and K.Gunavathy, EnggMathematics VolI & II,S.Chandan Publishers - 1998
3. Narayanan S, Manikavachagam Pillai T.K. & Ramanaiah G -Advanced Mathematics for Engineering Students - Vol I&II S. Viswanathan Printers 1993

ARC 103 HISTORY OF ARCHITECTURE

MODULE1

Introduction to Ancient World Architecture. A brief outline of the Neolithic revolution and its impact on built forms – brief study of a few ancient settlements – Jericho, Catal Huyuk, Hassuna, Koln-Lindenthal & Skara Brae. Egyptian Architecture: Evolution of Pyramids & cult temples.

MODULE2

Early Mesopotamian Architecture: Eg. Ziggurat of Urnammu, Ur. Mayan Architecture: Eg. Step Pyramid Complex, Tikal. Assyrian Architecture: Eg. Palace of Sargon, Khorsabad. Persian Architecture: Eg. Palace at Persepolis. A comparative study of all the styles of the ancient world.

MODULE3

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

MODULE4

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

MODULE5

Early Christian Architecture: Evolution of church form, surface treatment and materials of construction. Eg.: St. Clement, Rome. Byzantine Architecture: Technique adopted to construct domes over rooms which are square in plan. General structural systems, surface treatment and materials of construction.

ARC 104 ARCHITECTURAL GRAPHICS

The objective of this course is to understand the basics of plane and solid geometry through graphical exercises of increasing complexity.

Course contents: Communication through graphic language; Getting acquainted to geometrical constructions; lettering; Scales and their uses and construction; conic section and their properties and construction; orthographic representation of lines, planes, solids; pictorial representation techniques such as isometric projection and axonometric views.

References:

1. Bhat, Engineering Drawing, Charotar Publishing House, Anand, India
2. Gopalkrishna, K.R., Engineering Drawing, Vol.I & II, Subhas Publications, Bangalore, India
3. Morris, I.H., Geometrical drawing for Arts Students, Orient Longman Limited, Calcutta.

ARC 105 BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY

The objective of this course is to study different construction materials; understanding and drafting of various construction details with emphasis on improving the drafting skills; introduction to the understanding of plan, elevation and section; conventional representation; masonry work of brick/stone/laterite; introduction to basic building components like foundation, floor, lintel/arches and roof.

Course contents: Study of building components; understanding various conventions to be adopted for drawing plans, elevations and sections; building components and their pictorial representations; brick & stone masonry in walls, arches, brick masonry bonds – English, Flemish, decorative bonds, Rat trap bond; learning about stone masonry – coursed, random rubble, ashlar, etc. brick and stone arches; construction methods – lintels, Simple foundations in masonry, plastering, pointing.

Materials: Study of basic building materials like brick, stone, lime, cement, sand, tile and other day products – their properties, manufacturing, various quality tests; specification of mortars including cement, lime, surkhi, etc.

References:

1. McKay, G.B. (1972), Building Construction (Metric), Longman, London
2. Foster, Stroud, (1963), Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay
3. Gurucharan Singh, (1981), Building Construction EngG. Standard Book House, New Delhi
4. Dr.T.S.Balagopal Prabhu (1987), Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.

ARC 106 VISUAL ART STUDIO I

The objective of this course is to develop in student the skills in Free hand drawing and sketching in various media like pencil, charcoal and color. Importance is given to landscapes, sketching of human form in different activity postures.

Course contents: various exercises in free hand drawings, sketching and colouring in different media like pencil, charcol, pen and ink; study of arranged objects (still life) in pencil, charcol and pen and ink to highlight the texture and contrast; Introduction to colour theory – colour wheel, primary colours, secondary colours and tertiary colours; understanding complimentary colours; study of human proportion; understanding the skill of sketching different postures of human figures with light and shade; Emphasis is on architecturally interesting buildings such as tiled roof, flat roof with suitable background and foreground; light and shade in various media like pencil, ink and colour; study of textures in materials like pencil ink and colour (Exterior and interior building surfaces) such as walls, floors, window and doors, curtains, furnitures etc.

References:

1. Robert W.Gill, (1984), Manual of Rendering in pen and ink, Thames and Hudson, London
2. Hayashi Studio, (1994), Water Colour Rendering, Graphic-Sha Publishing Co., Ltd.
3. Ray Smith, (1995), Water Colour Landscape, Dorling Kindersley, London
4. Theodore D.Walker, (1989), Perspective Sketches, Van Nonstrand Reinhold, New York

5. Richard Rochan & Herald Linton, (1989), colour in Architectural Illustration, Van Nostrand Reinhold
6. Fredrick Harh, Art A History Painting and Sculpture – Architecture
7. Bruce D.Kurty, (1987), Visual imagination – An introduction of Art, Prentice Hall, New Jersey.
8. The Encyclopedia of Visual Arts Vol.1 to Vol.5, Encyclopedia Britanica, London.

ARC 107 WORKSHOP PRACTICE

The objective of this course is to train students in the practice of wood working through understanding of joinery and model making and also to learn the technical aspects.

Course contents: Introduction to various hand tools by performing various operations of carpentry and by preparing 5 models of various joints and its uses; Application of welding and other joints in architectural field; Demonstration of wood carving.

References:

1. Burbank, Nelson, (1986), House Carpentry Simplified, McGraw Hill Publications, NY
2. Krendlise L.N., (1984), Wood working, MIR Publications, Moscow
3. Sheldon Roger, (1993), Opportunities in carpentry career, UBA. VGM Career horizon, NY
4. Williams JJ (1981), Basic Carpentry Techniques, Ortho Books
5. Readers Digest, (1983), (1990), Readers digest complete guide to home improvements
6. Workshop practice Vol.1, Hejra Choudhary

ARC 108 BASIC ARCHITECTURAL DESIGN I

The objective of this course is to make student understand about appreciation of visual form, grammar of visual language, appreciation of art, vocabulary of design, principles of composition, appreciation of massing and study of anthropometrics.

Course contents: Principles of Visual perception, the grammar of visual language, principles of composition and relationship between the human activities and anthropometrics: learning about taking independent decisions or analyse their observations with a sound background of basic principles of visual perception and the principles of composition: continuous exposure of the student to the hypothetical as well as the real situations in which students are expected to work: individual discussion about the project of work with students and on application of the principles in process of design; instilling attitude of exploring different dimensions of composition without any restrictions and limitations; understanding single user space.

References:

1. Broomer F.Gerald, (174), Elements of Design: Space, Davis Publications Inc., Worcester, Massachusets
2. Wong Wucius, (1977), Principles of three dimensional Design, Van Nostrand Reinhold, NY
3. Wrong Wucius, (1977), Principles of two dimensional Design Van Nostrand Reinhold, NY
4. Maier Manfired, (1977), Basic Principles of Design, Vol.1, 2, 3 & 4, Van Nostrand Reinhold, NY

5. Sausmarez Maurice De, (1987), Basic Design – The dynamics of Visual Design Herbert Press, London
6. Item Johanes, (1973), the art of Colour, Van Nostrand Reinhold, Ny
7. Gordon, Bob and Gordon Maggic (2002), Complete Guide to Digital Graphic Design, Thames and Hudon, London
8. Watson, Donald and Crosbie, Michael, (2004), Time Saver Standards for Architectural Design (CDROM), McGraw Hill, New York.

II SEMESTER

ARC 201 MECHANICS OF STRUCTURES I

MODULE 1

FORCES AND STRUCTURAL SYSTEMS

Introduction to fundamentals of structures for Buildings – Classification - Natural structures - Building loads - Types of force systems - Resultant of parallel forces - Lami's theorem–parallelogram law.

MODULE 2

EQUILIBRIUM OF BODIES

Principle of moments – principles of equilibrium - types of loads - types of supports — support reactions - examples.

MODULE 2

ANALYSIS OF PLANE TRUSSES

Introduction to Determinate and Indeterminate plane trusses - Analysis of simply supported and cantilevered trusses by method of joints and method of sections

MODULE 3

PROPERTIES OF SECTION

Centroid - Moment of Inertia - Section modulus – Radius of gyration - theorem of perpendicular axis - theorem of parallel axis – Product of inertia.

MODULE 4

ELASTIC PROPERTIES OF SOLIDS

Types of stress and strains - Stress strain diagram for mild steel, high tensile steel and concrete - stresses in composite sections - Concept of axial and volumetric stresses and strains –elasticity.

MODULE 5

ELASTIC CONSTANTS

Modulus of Elasticity - Modulus of rigidity – Bulk modulus - Relation between elastic constants - application to problems.

References:

1. Mariam and Craige (1987), Statics John Wiley, New York
2. Prasad I.B., Applied Mechanics, Khanna Publishers, Delhi

3. R.K.Bansal: "Strength of Materials", - Laxmi Publications, Delhi, 2007.
4. S.Ramamrotham: "Strength of Materials", - Dhanpat rai & Sons, Delhi, 1990.
5. R.K. Rajput: "Strength of Materials", S.Chand & Company Ltd., New Delhi 1996

ARC 202 HISTORY OF ART AND CULTURE

MODULE 1

Chronological examination of art and artistic developments; their critical appraisal in the appropriate cultural context; India – the numerous facets of culture; Concepts in culture studies; Relation between culture and architecture; Various Case studies.

MODULE2

Crafts of India - textile, traditional paintings, stone sculpture, pottery, terracotta and puppets; Appreciation of Art, including collecting and preserving of painting; Art criticism; literature and architecture; Art, Sculpture, relief work & modern ideologies.

MODULE3

Overview of world architecture in Egypt, Greece, Rome and during Renaissance; Asian Architecture and aesthetics; Indian Architecture including Dravidian, Indo-Aryan, Buddhist, Jain and Islamic influences.

MODULE4

Special focus on Indian paintings and painters; awareness of perspective and depth; Music, dance, dramas, photography and films and its appreciation.

References:

1. Nath R. (1976), History of Decorative Art in Mughal Architecture, Motilal Banarasidas, Delhi
2. Urevbee, Andrew O, (1997), Culture and Technology, UNESCO, Paris
3. Bayer, Patricia (1990), Art Deco Interiors, Thames and Hudson, Delhi
4. Hartt, Frederiak, (1989), Art: History of Painting, Sculpture, Architecture, Vol.2, ed.3, Prentice Hall, NJ
5. Sivaramamurthy (Colambur), (1997), Art of India, Marry N.Abrams NY
6. Nath R. (1980), Art of Khajuraho, Abhinav Publications, Delhi

ARC 203 HISTORY OF ARCHITECTURE II

MODULE1

Ancient Indian Architecture: The Indus valley civilization - city planning, one typical residence, granary, great bath. Evolution of early Aryan architectural forms – impact on architecture of later days. Buddhist Architecture- Early Buddhist, Later Buddhist, The Mahayana phase.

MODULE2

The Hindu Temple : Evolution of form. Eg. Early Gupta temples, Ladhkhan & Durga temple, Aihole, temple at Deogarh, temple at Bitergaon. Chalukyan Architecture : A brief outline . Eg. Pattadakal. South Indian Secular Architecture : A brief outline.

MODULE3

Pallava Architecture: Rock-cut rathas & mandapas, Shore Temple, Mahabalipuram, Kailasanathar temple & Vaikunthaperumal temple, Kanchipuram. Chola Architecture: Eg.: Brihadeswara temple, Thanjavur.

MODULE4

South Indian Architecture – II: Pandya & Madura Styles- Evolution of the Gopuram, City planning. eg. Meenakshi temple, Madurai & Temple at Srirangam. Hoysala Style- Eg. Temple at Belur. A comparative study of all the South Indian styles.

MODULE5

Hindu - Other Regions, Orissa Style: Eg.: Lingaraja temple, Bhubaneshwar. Indo-Aryan Style- Eg.: Khandharia Mahadev temple, Khajuraho. Gujarat Style.(Hindu & Jain) - Eg.: Dhilwara temple, Mt. Abu. A comparative study of the Dravidian and Indo-Aryan styles. A comparative study of the Buddhist and Hindu styles.

References:

1. Fletcher, Sir Bannister, (1986), A History of Architecture, The Athlone Press, U.K.
2. Tadgell, Christopher, (1990), History of Architecture in India, Delhi, Viking
3. Brown Percy (1976), Indian Architecture – Buddhist and Hindu Period, Taraporevala Sons and Co., Mumbai
4. Grower Satish, (1980), Architecture of India, Buddhist and Hindu, Uttar Pradesh, Vikas Publications House
5. Walsh Margaret, (1971), The colour Source Book, Thames and Hudson, London
6. Albert O.Halse (1998), Architectural Rendering, NY
7. Brown, Percy (1976), Indian Architecture of Buddhist and Hindu Period, Taraporevala Sons and Co., Mumbai
8. Grover Satish, (1980), Architecture of India, Buddhist and Hindu, Uttarpradesh Vikas Publication House
9. Ananthwar M.A., (1980), Indian Architecture, Indian Book Gallery, New Delhi, India.
10. "History of World Architecture series", Oriental/Faber & Faber Ltd., London,1980.

ARC 204 ENVIRONMENTAL STUDIES

MODULE1

Introduction to fundamentals of environmental studies, definitions and need for public awareness – types of natural resources and associated problems – means of conserving various resources – role of an individual in conserving natural resources.

MODULE2

Introduction to concept and components of ecosystem – food chains, food webs and ecological pyramids – types of various ecosystems – biodiversity and need for its conservation

MODULE3

Types of environmental pollutions – cause, effects and controlling measures – associated global climatic problems – role of individual in prevention of pollution – natural hazardous including landslides, cyclone, floods, earthquake.

MODULE4

Introduction to concepts of sustainable development – equitable use of resources for sustainable lifestyles.

MODULE5

Various urban problems – population growth and associated problems – environment and human health – different environment protections acts – environmental ethics.

References:

1. Text book for environmental studies for undergraduate courses by Erach Barucha for University Grants Commission (available online at UGC website)
2. Environmental Pollution analysis by Khopkar S.M.
3. Dying Wisdom by Aggarwal Anil
4. Environmental Pollution analysis by Khopkar S.M.
5. Dying Wisdom by Agarwal Anil; Narain Sunita Ed Agarwal Anil
6. Environmental Pollution by Manivasakam N
7. Handbook of Environmental Health and Safety by Koren Herman, Bisesi Michael
8. Forest Policy by Nair Sathis Chandran; Jayan N D
9. Crisis of the upper Damoder Valley by India International Center.
10. Ecology and sustainable development by Ramakrishnan PS
11. Environmental Pollution by Hedges Laurent
12. Health aspects of environmental pollution control by WHO
13. Urban Environmental management planning for pollution control by Berry Brian JL; Horton Frank E
14. Man and Environment by Macabe RH; Mines RE
15. Environmental Impact assessment by Clark and others
16. Environment management in India by Sapru RK
17. Environmental Analysis by Saxena MM
18. Urban environment issues by TERI

ARC 205 ARCHITECTURAL GRAPHICS II

The objective of this course is to understand the solid geometry through graphic exercises of increasing complexity.

Course contents: Exercises to enhance graphic skills, section planes, auxiliary views and true shapes; Development of surfaces, model making techniques, parallel and radial line developments, Interpenetration of solids, intersection lines with solids of different kinds, pictorial representation by perspective view, The principles of perspective drawing and its relevance in the architectural design presentation.

References:

1. Bhat, Engineering Drawing, Charotar Publishing House, Anand, India
2. Gopalkrishna, K.R., Engineering Drawing, Vol.I & II, Subhas Publications, Bangalore, India
3. Morris, I.H., Geometrical drawing for Arts Students, Orient Longman Limited, Calcutta
4. Rolf, Jank, (1978), Architectural Models, Academy Editions, London
5. J.B.Bakema, Thoughts about Architecture, Academy Editions, St.Martin's Press

ARC 206 BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY II**MODULE 1**

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

MODULE 2

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

MODULE 3

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

MODULE 4

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

MODULE 5

Wood and wood products, classification of trees, understanding of timber, its structure, characteristics, seasoning methods, defects, preservation, fire resistance, various tests, suitability for various uses; properties of wood products; Ceramics-various types; glass as a building material-various types, properties and uses.

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

References:

1. McKay, G.B. (1972), Building Construction (Metric), Longman, London
2. Foster, Stroud, (1963), Mitchell's Advanced Building Construction, Allied Publishers Private Limited, Bombay
3. Gurucharan Singh, (1981), Building Construction Engineering, Standard Book House, New Delhi
4. Dr.T.S.Balagopal Prabhu (1987), Building Drawing and Detailing, Spades Publishers Pvt. Ltd., Calicut.
5. Sushil Kumar, (1991), Building Construction, Standard Publishers and Distributors, New Delhi
6. Garg, N. K. (2007). Use of Glass in Buildings, New Age International (P) Limited, Publishers, 4835/24 Ansari Road, Daryaganj, New Delhi – 110002. ISBN: 81-224-2065-

ARC 207 VISUAL ART STUDIO II

The objective of this course is skill development in various rendering media; understanding, appreciation and hands on experience of sculpture, model making and murals.

Course Contents: Skill development exercises in drawing and painting to enhance the technique in presentation; drawing exercises in pencil, pen and ink and colour; Highlighting the importance of free hand drawing in interior and exterior perspective drawings; developing students skill in proportion, selection of object, water bodies, human figures, street furnitures, automobiles, colour, contrast and texture; training in model making using plaster of paris, mount board, thermocol, metal, wire etc; Exercises on pencil and colour rendering on the building elevation, plan, site plan, etc.; Introduction to mural painting – key sketch preparation of the base, texture and colour application using suitable materials.

References:

1. Robert W.Gill, (1984), Manual of Rendering in pen and ink, Thames and Hudson, London
2. Hayashi Studio, (1994), Water Colour Rendering, Graphic-Sha Publishing Co., Ltd.
3. Ray Smith, (1995), Water Colour Landscape, Dorling Kindersley, London
4. Theodore D.Walker, (1989), Perspective Sketches, Van Nostrand Reinhold, New York
5. Richard Rochan & Herald Linton, (1989), colour in Architectural Illustration, Van Nostrand Reinhold
6. Fredrick Harh, Art A History Painting and Sculpture – Architecture
7. Bruce D.Kurty,(1987),Visual imagination – An introduction of Art, Prentice Hall, New Jersey.
8. The Encyclopedia of Visual Arts Vol.1 to Vol.5, Encyclopedia Britanica, London.

ARC 208 BASIC ARCHITECTURAL DESIGN II

Objective: The objectives of this course is to understand the process of appreciating and designing built forms, understanding the concept of shelter, study of user circulation, the measure of space, designing simple building typologies in a presentable form.

Course contents: Extension of the compositional principles already taught in the earlier design studio; ideal design methodology; Understanding user circulation and space requirements; Taking up design of small uncomplicated spaces using the ideal-design methodology; Exploration of various methods of presentation; including the construction of 3-dimensional scaled models; Emphasis on visual design.

References:

1. Sausmarez Maurice De, (1987), Basic Design – The dynamics of Visual Design, Herbert Press, London
2. Rochon Richard and Linton Herald, (1991), Colour in Architectural Illustration, Van Nostrand Reinhold, NY
3. Itten Johanes, (1973), The art of colour, Van Nostrand Reinhold, NY
4. Hillyer VM, Huey EG, (1996), Story of Sculpture, Nelson, Meredith Publishing Company, NY
5. Wagenknecht Kay, Herte, (1989), Site+Sculpture – A collaborated design Process, Van Nostrand Reinhold, NY
6. Burden Ernest, (1987), Design Communication, McGrawHill, USA

III SEMESTER

ARC 301 MECHANICS OF STRUCTURES II

MODULE 1

SHEAR FORCE AND BENDING MOMENT

Concept of shearing forces and Bending Moments - shear force and bending Moment diagrams for cantilever and simply supported beams subjected to point load, uniformly distributed loads and their combinations

MODULE 2

STRESSES IN BEAMS

Theory of simple bending - bending stresses in beams, shear stresses in beams - examples on simple sections. Stress distribution diagrams.

MODULE 3

DEFLECTION OF BEAMS

Slope and deflection at a section - Double Integration and Macaulay's method for simply supported and cantilever beams

MODULE 4

THEORY OF COLUMNS

Short and long columns - Euler's method and its limitations - Derivations of Euler's formula (for different end conditions) – Rankine's formula for columns, examples, effect of eccentric loading

MODULE 5

INTRODUCTION TO INDETERMINATE STRUCTURES

Concept in Analysis of continuous beams, fixed beams, cantilevers, and portal frames (No problems).

References:

1. P.C.Punmia, Strength of Materials and Theory of Structures; Vol I, Laxmi publications, Delhi 1994
2. S.Ramamrotham, Strength of materials - Dhanpatrai & Sons, Delhi, 1990.
3. R.K.Bansal - Engineering Mechanics and Strength of Materials - Lakshmi Publications, Delhi, 1990.
4. R.K. Rajput - Strength of Materials, S. Chand & Company Ltd., New Delhi 1996
5. B.C.Punmia, 'Strength of Materials and Theory of Structures, Vol.I, Laxmi publications, New Delhi 1994.
6. R.K. Rajput "Strength of Materials", S.Chand & Company Ltd., New Delhi 1996

ARC 302 HISTORY OF ARCHITECTURE III

MODULE 1

Italian Romanesque Architecture: Architectural characteristics of the churches of Northern Italy, Central Italy and South Italy. eg. Pisa Cathedral (Central Italy). French Romanesque - eg. Abbey - Aux - Hommes at Caen. British Romanesque - eg. Durham's Cathedral.

MODULE 2

Introduction to Gothic architecture, its evolution of structural systems, arches, vaults and cross vault, decoration, characteristic of French architecture. eg. Notre - Dame, Paris.

MODULE 3

Understanding the general influences and characteristics of British & Italian gothic architecture and its structural developments and decorative motives. Characteristics of British gothic Architecture. Characteristics of Italian gothic Architecture - eg. Milan Cathedral.

MODULE 4

Birth of Renaissance and its impact Architectural style of Early Renaissance: Characteristics and works of Brunelleschi. High Renaissance and Mannerism: Study of the works of Bramante and Michelangelo. Baroque and Rococo: Architectural style of Palladio & Bernini, Basilica, Vicenza.

MODULE 5

French Renaissance: Characteristics and style of French Renaissance example The Louvre, Paris. British Renaissance: Tudor, Elizabethan and Jacobean Styles: Characteristics and work of Inigo Jones. Christopher wren's contribution towards Renaissance Architecture with St. Paul's, London as an example.

References:

1. SIR Banister Fletcher's, "A History of Architecture", Butterworth Heinemann 19th Edition, 1987.
2. Cyril Mango, "Byzantine Architecture", Harry N. Abrams Inc. Publishers, New York, 1976.
3. Kubale, Hans Erich, (1972), Romanesque Architecture, Harry N. Abraham, Inc.

ARC 303 CLIMATOLOGY

MODULE 1

Climate & Weather. Scales of climate - macro-climate, meso-climate and micro climate. Climatic variables: temperature, humidity, precipitation, solar radiation, wind, etc. Tropical Climate. Climatic Zones of India & their characteristics.

MODULE 2

Geometry of solar movement. Altitude & azimuth angles. Sunpath diagram/Solar chart. Horizontal and vertical shadow angles. Use of shadow angle protractor. Design of shading devices. Performance evaluation of shading devices.

MODULE 3

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

MODULE 4

Thermal comfort. Indices of thermal comfort - Tropical Summer Index & Effective Temperature. Thermal effects in buildings. Basic concepts of heat transfer in buildings, units & terminology.

MODULE 5

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

References:

1. Boutet, T.S., (1987), Controlling Air Movement, McGraw Hill Book Co.
2. Carson, R., (1950), The Sea Around Us, Paladin Books
3. Crutchfield, H.J., (1983), General Climatology, Prentice Hall of India
4. Givoni, B., (1994), Passive and Low Energy Cooling of Buildings, Van Nostrand Reinhold Co.
5. Gribbin, J., and Gribbin, M. (1997), Watching the Weather, Universities Press
6. Koenigsberger, et.al. (1974), "Manual of Tropical Housing and Building (Part-II)", Climate Design, Longman, London
7. Mather, J.R., Climatology: Fundamentals and Applications, McGraw Hill Book Co.
8. Menon, P.A., (1989), Our Weather, National Book Trust, India
9. Nayak J.K. et.al, (1999), Manual on Solar Passive Architecture, Solar Energy Center, Ministry of Non-Conventional Energy Sources, Government of India, New Delhi
10. Pal, S.K., (1998), Physical Geography of India a study in regional earth sciences, Orient Longman
11. Robbins, C.L., (1986), Daylighting: Design and Analysis, Van Nostrand Reinhold Co.

ARC 304 THEORY OF DESIGN-1

The objective of this course is Introduction to evolution of design thinking, process and methodology, principles of Architectural composition, critical appraisal of buildings and design for the design philosophy and aesthetic principles involved.

MODULE1

Origin and development of architecture. Different types of arts and their philosophical relationships with societies in history. Art and their principles of composition from various eras and societies which defines their relationship of their philosophies of aesthetics common to all art forms including architecture and understanding them through analysis of paintings, sculpture, furniture, photography, etc.; for example: Greek, Vedic Indian, Bauhaus, etc.

MODULE2

Observation and rational analysis: Graphics of analysis and designing process. Discussion on aspects of creative thinking. Definition of art, artist, engineer, craftsmen, designer and where

does architect fit. Design process experiments in history, and chart of design methodologies followed by various architects and designers.

MODULE 3

Formal aesthetics related to volume, space: Perception of space, various definitions of space in history and its implication in the aspects of design. Elements of design like color, texture, light and shade, pattern in design, geometry of various shapes and their meaning in design.

MODULE 4

Tools of composition like unity, mass and form, contrast, harmony, symmetry and asymmetry, positive and negative spaces, scale and proportions, which could be understood by analyzing Indian and foreign buildings in history and its comprehensive analysis. Finally understanding the relationship of philosophy, design process, design methodology, and application of elements and tools of composition by studying various forms of design.

References:

1. Robertson, H & Arkinson, R (1924), The Principles of Architectural Composition, The Architectural Press, London
2. V.S.Parmar, (1990), Design Fundamentals, Somaiya Publications Private Limited, New Delhi
3. John Lang, (1987), Creating Architectural Theory, Van Nostrand Reinhold Company, New York
4. Christian Norberg – Schulz, (1971), Existence, Space and Architecture, Studio Vista Limited, London
5. Simon Unwin, (1997), Analysing Architecture, Routledge London & New York
6. Francis D.K.Ching, (1979), Architecture-Form, Space and Order, Litton Educational Publishing Inc., Van Nostrand Reinhold Company, London
7. Richard Padoram, E & FN SPON, (1999), Proportion, Science Philosophy Architecture, Taylor and Francis Group, Routledge, New York and London
8. Baker, Geoffrey, (1989), Design Strategies in Architecture an approach to the analysis of Form, E & FN spon, N.Y.
9. Iengar, Keshavram M (1996), Composing Architecture, Academy of Art and Architecture, Mysore.
10. Jencks Charles ;Kropf Karl, (2003), Theories and manifestoes of contemporary architecture, New York
11. Frampton Kenneth; Glusberg Jorge (2000), World Architecture 1900-2000, Springer Wien, New York
12. Ballantyne Andrew, (2002), What is Architecture? New York
13. Unwin Simon, (2000), Architecture Note Book, Routledge, London
14. Pandya Yatin, (2007), Elements of Space Making, Mapin Publications, Ahmedabad
15. Pandya Yatin, (2005), Concepts of Space in Traditional Indian Architecture, Mapin Publications, Ahmedabad.

ARC 305 BUILDING SERVICES I

MODULE 1

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

MODULE 2

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

MODULE 3

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

MODULE 4

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

MODULE 5

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

References:

1. Water, Sanitary & waste Services for Building, Wine, Alan, F.E. & Swaffield, J.A., 5th Edition
2. Birdie J.S., Birdie G.S., (1998), Water Supply and Sanitary Engineering, Dhanpathray Publishing Company, New Delhi
3. Orthobooks, Basic Plumbing Techniques, Chevron Chemical Company, San Ramon, Canada
4. Hussain S.K., Water Supply and Sanitary Engineering, Dhanpatray and Sons, New Delhi
5. Stein/Raynolds, Mc Guinness, Mechanical and Electrical Equipment for Buildings, Vol.I, John Wiley and Sons, NY
6. Dagostino FR, Mechanical and Electrical Systems in Construction in Architecture, Reston Publishing Company, Prentice Hill Co., Virginia.
7. Rangwala SC, Fundamentals of Water Supply and Sanitary Engineering, Charotar Publishing Company, Anand
8. Greeno, Roger, “Building Services Technology and Design”, Longman Scientific and Technical, Harlow, 1997.
9. Chatterjee, A.K., “water Supply and Sanitary Engineering”, Khanna publishers, New Delhi,
10. “Hand Book on water Supply and Drainage (with special emphasis on plumbing)”, Bureau of Indian standards, New delhi.

ARC 306 COMPUTER APPLICATIONS IN ARCHITECTURE – I

The objective of this course is to impart training in the use of computer aided design and drafting techniques in Architectural design and detailing.

Course contents:

- Introduction to computer fundamentals, file management
- Overview of CAD in Architecture – Introduction to various CAD software for architectural application
- Getting started with AutoCAD – Drawing setup – units, limits, precision
- Drawing simple objects – sign convention, point, line arc, circle, polyline, polygon, use of other draw commands – spline, block, hatch, text
- Dimensioning
- Modify commands – editing of objects such as erase, copy, mirror, scale, move, rotate etc.
- Formatting – concept of layer, layer management, color, text style, line type, dimensioning style, multiline
- Surface modeling
- Concept of 3D modeling – primitives, boolean techniques
- View ports, 3D view point preset views, isometric views, model space, paper space
- Commands for printing – page set up, print preview, print
- Architecture related exercises such as drawing plan, elevation, sections of buildings

References:

1. AutoCAD reference manual
2. Omur George, (1999), Mastering AutoCAD, BPB Publications
3. Architectural Desktop reference manual.

ARC 307 ARCHITECTURAL GRAPHICS III

The objective of this course understands of shades and shadows on two and three dimensional graphic composition.

Course Contents: study and analysis of character of light and its effect on three dimensional graphic compositions through study; Training of light on plan and elevations. Appreciation of effect of light on simple built forms.

Graphical methods of drawing the following

- (1) The Sciography of simple geometrical forms on vertical, horizontal and inclined planes
- (2) Sciography of curved shaped objects on horizontal, vertical and inclined planes.

Exercises with the emphasis on the application of sciography techniques on Architectural Elevation, Plan as part of the presentation

NOTE: Suitable presentation and rendering techniques should be taught along with landscape features.

References:

1. Mulik Shankar (1994), Perspective and Sciography, Allied Publishers Limited, Bombay
2. Michael E.Helms (1990), Perspective Drawing, A step-by-step handbook, Prentice Hall, Eagle Wood Cliff, New Jersey
3. Halse, Albert, (1988), Architectural Rendering, McGraw Hill Book Co., NY

ARC 308 BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY III**MODULE 1**

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

MODULE 2

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

MODULE 3

Ferrous and non-ferrous metals-iron, steel, alloys, various forms and their applications in buildings- aluminium, copper, zinc, lead,tinPolymeric materials- rubbers, plastics Asbestos products Developmental reference to traditional trusses, different forms, lean-to, double lean-to collar, couple roof , fixing of Mangalore tiles, A.C. & G.I. sheets and gutters.

MODULE 4

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

MODULE 5

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

References:

1. W.B.Mckay, Building Construction Vol. I, II and III
2. T.S. Balagopal Prabhu Building Design and Civil Engineering Drawing
3. Rangwala, Building Construction
4. Rangwala, Engineering Materials
5. Relevant IS codes
6. Arora, S.P. & Bindra, S.P., "A Text Book of Building Construction", Dhanpat Rai & sons, New Delhi, 1994.
7. Jha, J. & Sinha, S.K., "Building Construction", Khanna Publishers, New Delhi, 1977.

ARC 309 MODEL MAKING

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

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

Exercises in preparing detailed models of buildings from given set of drawings. The subject teacher shall co-ordinate with the Architectural Design Studio in-charge while working out / Setting out the various exercises in model making.

ARC 310 ARCHITECTURAL DESIGN I

The objective of this course is to train student in design development of moderate complexity through understanding and appreciation of space and functional requirements such as circulation, facilitation and area analysis, with particular stress on techniques of graphic representation as an integrated process in architectural design. Basics of technical drawings are to be adhered strictly.

Course contents: Introduction of exercises interconnecting basic design and architectural design, understanding the arrangement of solids for aesthetic consideration to foster basic architectural qualities in design like composition and other human considerations like, privacy, convenience, comfort, etc.; understanding the significance of the factors in creating ideal environment; learning the design process; Critical appraisal of spaces to which students are frequently exposed to like library, classroom, hostel residence, clinic, etc. Factors like aesthetics – colour, texture, arrangement and profile of forms, circulation pattern, furniture arrangement, etc.

A small design exercise with critical appraisal of various spaces as first assignment; other design problems involving activities for two to twenty persons.

References:

1. Cohen Uriel, McMurtry Ruth, (1985), Museum and Children, Design Guide, The School of Urban Planning and Architecture, University of Wisconsin, Milwaukee
2. Mary Julliet, (1984), Designing room for children, Little Brown and Company, London
3. Helper Donald, Paul Wallach, (1987), Architecture Drafting and Design, Mc-Graw Hill Company, NY
4. Neufert, Ernst (1970), Ernst Neufert – Architect's Data, Crosby Lockwood and Sons, London
5. Ching, Francies, D.K. (1979), Architecture Form, Space and Order, Van Nostrand Reinhold Co., NY
6. Chiara, J.D. (1984), Time Saver Standard for Site Planning, McGraw Hill Book Co., NY

IV SEMESTER

ARC 401 DESIGN OF STRUCTURES I

MODULE 1

TIMBER

Design requirements from National Building Code, Design of Madras Terrace roof.

MODULE 2

STEEL SECTIONS AND RIVETED JOINTS

Properties of rolled steel sections, riveted joints, Analysis and Design of riveted joints (Excluding eccentric connections)

MODULE 3

WELDED JOINTS

Types of welding, permissible stresses, Design of fillet welds (excluding eccentric connections)

MODULE 4

STEEL BEAMS

Allowable stresses, General specifications, Design of laterally supported beams.

MODULE 5

STEEL COLUMNS

Allowable stresses, various shapes, built-up sections, Design of columns (excluding lacing, battening and other connections).

References:

1. Ramachandra S., Design of Steel Structures, Standard Book House, Delhi, 1984.
2. A.S.Arya, Structural Design in Steel, Masonry and Timber, Nemchand and Bros, Roorkee, 1971.
3. National Building Code of India, 1983, Part VI, Structural Design.
4. Gurucharan Singh, Design of Steel Structures, Standard Publishers, New Delhi, 1982.
5. Negi "Design of steel Structures" - Tata Mcgraw Hill Book Company, New Delhi 1997.

ARC 402 HISTORY OF ARCHITECTURE IV

MODULE 1

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

MODULE 2

Slave kings - eg.: Qutub mosque, Qutub minar, Tomb of Nasir - ud - din - Mohammed shah, Khilji dynasty - eg.: Alai Darwaya, Tughlaq Dynasty - eg. Tomb of Ghiyas - ud - din Tughlaq, Kirki mosque, Delhi. Sayyid and Lodi Dynasty - Development of Octagonal & Square tombs, eg.: Mothi - Ki - Masjid.

MODULE 3

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

MODULE 4

Gujarat - Earlier period - Eg - Mosque at Broach, Jami Masjid at Ahmedabad, middle period - eg. Mosque at Champanir, Teen Darwaza, Evolution of Tombs. Later period - eg. Siddi sayad mosque, sha Alam Rauza, Adalaj - step well , Rani Rupavatis Mosque. Outline idea of Bijapur style.

MODULE 5

Babur - eg. Humayuns Tomb - Delhi; Akbar - eg. Agra fort and Fathepur sikri - site planning Jodhbais palace, Birbal palace, Diwane - khas, Salim Chisti's Tomb & Buland Darwaza; Jahangir - Eg. Akbar's mausoleum at Sikandra; Shah - Jahan - Eg. Red fort, Jami Masjid at Delhi, Taj - Mahal - Agra.

References:

1. Brown, Percy, "Indian Architecture (Islamic period)", DB Taraporevala Sons & Co, Mumbai, 1983.
2. Croness & Haywoods, "The Gardens of Mughal India", Vikas Delhi, 1973.

ARC 403 THEORY OF DESIGN II

The objective of this course is to understand various terminology, philosophy, styles involved in architectural composition, critical study of various architectural design theories, understanding architectural criticism.

MODULE 1

Definition of Space and Concept in Design: Change in design methods due to changing definitions of space- from planer to third dimension, Euclidean to Einstein's relativity, Cartesians coordinates to psychological interpretations of space definition.

MODULE2

Perspectives in Renaissance to 3-d modeling in computers. Character definition of design through concepts and interpretation of the concept in terms of composition methods and space modulation. Discuss with examples in history. Relationship of function in expression of design like, expression of climate and topography, expression of culture and regional characters, expression of circulation and function of building, expression of structure and technology in design.

MODULE 3

Styles in Architecture: Determinants of style are region, climate, sociology, politics, scientific inventions, materials and technology. Discussion of these influences in development of styles in history. Understanding styles as symbols.

MODULE4

Theories in architecture: Discussion on aesthetic theories, proxemic theories, theories related to environment and behavioral analysis and its application in design.

MODULE5

Architectural Criticism: Importance of criticism in architecture, its role and ethics involved. Types of criticism like- normative, interpretive, and descriptive. Settings for criticism in present context and in history. Critical analysis of important buildings and issues related to both Indian and foreign context.

References:

1. V.S.Parmar, (1990), Design Fundamentals, Somaiya Publications Private Limited, New Delhi
2. John Lang, (1987), Creating Architectural Theory, Van Nostrand Reinhold Company, New York
3. Christian Norberg – Schulz, (1971), Existence, Space and Architecture, Studio Vista Limited, London
4. Simon Unwin, (1997), Analysing Architecture, Routledge London & New York
5. Francis D.K.Ching, (1979), Architecture-Form, Space and Order, Litton Educational Publishing Inc., Van Nostrand Reinhold Company, London
6. Richard Padoram, E & FN SPON, (1999), Proportion, Science Philosophy Architecture, Taylor and Francis Group, Routledge, New York and London
7. Wilson, Colin St.John (1992), Architectural Reflections Butterworth Architecture, Oxford
8. Hubbard, William (1980), Complicity and Conviction: Steps Towards an Architecture of Convention, The MIT Press, Mass
9. Baker, Geoffrey, (1989), Design Strategies in Architecture an approach to the analysis of Form, E & FN spon, N.Y.
10. Frampton Kenneth; Glusberg Jorge (2000), World Architecture 1900-2000, Springer Wien, New York
11. Bellantyne Andrew (2002), What is Architecture? New York
12. Unwin Simon, (2000), Architecture note book, Routedge, London
13. Pandya Yatin, (2007), Elements of Space Making, Mapin Publications, Ahmedabad.
14. Pandya Yatin, (2005), Concepts of Space in traditional Indian Architecture, Mapin Publications, Ahmedabad
15. Swaback Vernon D (2003), Creative Community Designing for Life, Images Publishing Group, Melbourne
16. Havell E.B. (2000), Encyclopedia of Architecture in the Indian Subcontinent, Aryan Books International, New Delhi.

ARC 404 BUILDING SERVICES-II

MODULE 1

Light - Electromagnetic radiation, Visual task requirements, Units of Light, Light, Vision and Buildings, Standards of Lighting and Visual comfort. Artificial lighting - requirements. Types of electrical lamps. Electrical fittings / equipment used in buildings.

MODULE 2

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

MODULE 3

Supplementary artificial lighting for buildings. Out door lighting, Flood lighting and lighting of thorough fares.

Principles of electrical installation in buildings. Distribution, Circuits and elements of building wiring systems.

MODULE4

Safety methods and measures to be adopted, study of relevant I.S. Codes.

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

References:

1. Pritchard, D.C., "Lighting", Longman Scientific & Technical, Harlow, 1995
2. Hopkinson, R.G., "Architectural Physics - Lighting", London, 1963.
3. Benjamin Evans, "Daylight in Architecture", McGraw - Hill Book Company, Newyork, 1981.

ARC 405 SURVEYING AND LEVELLING

The objective of this course is to understand the principles of surveying, classification, types of surveys and their applications.

Course contents: Introduction to chain survey, principles, classification, instruments used, ranging, reciprocal ranging, chaining on sloping ground, errors in chaining, tape corrections, obstacles to chaining and ranging, problems in chaining, cross staff survey, chain triangulation.

Plane table survey, advantages and disadvantages, types of plane table survey, radiation, intersection, traversing and resection, errors in plane table survey.

Levelling, methods of levelling, booking and reduction of levels, longitudinal levelling, cross sectioning, errors in levelling, problems in levelling, contouring.

Theodolite survey, measurement of horizontal and vertical angles, problems tackled like centre line of building, setting out angles, etc. Study of instruments: Total Station.

Reference:

1. Punmia B.C., (2005), Surveying, Laxmi Publications Private Limited
2. DE Alak, (2002), Plane Surveying, S.Chand & Company
3. T.P.Kanetkar, S.V.Kulkarni, (1989), Surveying and Levelling Vol.I, Pune Vidyarthi Griha Prakashan, Pune
4. Venakataramaiah, (1996), Text Book of Surveying, University Press
5. Arora, K.R., (1991), Surveying Vol.I, Standard Book, New Delhi

ARC 406 COMPUTER APPLICATIONS IN ARCHITECTURE – II

Attributes – understanding object linking and embedding – Importing objects into AutoCAD using OLE working with OLE objects. Understanding 3D coordinate system - Using View ports – 3D drawing & Editing commands – Interactive Viewing in 3D.

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

Introduction to rendering in 3D – Rendering process – Enhancing digital images from CAD application using Adobe Photoshop, Paint Shop Pro & other graphic programs.

References:

1. Ron House "AutoCAD 2000"
2. Omura George, "Mastering AutoCAD 2000", BPB Publications, New Delhi, 1988.

ARC 407 ARCHITECTURAL GRAPHICS IV

The aim of the course is to make students understand why anything and everything we see is a perspective view of the same, and how do we represent that view on a piece of paper. The objective of the course is to teach them the fundamental of perspective views, to draw one point and two point perspectives and to draw the sciography for one and two point perspectives.

Course contents: Critical study of 2D drawings and their graphic importance in perspective making; Integration of the effect of light on buildings and perspective drawing. Exercises of varied complexity will be handled from interiors to exteriors.

References:

1. Mulik Shankar (1994), Perspective and Sciography, Allied Publishers Limited, Bombay
2. Michael E.Helms (1990), Perspective Drawing, A step-by-step handbook, Prentice Hall, Eagle Wood Cliff, New Jersey
3. Halse, Albert, (1988), Architectural Rendering, McGraw Hill Book Co., NY
4. Jha, J. & Sinha, S.K., "Building Construction", Khanna Publishers, New Delhi, 1977.
5. Arora, S.P. & Bindra, S.P., "A Text Book of Building Construction", Dhanpat Rai & sons, New Delhi, 1994.

ARC 408 BUILDING MATERIALS AND CONSTRUCTION TECHNOLOGY IV

MODULE 1

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

MODULE 2

Basic rule of relationship and design of riser and tread. Different types of stair way design. Construction details of concrete stairs of composite construction. Design of handrail and balusters using different materials. Various methods of fixing them.

MODULE 3

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

MODULE 4

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

MODULE 5

Materials: Concrete: Introduction, classification, constituent materials, preparation, curing, compaction, water cement ratio, strength, workability, durability, defects, physical properties, proportioning, admixtures, reinforced cement concrete; Tar, bitumen, asphalt, gypsum; Paints, types, application, properties.

References:

- 1.W.B.Mckay, Building Construction Vol. I,II and III
- 2.T.S. Balagopal Prabhu Building Design and Civil Engineering Drawing
- 3.Rangwala, Building Construction
4. Rangwala, Engineering Materials

ARC 409 ARCHITECTURAL DESIGN II

The objective of this course is to understand the nature and interdependency of multi function spaces and their effect on visual, aesthetic and structural elements.

Course contents: Volumetric study of built forms, various building materials & their application in architectural design; critical appraisal of both internal and external spaces, evaluation of contemporary architectural works as warm up exercises; Design problems of relatively complex nature to be worked out with exposure to case study and literature study; design exercises for various climatic zones; a short study tour of two to four days to study the built forms in various regions; the design exercise is to address undulating nature of site (urban/rural); study of contours and related challenges; three dimensional presentation (in perspective model on computer graphics) is advised.

References:

1. Neufert Ernst, (1970), Architect's Data, Crosby Lockwood and Sons, London
2. Chiera JD and Calender, (1983), Time Savers Standards for Building Types, McGraw Hill Book Company, New York
3. Chiera JD, (1984), Time Savers Standards for Site Planning, McGraw Hill Book company, New York
4. Ching Francis, (1979), Architecture Form, Space and Order, Van Nostrand Reinhold Company, New York.
5. The National Building Code (2000), IS Publications, India.
6. IS Code Reference Manual for the Building Design for Physically Handicapped.

V SEMESTER

ARC 501 DESIGN OF STRUCTURES II

MODULE 1

PROPERTIES OF STEEL AND CONCRETE

Structural properties of concrete - Grades and Strength of Concrete - durability - code provisions and design requirements of steel and concrete.

MODULE 2

WORKING STRESS DESIGN METHOD

Introduction to Elastic Theory - basic concepts - stress-strain relationships, design of singly reinforced beams - merits and demerits of the method - code requirements.

MODULE 3

LIMIT STATE DESIGN - INTRODUCTION

Various limit stages - characteristic load and characteristic strength of materials - partial safety factor – stress - strain relationship of steel and concrete - safety and serviceability requirements.

MODULE 4

LIMIT STATE DESIGN OF BEAMS

Analysis and Design of rectangular sections for bending - singly reinforced, doubly reinforced and flanged sections.

MODULE 5

LIMIT STATE DESIGN OF SLABS

Design of one way and two way slabs using IS Code co-efficients for various edge conditions.

References:

1. P.Dayaratnam, Design of Reinforced Concrete Structures, Oxford and IBH Publishing Co., 1983.
2. N.C.Sinha and S.K.Roy, Fundamentals of Reinforced Concrete, S.Chand & Co., New Delhi, 1983.
3. S.N. Sinha, 'Reinforced Concrete Design' Tata McGraw Hill, New Delhi 1998.
4. Dr.B.C.Punmiya, Reinforced Concrete Structures, Laxmi publication , Delhi, 1994.
5. Limit state design of R.C Structures, Laxmi publications, NewDelhi.

ARC 502 CONTEMPORARY ARCHITECTURE – I

MODULE 1

Post- Renaissance architecture of Europe in general and England in particular. Industrial revolution and its impact on architecture and urban settlement in particular. Arts and crafts and Art – Nouveau movements and their impact on architecture. The principles and works of Mackintosh and Antonio Gaudi.

MODULE 2

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

MODULE 3

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

MODULE 4

Rapid Urban growth in Europe and USA. The emergence of International style of architecture. Principles and works of Frank Lloyd Wright and Le Corbusier. Architecture 19
The styles and trends of architecture brought by Britishers to India and their evolution. The impact of Hindu and Indo-Sarsanic style on the British architecture in India. The characteristics of British colonial architecture with examples form the works of Edwin Lutyen

Text Books:

1. Nikolaus Pevsener, "Sources of modern architecture and design", Themes and Hudson, 1989.
2. William J.R., Curtis, "Modern architecture since 1900", Prentice hall, New Jercy USA, 1983.

References:

1. Editor in Chief: Adolf K Placrek, Macmillan, "Encyclopedia of Architecture (Vol I to IV)", free press, Newyork, 1990.
2. Manfern Tofuri & Frences Dal Co. "Modern Architecture -I & II (World architecture series), Faber and Faber / elector, Newyork, 1989.

ARC 503 VERNACULAR ARCHITECTURE

MODULE 1

INTRODUCTION

Approaches and concepts to the study of Vernacular Architecture - Aesthetic - Anthropological - Architectural - Developmental - Geographical - Historical - Spatial - Folkloristic.

MODULE 2

TRADITIONAL PRINCIPLES OF PLANNING IN WESTERN & NORTHERN INDIA

Primitive forms, symbolism, colour, Folk Art, etc. in the Architecture of the Deserts of Kutch and Gujarat State - Subterranean Architecture - Wooden Houses & Mansions (Havelis) Gujarat & Rajasthan - Houseboats (Dhungas), Kashmir - Matedials of Construction & Construction detail.

MODULE3

VERNACULAR ARCHITECTURE OF SOUTH INDIA

Wooden Houses, palaces & Theatres in Kerala, Chettinad houses and palaces in Tamil Nadu - Principles of Planning, proportion & religious practices & beliefs & culture, materials of construction & construction detail & settlement planning.

MODULE 4

WESTERN INFLUENCES ON VERNACULAR ARCHITECTURE

Colonial influences on the Traditional House, Goa, and change - Bangla & Bungalow, Bengal and Victorian Villas - Planning Principles, materials & methods of construction - House Typologies, settlement Planning, Pondicherry & Cochin.

MODULE 5

SECULAR ARCHITECTURE

Medieval period - Citadels, palaces, towers, gateways, public buildings, etc. in the medieval towns of Jodhpur, Jaipur, Jaisalmer, Gwalior, etc.

References:

1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.
2. V.S.Praman, Havali - Wooden Houses & Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.
3. Kullrishan Jain & Minakshi Jain - Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad, 1992.
4. G.H.R. Tillotsum - The tradition of Indian Architecture Continuity, Controversy - Change since 1850, Oxford University Press, Delhi, 1989.
5. Carmen Kagal, VISTARA - The Architecture of India, Pub: The Festival of India, 1986.
6. Amos Rappoport, House, Form & Culture, Prentice Hall Inc. 1969.

ARC 504 SITE PLANNING

MODULE 1

Definition of plot, site, land and region - importance of site analysis – factors involved. Accessibility, size and shape of sites. Confirming and non-conforming uses. Climate and topography, infrastructures available.

MODULE2

Sources of water supply and means of disposal system, architectural and visual aspects. Preparation of site analysis diagram.

MODULE 3

Lie of the land, contours, watershed, surface drainage, ayacuts and irrigation lands. Water, vegetation, soils, climate, land forms. Sewage disposal, irrigation systems and ecology. Preparation of maps of matrix analysis, composite analysis, locality plans, topographical analysis.

MODULE 4

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

References:

1. John Ormsbee Simonds, "Landscape Architecture: A manual of site planning & design", McGraw Hill, 1961.
2. Kevin Lynch, "Site Planning", MIT Press, Cambridge, MA. 1957.
3. Joseph De Chiara and Lee Coppleman, "Planning Design Criteria", Van Nostrand Reinhold Co., New York, 1968
4. Thomas H. Russ, "Site Planning and Design Handbook" Pearson Education, 2002
5. Diane Y. Carstens, "Site Planning & Design for the Elderly", Van Nostrand Reinhold, New York, 1993
6. James B. Root, "Fundamentals of Landscaping & Site Planning", AVI Pub. Co., Westport, 1985
7. William M. Marsh, "Environmental Analysis for Land Use and Site Planning", McGraw-Hill, 1978
8. R. Gene Brooks, "Site Planning - Environment, Process and Development", Prentice Hall, 1988

ARC 505 SOCIO-ECONOMIC STUDIES**MODULE 1**

Introduction to sociology and its relationship with architecture, essential elements of society, social problems, rural and urban communities, tribal society, Indian caste system, cultural diffusion, urbanization in India, problems of slum, migration, problems related to public health, communication reforms and housing, principles of social research.

MODULE 2

Study of social problems in urban and rural context, bio-social and socio-cultural systems, understanding urban issues such as slums, migration; Basics of social research.

MODULE3

Introduction to Building Economics, nature and scope of the subject of building economics, utility to architects, economic problems. Economic Organization of the Society, Indian Living Standard and its comparison with other countries.

MODULE 4

Laws and Returns and its applicability in architecture, Opportunity Costs, Methods of Financing and Valuation, Basics of Estimating and Cost Accounting, elements of Book-keeping and Accounts. Factors of production, Inflation and Building Cost, wages and incentives.

MODULE 5

Energy Crisis and building construction, a critical review, economic development and its effects on environmental quality, depreciation, brief idea on the forms of business organizations and professional firms.

References:

1. Maclver, R.M. and Page, Charles, (1974), "Society: An introductory Analysis", McMillan India Limited, Delhi

2. Mangalore University, (1991), "Perspectives of Dakshina Kannada and Kodagu, Mangalagangothri, Mangalore
3. Madhan G.R., (1981), "Indian Social Problems, Vol.1", Allied Publishers, New Delhi
4. Shankar Rao C.N., "Sociology". Tara Chand, (1993), "Engineering Economics", Nem Chand and Bros., Roorkee (U.P.)
5. Ghan P.T., (1985), "Engineering Economics", Pune Vidyarthi Griha Prakashan, (Pune)
6. Dewett K.K., (1991), "Economic Theory"
7. Namavati (1991), "Professional Practice and Methods of Valuation", Mumbai
8. Baidynath, Saraswati (2000), Nature of Man and Culture, Aryan Books International, Delhi
9. Pannerselvan, R (2005), Engineering Economics, Prentice Hall of India, New Delhi
10. Lester, Thurow (2003), Fortune Favours the Bold, Harper Business, New York.

ARC 506 BUILDING SERVICES III

MODULE 1

Air conditioning - introduction. Comfort conditions within built environment. Basic refrigeration systems. Refrigeration system components. Vapour compression cycle. Concept of cooling load. Introduction to calculation of cooling load. Concept of zoning.

MODULE 2

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

MODULE 3

Lifts: types of lifts - Dimension of lifts. Traffic analysis, calculation of round trip time and selection of lifts. Hoistway/shaft/well, machine room & pit. Arrangement of lifts. Escalators - characteristics, dimensions and arrangements of escalators.

MODULE 4

Causes of fire, Mechanism of fire spread in buildings, classification of fire. Grades of fire hazard – Personal hazard, internal hazard & exposure hazard classification of building based on occupancy. High temperature effects and combustibility of building materials and structure. Fire resistance of buildings.

MODULE 5

Passive and Active fire precautions: Site planning, Heat sensitive detectors, Fire alarm system, means of escape. Fire fighting installations: hose reel, internal hydrant system, CO2 system, wet risers, etc.

ARC 507 COMPUTER APPLICATION (NON GRAPHICAL)

Computer Architecture and Fundamentals Operating Systems & MS-DOS

Importance of an Operating System:

A Guarantee to an Instant Start on MS-DOS, Getting Started on DOS with Booting the System, MSDOS.SYS, Command COM, Telling DOS the Date and Time, Concepts Review, Getting and Interpreting a Directory, Making use of Pause Key to freeze scrolling, Getting a Printed Copy of a Directory, ❖ Copying commands, Copy command, Copy Source file Destination file, Disk copy source Destination

**MS Windows 2000 O.S., Microsoft Office-2000, Microsoft Word-2000,
Microsoft Excel-2000, Microsoft Access-2000, Microsoft Power-Point-2000**

Internet Essentials Email & Outlook Express.

Two modes in which Windows Explorer works

My Computer, Windows Explorer, File Management Tools under Windows Explorer

ARC 508 BUILDING MATERIALS& CONSTRUCTION TECHNOLOGY V

MODULE 1

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

MODULE 2

Purpose and functions of joints in Building construction, types of joints that occur in Buildings. Expansion joints in Brick walls and R.C.C. framed structures and its construction details and materials involved in the construction. Study of relevant IS codes.

MODULE 3

Principles of temporary works such as shuttering, centering and scaffolding, Form work, Centering and scaffolding materials used for these temporary structures - timber & steel, literature survey on temporary structures.

MODULE 4

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

MODULE 5

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

Materials: Materials and methods for fire proofing – thermal insulation– damp properties of basements and water retaining structure.

References:

1. Balagopal T.S.Prabhu, “Building Design and Civil Engineering Drawing”, Spades Publishers, Calicut
2. R.Chudley, “Construction Technology”, Vol.3, 4, 5, ELBS, Longman group
3. McKay, W.B., (1972), “Building Construction (Metric)”, Longman, London
4. Foster, Stroud (1963), “Mitchell’s Advanced Building Construction”, Allied Publishers Pvt.Ltd., Bombay
5. Gyala, Sabestyen, (1977), “Light Weight Building Construction”, George Godwin Limited, London
6. Arora, S.P. & Bindra, S.P., "A Text Book of Building Construction", Dhanpat Rai & Sons, New Delhi, 1994.
7. Jha, J. & Sinha, S.K., "Building Construction", Khanna Publishers, New Delhi, 1977.

ARC 509 ARCHITECTURAL DESIGN III

The objective of this course is to undertake design development with climate as a critical consideration and sustainability is an important aspect.

Course contents: Analysis of form from the point of view of well known architectural principles and critical study of climatic elements and their influence on design development. Design problems involving different user group; Institutional, commercial typologies with special stress on sustainability.

Understanding climate as a precursor to design. Integrating climatic requirements with design decisions. Design for varied user groups like Institutional, commercial etc. such that a more sustainable environment can be achieved which will satisfy certain basic comfort conditions.

References:

1. Neufert, Ernst (1970), Ernst Neufert, “Architects Data, Cros” by Lockoowd and Sons, London
2. Chiara, J.D., and Callender, John (ed.), (1983), “Time Saver Standards for Building Types”, McGraw Hill Book Co., NY
3. Ching, Francies, D.K. (1979), “Architecture Form, Space and Order”, Van Nostrand Reinhold Co., NY
4. Chiara, J.D. (1984), “Time Saver Standard for Site Planning”, McGraw Hill Book Co., N.Y.
5. Jencks Charles, (1984), “The Language of Post Modern Architecture”, Academy Editions, London
6. Collin Rowe, (1987), “Sterling James – Building Projects”, Rizzoli, New York
7. Charles Jencks, (1979), “Bizare Architecture”, Academy Editions, London
8. Burden, (1984), “Design Presentation”, McGraw Hill, London.

VI SEMESTER

ARC 601 DESIGN OF STRUCTURES III

MODULE 1

LIMIT STATE DESIGN OF RCC COLUMNS

Code provisions - Design of axially loaded short and long columns of rectangular and circular sections - ties and spiral reinforcements

MODULE 2

LIMIT STATE DESIGN OF BEAMS AND SLABS

Limit State Design of continuous beams and slabs using code coefficients.

MODULE 3

LIMIT STATE DESIGN OF STAIRCASE

Types of staircases - Design of doglegged staircase.

MODULE 4

WORKING STRESS DESIGN OF FOUNDATION

Types of foundations - Isolated pad footings - combined footings - Design principles for rafts, pile foundations (No design calculations)

MODULE 5

WORKING STRESS DESIGN OF RETAINING WALLS

Design of RCC Cantilever retaining walls.

References:

1. P.Dayaratnam, Design of Reinforced Concrete Structures, Oxford and IBH Publishing Co., 1983.
2. N.C.Sinha and S.K.Roy, Fundamentals of Reinforced Concrete, S.Chand and Co., New Delhi, 1983.
3. Vazirani and Ratwani, Concrete Structures, Khanna Publishers, New Delhi, 1969.
4. S.N. Sinha Reinforced Concrete Design Tata McGraw Hill, New Delhi 1998.
5. Ashok K. Jain Reinforced Concrete Limit State Design Nemchand, Bros Roorkee 1983

ARC 602 CONTEMPORARY ARCHITECTURE – II

MODULE 1

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

MODULE 2

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

MODULE 3

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

MODULE 4

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

MODULE 5

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

Text Books:

1. Vikram Bhatt & Servier Peter, "Contemporary Indian Architecture after the masters," Mopin Publishing Ltd., Ahmedabad, 1996.
2. Jenles Charles, "Architecture Today", Academy edition, London, 1988.

References:

1. Editor - in Chief: Adolf K. Placsek, Mackmillan, "Encyclopedia of Architecture Vol I to IV" Free Press, New York 1990.
2. Kulterman Udo, "Architecture of the 20th Century", Van Nostrand Reinhold, London, 1993.

ARC 603 ESTIMATION, QUANTITY SURVEYING AND SPECIFICATIONS

MODULE 1

Introduction, Types of Estimate, Detailed Estimate - Units of Measurements, Details of measurement and calculation of quantities of various items of work, Methods of Building Estimate - separate or individual wall method, Centre line method. Preparation of detailed estimate for different types of buildings.

MODULE 2

Definition, types, importance of outline and detailed specification in construction practice, method of writing specifications. Detailed specification writing for all construction materials-works like earth work, masonry, flooring, roofing concrete, false ceiling, water proof structures, carpentry works, painting and finishing.

MODULE 3

Analysis of rates for main items of work in buildings, considering current market rates for building materials, labour wages, plants and tools, transportation, handling, storage and contractor's profit.

MODULE 4

Cost price and value. Factors controlling the cost of urban real properties - valuation, depreciation, rent and its implications.

MODULE 5

Tenders-calling tenders, types of tenders, preparation of tender documents- contract, class of contractors, bills-preparation of bills, vouchers etc. Training to write specification for works designed for special situation like non conventional use of conventional materials, etc.

Text Books:

1. Dutta, B.N., "Estimating & Costing in Civil Engineering Theory & Practice]", UBS Publishers' Distributors Ltd., New Delhi, 1995.
2. Rangawala, K.S., & Rangawala, K.K., "Elements of Estimating & Costing", Charotar Publishing House, Anand, 1984.

ARC 604 BUILDING ACOUSTICS

The objective of this course is to understand the behavior of sound in an enclosed space and remedial measures for controlling unwanted noise.

MODULE 1

Acoustical / Sonic Environment and acoustical comfort. Sound, Nature of sound. Behavior of sound in enclosed spaces. Concept of Geometric Acoustics. Reflection of sound and their applications. Absorption of sound. Sound absorption coefficient. Reverberation & Reverberation Time Calculation.

MODULE 2

Sound absorbing materials - Porous materials, Panel / Membrane absorbers & Cavity / Helmholtz Resonators. Absorption coefficients of indigenous acoustical materials. Space / Functional absorbers. Mounting conditions and its impact on sound absorption.

MODULE 3

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

MODULE 4

Outdoor & indoor noise, airborne noise & structure borne noise / impact noise, community noise, & industrial noise. Transmission of noise & transmission Loss. Maximum acceptable noise levels. Means of noise control & sound insulation. Sources of industrial noise.

MODULE 5

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

References:

1. Knudson, Vern (1950), "Acoustical Designing in Architecture", John Wiley, N.Y.
2. Parich, Peter (1979), "Acoustics: Noise and Buildings", Faber and Faber, London
3. Kinsleter, Lawrence E. and Frey Austin R., (1989), "Fundamentals of Acoustics (ed.2)", Wiley Eastern Ltd., New Delhi
4. David Egan (1988), "Architectural Acoustics", McGraw Hill Book Co., NY
5. Templeton and Saunders (1987), "Acoustic Design", Architectural Press, London
6. Narasimhan V., (1974), "Introduction to Building Physics", Central Building Research Institute, Roorkee.
7. Templeton (ed.), "Acoustics in the Built Environment", Butterworth, London, 1993.

ARC 605 BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY VI**MODULE 1**

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

MODULE 2

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

MODULE 3

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

MODULE 4

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

MODULE 5

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

References:

1. R.Chudley, "Construction Technology", Vol.4
2. Mckay WB, "Building Construction"
3. Madhava Rao and Others, "Appropriate Technologies for Low-Cost Housing" (Oxford 1BH)
4. Relevant IS Codes, BIS
5. Handbook on Concrete Reinforcement and Detailing, BIS

6. Arora, S.P. & Bindra, S.P., "A Text Book of Building Construction", Dhanpat Rai & Sons, New Delhi, 1994
7. Jha, J. & Sinha, S.K., "Building Construction", Khanna Publishers, New Delhi, 1977.

ARC 606 WORKING DRAWING

The objective of this course is to develop the skills and techniques of preparation of production drawings by taking an already self designed project of earlier semester and imparting training of the drafting of working drawing details.

Course contents: Exposure to the production drawing techniques used in the office environment. The preparation of drawings with standard practised notations, symbols to convey the architectural design and details for the execution purpose. The preparation of drawings for load bearing structures and also to the framed structures separately right from the excavation drawing, foundation details, wall marking details, structural drawing details, roof details, door and window opening schedule and details. The preparation of checklists for drawing numbers, cross verification of drawing, extracting the quantities for estimates. The portfolio should contain all detailed execution drawing of the project completely.

Output: The student would know the type of work he would be exposed to in an architects office just before the commencement of the professional training.

References:

1. Waktia, Osamu and Linde, Richard, (1977), "The Professional Practice of Architectural Detailing", John Wiley and Sons, N.Y.
2. Thomas, Marvin, (1978), "Architectural Working Drawings: A Professional Technique", McGraw Hill Book Co., N.Y.
3. The Professional Practice of Architectural Working Drawings by Osamu, A, Watila & Richard M.Linde, ISBN-10:0471395404, ISBN-13:978-0471395409.

ARC 607 ARCHITECTURAL DESIGN IV

The objective of this course is critical analysis and understanding of structures and/or design program of complex nature and integrating design with climate socio economic issues, building services and architectural principles.

Course contents: Investigation of complex structural and/or programme forms for buildings. Thinking of building as an entity where services play an intrinsic role in design and their integration add to the efficiency of design along with services. The other main objective will be to satisfy socio-economic issues in building.

References:

1. Neufert, Ernst (1970), Ernst Neufert, "Architects Data, Cros" by Lockowd and Sons, London

2. Chiara, J.D., and Callender, John (ed.), (1983), "Time Saver Standards for Building Types", McGraw Hill Book Co., NY
3. Ching, Francies, D.K. (1979), "Architecture Form, Space and Order", Van Nostrand Reinhold Co., NY
4. Chiara, J.D. (1984), "Time Saver Standard for Site Planning", McGraw Hill Book Co., N.Y.

ARC 608 ELECTIVES (I STAGE)

ARC 608.1 CONCRETE TECHNOLOGIES

MODULE 1

Introduction - classification of concrete mixes - Grades of concrete - Advantages and disadvantages of concrete. Concrete Making Materials - Cement-Method of Manufacturing of Cement - properties and specific uses of various types of cement. Test on cement - fineness - setting time - consistency - soundness - compressive strength.

MODULE 2

General classification of aggregate - properties of aggregate - shape, texture, porosity and absorption, soundness- test on aggregates. Grading of Aggregates. Water - Quality of Water for mixing and curing - use of sea water for mixing concrete.

MODULE3

Basic consideration - factors influencing mix proportion - Mix Design by ACI method and I.S. code method - Design of high strength concrete - test on concrete. Information on Admixtures Plasticizers.

MODULE 4

Introduction - Batching of materials - Mixing of Concrete materials - Transportation of concrete - Placing of concrete - curing of Concrete. Properties of Concrete - Introduction - strength of Concrete - stress and strain characteristics of concrete. Thermal properties of concrete - Micro cracking of concrete- RMC.

MODULE 5

Introduction - light weight concrete - Fibre reinforced concrete - Polymer composites concrete - Air entraining concrete - Ferrocement - sulphur concrete - Mass concrete - Guniting. Quality control in Concrete - Sampling and testing of concrete - Factors causing variations in the quality of concrete.

Text Books:

1. Shetty. M.S., Concrete Technology, S.Chand and Co, 1984.
2. Gambhir, M.L., Concrete Technology, Tata McGraw Hill, 1996.

ARC 608.2 DISASTER MANAGEMENT

The objective of this course is to increase understanding about various disasters as an interdisciplinary knowledge acquisition effort and what role an architect can play for community with this added knowledge of the subject.

Disaster – a world view; Disaster – the Indian Perspective; Typology of disasters and increased understanding.

Preparedness and mitigation; Community health and casualty management; Disaster Management – role of various agencies; Relief measures; Reconstruction and Rehabilitation.

References:

1. V.K. Sharma (1995) Disaster management, Indian Institute of Public Administration, New Delhi, United Press, new Delhi
2. Carter, W.N (1990) Disaster Management- a disaster manager's handbook, Asian Development Bank, Manila.
3. UNCHS (1996) Habitat II Agenda, Disaster management Unit, Nairobi, Kenya.
4. United Nations (1986) Disaster Prevention & Mitigation, United Nations Disaster Relief Organization.
5. Farrington, Karen (1999) Natural Disasters – The terrifying forces of nature, Gramercy Books, London.
6. Zebrowski, Ernest (1993) Perils of a Restless Planet, Cambridge University Press, Cambridge.
7. Hewitt (1983) Interpretation of Calamity, Allen & Unwin Inc., London.
8. Arnold C. and Reitherman R (1982) Building Configuration and Seismic Design, John Wiley and Sons.
9. Lagorio, H.J (1990) Earthquakes: An Architect's Guide to non structural and Seismic hazards, John Wiley and Sons.
10. Reddy, L.R (2001) The pain and Horror of Gujarat Earthquake, APH Publishing Corporation, New Delhi.
11. Maharashtra emergency, Earthquake rehabilitation Programme (1998) Maharashtra Disaster Management Plan, Risk assessment and vulnerability analysis, Government of Maharashtra, Mumbai.
12. Mukhopadhyay, Asim Kumar, (2005), Crisis and Disaster Management Turbulence and Aftermath, New age International Private Limited, New Delhi
13. Singh, RB (2000), Disaster Management, Rawat Publication, Jaipur.

ARC 608.3 ADVANCED COMPUTER APPLICATIONS

The objective of this course is to train students in one critical area of digital Architecture and instill skills in them relative to market demands.

- Exposure to Building Information Modelling (BIM) Software – Autodesk Revit/AutoCAD
Creating buildings using intelligent/parametric objects like walls, door, windows, slabs, roofs

Generating sections, elevations, scheduling, tags, etc.

- Exposure to Presentation software; 3D studio max/Artlantis
Importing models from CAD software, Creation of primitives, compound objects, Modifiers
Creation of materials, lights, cameras, etc., Rendering, Creating walkthroughs, panoramic views, VRML

References:

Autodesk Revit/Archi-CAD Manual, 3D studio-max manual.

ARC 608.4 BUILDING PHOTOGRAPHY

The objective of this course to introduce the student to the world of photography with accent on building photography and interconnecting the techniques of architectural composition with the techniques of building photography.

Course contents: Introduction to the basic technical, observational and compositional skills and knowledge required for study of architecture through the photography media. Prerequisite: Needs own suitable camera and basic design abilities.

History of Photography, understanding of optics, digital camera parts, types of cameras and their uses, understanding of shutter speed, aperture, depth of field, ISO speed and their combined effect, Image processing in the computer, understanding composition, basics of building and daylight photography, suitable lenses, testing through field assignments and computer work.

References:

1. Dilwali, Ashok (2002), All about Photography, National Book Trust, New Delhi
2. Child, John, (2005), Studio Photography, Elsevier, London

ARC 608.5 LANDSCAPE DESIGN

MODULE1

Introduction to evaluation of various landscape features – forces that shapes them including manmade forces, climatic forces, fluvial forces, etc. man-nature relationship from prehistoric periods – man become the designer of landscape – landscapes of men –

MODULE2

evolution of landscape design – components of landscape design – principles of landscape design – study of landscape design aspects such as site. Orientation, plant materials –

MODULE3

Site analysis and site planning – hard and soft landscapes – water features in the landscape – various types of landscape design – landscape is the means to shape the outdoor norms.

References:

1. Introduction to landscape architecture by Laurie M
2. The landscape of man by Geoffrey and Susan Jellicoe
3. Landscape by design by Aldous Tony; Clouston Brian
4. Relating architecture to landscape by Birlested Jan
5. Landscape Design in Chinese Gardens by Tsu Frances Ya Sing
6. Contemporary Japanese landscape by Birlested Jan
7. Contemporary landscapes in the world by Miyagi Shunsaku; Yokohari Makoto
8. Residential Landscape Architecture by Booth Norman K; Hiss James E

STAGE II**VII & VIII SEMESTER****ARC 701 PRACTICE SCHOOL (PROFESSIONAL TRAINING)**

The objective of this course is to offer students an opportunity to work in an architect's office and get acquainted with the demands of the profession, including carrying out independent critical study of a building of architectural importance, study of an innovative building material and study of observed and drafted details.

Course contents:

The professional training shall be for duration of one year in various aspects of Architectural practice. During this period, the candidate shall produce four reports viz., Training Report, Building Study, Building Material Study and Detailing study.

The Training Report shall consist of the various drawings, observations, technical graphic data, etc. obtained during the process of training and shall carry a weightage of 100 marks.

The building study shall be a critical appraisal of one of the noted buildings designed and supervised by the firm in which the candidate has taken the training. This shall carry 50 marks.

The Building Material Study shall include pertinent data, characteristics and applications of a contemporary building material. This should have 50 marks as weightage. The detailing study shall deal with the various aspects of an interesting detail done by the firm, where the candidate has done the training or any other project of interest – 50 marks shall be assigned for this study. Professional training will be carried out as per the professional training rules as prescribed.

The training report & thesis synopsis (Training Report, Building Study, Building Material Study and Detailing study) shall be submitted at the end of eighth semester.

ARC 702 THESIS SEMINAR

Thesis synopsis shall be submitted at the end of seventh semester for approval by the thesis panel.

Thesis seminar on the selected topic shall be presented and a report shall be submitted at the end of eighth semester. Thesis seminar will be of 100 marks which will be evaluated internally by a thesis panel.

IX SEMESTER

ARC 801 PROFESSIONAL PRACTICE I

MODULE 1

Architects ACT 1972 and its implications. Council of Architecture and its role. The Indian Institute of Architects and its role. Code of Professional conduct as laid down by Council of Architecture and Indian Institute of Architects.

MODULE 2

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

MODULE 3

Conditions of Engagements – Normal Services – Construction Stage & Supervision Stage. Additional Services, Special Services and Partial Services. Total construction cost. An overview of the calculation of fees and professional charges. The underlying basis for the calculation of fees.

MODULE 4

Tender - its meaning & significance. Invitation to tender – Private invitation, Public Notice and Negotiation. Tender Notice and its characteristics. Opening of Tender. Acceptance of Tender. Types of Tender. Characteristics, advantages & disadvantages of various types of tenders.

MODULE 5

National Building Code of India and its significance. Building Bye - Laws & Regulations, Development Control Rules, Municipal Acts, Corporation Acts, Consumer Act & its implications. Heritage Act.

Text Books:

1. Namavathi Roshan, "Professional Practice", Lakhani Book Depot, Mumbai, 1984.
2. Indian Institute of Architects, "Handbook on Professional Practice", Architects Publishing Corporation of India, Mumbai.

ARC 802 HUMAN SETTLEMENTS

MODULE 1

INTRODUCTION

Elements of Human Settlements - Role of Man and Society in the growth and decay of human settlements.

MODULE 2

PLANNING CONCEPTS

Contribution to planning through - Patric Geddes, Ebenezer Howard - CA Perry - Le Corbusier - Doxiadis - Mumford - Relevance to Indian Planning Practice.

MODULE 3

URBAN PLANNING

Various types of plans, Master plan, structure plan, comprehensive plan, subject plan, Zonal Development plan, their scope and content, planning process.

MODULE 4

URBAN DEVELOPMENT PROGRAMMES

IUDP, IDSMT, Megacity, FIRE, Sustainable City Programme - their context, concept, scope, content and funding mechanism.

MODULE 5

RURAL PLANNING

Rural settlement structure - Demographic dynamics - micro level planning: Scope and content.

References:

1. C.L.Doxiadis, Ekistics, 'An Introduction to the Science of Human Settlements', Hutchinson, London, 1968.
2. Madras Metropolitan Development Authority, 'Master Plan for Madras Metropolitan Area, Second Master Plan - 1995.
3. Government of India, 'Report of the National Commission on Urbanisation', 1988.
4. Ministry of Urban Affairs and Employment, Government of India, New Delhi, 'Urban Development Plans: Formulation & Implementation' - Guidelines - 1996.
5. Hansen N., 'Regional Policy and Regional Integration' Edward Elgar, UK, 1996.
6. Centre for Human Settlements, Anna University, Chennai 'Development Plan for Uthokottai Taluk, Cheyyur Taluk', 1999.
7. AndroD.Thomas, 'Housing and Urban Renewal, George Allen and Unwin, Sydney, 1986.

ARC 803 CONSTRUCTION MANAGEMENT

MODULE 1

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

MODULE 2

Network analysis fundamentals, CPM Network analysis procedure.

MODULE 3

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

MODULE 4

Project cost analysis - Cost versus time, Contracting the Network etc.
Resource Allocation - Resource Smoothing and Resource Leveling.

MODULE 5

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

Text Books:

1. L.S., "PERT and CPM - Principles and Applications", Affiliated East - West Press Pvt. Ltd., New Delhi, 1989.

References:

1. Stevens, James. D., "Techniques for Construction Network Scheduling", McGraw - Hill Publishing Company, New York, 1990.

2. Mukhopadhyay, S.P., "Project Management for Architects and Civil Engineers", Firma KLM Pvt. Ltd., Calcutta, 1981.

ARC 804 BUILDING MATERIALS & CONSTRUCTION TECHNOLOGY VII

MODULE 1

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

MODULE 2

Preferred sizes for horizontal and vertical co-ordinating and controlling dimensions. Controlling dimensions for widths of building components & controlling zones. Controlling dimensions for heights of building components & controlling zones. Storey heights & room heights.

MODULE 3

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

MODULE 4

Study of prefabricated commercially available systems - Space Deck System, Triodetic System, Mero System & Nodus System. Geodesic Domes.

MODULE 5

Introduction to System Building / Method Building. Closed System & Open System. Analysis of building elements / components for introduction of prefabrication in India context. Classification of prefabricated components.

References:

1. Makowski, "Analysis, Design and Construction of Double - Layer Grids", Applied Science, London, 1981.
2. Heki,K., (ed.), "Shells, Membranes and Space Frames", Elsevier, New York, 1986.

ARC 805 ARCHITECTURAL & URBAN DESIGN STUDIO

The objective of the course is to create an opportunity for the coordinated group work in conducting physical, socio-economic and traffic analysis: data collection, analysis and presentation as a prerequisite to the main design issues, including intervention into specialized aspects of landscaping, town planning and urban design through architectural design exercises.

Course contents: Correlation of design issues to land and surrounding areas, influences of neighbouring areas on the design development; Consideration of issues such as socio-economics, environment, technology in relation to urban design.

The basic aim of the studio is to relate the building/buildings, complexes, streets, public places and spaces, etc., to the urban or regional context for which the change in the scale would imply change in the complexity of design, change in the user profiles, change in the issues addressed and involvement of public in design. The large scale design would require variation in all stages of design. Aspects in Design: Introduction to historical development of urban design, various theories in modern times, aspects of planning, and cultural contribution in definition of spaces. Studies in urban design like behavioral studies and physical expression of socio-cultural aspects, morphology and typology in city structure, townscape and image ability of public spaces, communication systems, infrastructure development and network of open spaces, etc., are understood through examples or book reviews Interpretive techniques and analyzing methods like visual analysis, questionnaire techniques, recording devices, mapping and vantage points, are reviewed and chosen. Observation, Methods of public participation in design are also planned. Design proposal should consider all possibilities to achieve the aims and objectives of design. The class should provide a master-plan which would have design in the form of guidelines, bye-laws, phasing of design, prototype, design, or detailed design

References:

1. Gallion Arthur B ; Eisner Simon, (1963)Urban pattern city planning and design, Van nostrand
2. School of Architecture(CEPT),(1988), Typology and Mapping of Housing Zones, Ministry of Urban Development; NBO
3. Cullen Gordon, (1968), Townscape, Architectural Press
4. Caminos Horacio; Goethert Reinhard, (1983), Urbanization Primer, M I T Press
5. Frey Hildebrand;(1999), Designing the city, E and F N Spon
6. Spreiregen P D(1965), Architecture of towns and cities, McGraw Hill
7. Chiara, J.D., and Callender, John (ed.), (1983), "Time Saver Standards for Building Types", McGraw Hill Book Co., NY

8. Chiara, J.D. (1984), "Time Saver Standard for Site Planning", McGraw Hill Book Co., N.Y.
9. Krier Rob, (1984) Urban Space, Academy editions
10. Christopher Alexander,(1977), Pattern Language, Oxford University Press

X SEMESTER

ARC 901 THESIS PROJECT

The objective of this course is to develop independent critical thinking and design/research abilities under the guidance of the faculty adviser, in demonstrating at the minimum the architectural knowledge gained over the last five years, skills developed and professionalism inculcated.

Course contents: The thesis project is to prove the ability of student to handle all phases of a building/research design. It is a subject for scholastic study through analysis. It is the development and presentation to design of a building including its setting in specific environment and its typical aspects.

The scope of this thesis can be in the areas such as architectural design, urban design, architectural research. Area of the study is left to the choice of the student. As per his inclination towards the area, the final selection of the topic will be as approved by the thesis selection committee of the Faculty of Architecture.

The progressive evaluation of student's work is mandatory. The student shall commence the work on the topic in the eighth semester. The evaluation is conducted by a panel of jury intermittently & a final open defense is conducted.

ARC 902 PROFESSIONAL PRACTICES – II

MODULE 1

Social Role / Social Responsibilities of Architects, Architect and Office- Office and its management, Architects duties to his employees under labour welfare provisions. Duties and Liabilities of an Architect – Latent Defects & Patent defects, Legal responsibilities of architects towards Statutory Bodies.

MODULE 2

Purpose of architectural competitions. Council of Architecture's Guidelines on Architectural Competitions. Types of competitions. Classification of competitions –Competition Organization – Single Stage Competition & Two Stage Competition. Regional Special Category Competition. Advisers – Technical and Professional

MODULE 3

General Conditions of the Contract as put forward by the Indian Institute of Architects. Prime cost. Materials & workmanship, Inspection. Defects. Damages for non-completion, Virtual completion and defects liability period, Determination by the owner and determination by the contractor.

MODULE 4

Arbitration and its significance. Advantages of settling the disputes & differences by arbitration, Arbitrator – qualifications of arbitrator, appointment, powers and duties. Award, publication of award, Interim award, the Arbitration Agreement, Order of Reference. Kinds of arbitration.

MODULE 5

Meaning of Easements. Dominant Heritage and Servient Heritage. Characteristics of easement. Natural Rights & Customary Rights. Continuous & Discontinuous Easements. Easement of Supports and Easements of Drainage

Text Books:

1. Namavathi Roshan, "Professional Practice", Lakhani Book Depot, Mumbai, 1984.
2. Indian Institute of Architects, "Hand book on Professional Practice", Architects Publishing Corporation of India, Mumbai.

ARC 903 ELECTIVES (STAGE II)

ARC 903.1 ADVANCED LANDSCAPE DESIGN

The objective of this course is to understand landscape design is a means to enhance the local and global environment.

Course content: Introduction to western and eastern landscape – concept, philosophy, components of Japanese, Chinese and Mughal gardens – study of hard and soft landscape elements – design principles – plant materials – components of hard landscape – principles of landscape layout designing – site planning for larger developments such as campuses, housing developments – recreational facility design – influence of landscape design on our physical, visual environment – tool to utilize the site resources – site analysis for larger developments.

Introduction to urban landscape design – elements of urban landscape – park system – play ground – recreational spaces – water landscapes. Introduction to ecology and landscape design – means to mitigate the human impacts – way to rejuvenate our natural resources like water, air, and microclimate – method to protect us from natural forces such as erosion, flood, landslide, cyclone, and sand storm.

References:

1. Laurie M., Introduction to landscape architecture
2. Richard T.T., Godron Michael, Landscape Ecology
3. Tsu Frances, Ya Sing, Landscape design in Chinese gardens
4. Aldous Tony; Clouston Brian, Landscape by design
5. Sato Akira, Contemporary Japanese Landscape
6. Miyagi Shunsaku, Yokohari Makoto, Contemporary landscapes in the world
7. Booth Norman K., Hiss James E., Residential Landscape Architecture
8. Moyet Janet Lennox, Landscape Lighting Book
9. Geoffery C., Jelicoe Sysan, Landscape of Man
10. Birlested Jan, Relating architecture to landscape

11. CIP, Urban landscape design
12. Harris Charles Ward Dines Nicholas, Time Saver Standards for Landscape Architecture.

ARC 903.2 ENERGY AND ENVIRONMENTAL CONCERNS IN DESIGN

The objective of this course is to understand the meaning of development, Economics of development, Impact on environmental system, architecture for sustainable development, attitude of conservation, materials-energy and environment, critical examination of development and constructional practises.

Course contents: Meaning of development – economics of development – impact on environmental system – attitude of conservation – importance of environmental conservation – environmental quality parameters – ecosystem conservation – indicators of environmental health – environmental impact assessment. Sustainable development – understanding energy conservation in buildings – relationship between energy, environment and human development, energy conservation techniques – non conventional energy sources like, solar power – wind power – etc. renewable and non-renewable forms energy audit in buildings. Conservation of building materials – energy in building materials.

References:

1. Boutet, T.S., Controlling air movement, McGraw Hill Book Co., 1987
2. Buchanan, P.Ten shades of green: architecture and the natural world, The Architectural League of New York, 2005
3. Givoni, B. Passive and low-energy cooling of buildings, Van Nostrand Reinhold Co., 1994
4. Guzowski, M. Daylighting for sustainable design, McGraw Hill (Professional Architecture Series), 2000
5. Hyde, R., Climate responsive design: a study of buildings in moderate and hot humid climate, E & FN Spon, 2000
6. Majumdar, M. (Ed.) Energy efficient buildings in India, MNES/TERI, 2002
7. Nayak J.I. et., AI, Manual on Solar Passive Architecture, Solar energy Centre, MNES, 1999
8. Olygyay, V. Design with climate: bioclimatic approach to architectural regionalism, Purinceton University Press, 1963
9. Pita, E.G. Airconditioning, principles and systems: an energy approach, Prentice Hall of India, 2002
10. Thomas, R. Environmental design: an Introduction for architects and Engineers, E & FN Spon 1989.

ARC 903.3 BUILDING VALUATION TECHNIQUES

The objective of this course is to understand and practise various methods of valuation related to property and equipment. Assessing value of used items for purposes such as income tax, property tax and for getting loans. Valuation methods adopted by banks and financial organizations.

Course contents: Theories and principles of valuation of immovable properties. Differences and similarities of Cost, price and value. Value subjected to purpose, date and title of property, different form of value. Deferred land value, capitalised value, annuity methods of valuation – factors affecting the values of land, comparative method, abstractive method, Belting method. Valuing by depreciation of cost, types of calculation, straight-line method constant percentage method, sinking fund method, Sum of digit method. Local bodies and government taxes, annual repairs and maintenance insurance, loss of rent. Valuation of lease hold, free hold, properties, licenses premises, legal limits and advantages.

References:

1. Namavathi Roshan, (1993), Professional Practice, Lakshmi Book Depot
2. Ashwath Damodaran, (2002), Investment Valuation: Tools & Techniques for Determining the Value of any Asset

ARC 903.4 HOUSING

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

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

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

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

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

References:

1. Abrams, Charles, "Housing in the Modern World", Faber, London, 1964.
2. Allen, W.A., Happold, E., Word, A.M., & Courtney (Ed.) "A Global strategy for Housing in the third millennium E & FN Spon, London, 1992.

ARC 903.5 ARCHITECTURAL CONSERVATION

MODULE 1 INTRODUCTION

Definitions of Conservation, preservation, urban design and Renewal - Need for them - Indian Context - Role of architect in such programmes.

MODULE 2

EVOLUTION AND METHODOLOGY

Origin and evolution in history - architectural heritage - required - Methodology - Stages of development - Implementation tools and technologies.

MODULE 3

SOCIO - CULTURAL DIMENSION

Social, Cultural, economical, and historical values of Conservation programme – Involvement of Community- Social Organisations – public participation – Conflict and compatibility between Conservation and development.

MODULE 4

CASE – STUDIES

International Case Studies (atleast four) – Success and failure – reasons for it – Role of UNDP, UNESCO and other funding agencies – their involvement.

MODULE 5

LEGISLATION

Special legislation – relevance to T & CP Act 1971 – The T.N. Heritage Bill – Constitution of authorities – administrative aspects – New Concepts and emerging trends in Conservation.

References:

1. Conservation and Development in Historic Towns and Cities. - Pamela Ward - Orid Press. Ltd.
2. Planning for Conservation - Kain Roger, - St.Martin N-Y 1981
3. Recycling Cities – Cutler and Cutter – Canni, Massachussets, 1976
4. Character of Towns an Approach to Conservation - Worskett Roy, Architectural Press – London.

ARC 903.6 WASTE MANAGEMENT AND RECYCLING

MODULE 1

INTRODUCTION

Waste in built environment – Traditional practices of waste Management Current Scenario in India – Categorisation to solid, liquid and gaseous wastes – sectors responsible for waste generation.

MODULE 2

WASTE AND BUILT ENVIRONMENTAL

Solid and Liquid waste from residential and commercial buildings – Environmental significance – segregation and treatment of wastes – Industrial case studies – Experiments in construction industry – demolition – Role of NGOS in waste management.

MODULE 3

ALTERNATIVE BUILDING MATERIALS

Need for recycling industrial – byproducts as alternative building materials – use of fly ash, Furnace slag, Quarry dust, silica fume, waste lime and gypsum – Technology required for manufacturing – specification and application in construction industry.

MODULE 4

RECYCLING OF WASTES

Meaning of sustainable approach – Identification and workability of waste - Concept of recycling Solid and Liquid wastes in building industry – Solid waste recycling, Vermi Composting, Biogas production – Liquid waste recycling methods and practices.

MODULE 5

ENVIRONMENTAL MANAGEMENT AND ENERGY OPTIONS

Degradation of environment due to waste – Salient features of environmental laws – Rain water Harvesting techniques - Biological and Thermal energy options – Refuse derived fuel and other options.

References:

1. Ravindrarajah, R.S, Tam. T.C. Properties of concrete made with crushed concrete a coarse aggregate, - Magazine of concrete Research, Vol-37, March 1985.
2. Arceivala. S.J., “Wastewater Treatment for pollution Control”- Tata-McGraw Hill, New Delhi, 1986.
3. ERM.UK Municipal Solid waste Management, Study for the MMA-Vol-1 Interim Report, August-1995.
4. R.Ambalavanan and A.Roja “Feasibility Studies on Utilisation of Wastelime, Gypsum with Fly Ash - The Indian concrete Journal – Vol. – 70 Nov-1996.

ARC 903.7 ARCHITECTURE AND CRITICAL THEORY

MODULE 1

INTRODUCTION

Overview of Links between Architecture and Cultural Debates.

MODULE 2

PRESENT CONCEPTS

Issues of Modernity - Structuralism - Semiotics and Architecture - Introduction to the works of Saussure - Phenomenology and Architecture - Introduction to the works of Husserl and Heidegger.

MODULE 3

ENQUIRY

Post Structuralism questioning the Binary opposites - Introduction to works of Foucault, Derrida and Deleuze.

MODULE 4

DISCUSSIONS

Nationalism and Architecture - Neo-traditionalism and Desire for Authenticity. Environmental Agendas: Limits to Growth - Appropriate Technology - Sustainability - Behavioural Studies.

MODULE 5

EMERGING TRENDS

Film and Architecture - Discussing Metropolis, Blade Runner and Belly of an Architect - Agendas of Race and Gender.

References:

1. Anthony D.King, Building and Society, Routledge Kegan & Paul, 1980.
2. Margaret A. Rose, The Post-Modern and the post-industrial, Cambridge University Press, Cambridge, 1992.
3. Neil Leach (ed.), Rethinking Architecture: A Reader in Cultural Theory, Routledge, London, 1997.
4. Paul Feyerabend, Farewell to Reason
5. Quentin Skinner (ed.), The Return of Grand Theory in the Human Sciences, Cambridge University Press, Cambridge, 1990.

ARC 903.8 BUILDING STRUCTURAL SYSTEMS

MODULE 1

Masonry – Masonry piers – Stability of masonry walls – Principles – Design of walls – Reinforced masonry – Examples

MODULE 2

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

MODULE 3

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

MODULE 4

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

MODULE 5

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

References:

1. IS 1893: 1984 – Criteria for Earthquake Design of Structures, Bureau of Indian Standards, New Delhi, 1984
2. IS 4236:1976 – Code of practice for Earthquake Resistant Design and construction of Buildings, Bureau of Indian Standards, New Delhi, 1976.

ARC 903.9 URBAN DESIGN

MODULE 1

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

MODULE 2

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

MODULE 3

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

MODULE 4

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

MODULE 5

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

References:

1. Lynch, Kevin, "The Image of the City", MIT Press, Cambridge, Mass, 1960.
2. Krier, Rob, "Urban Space", Academy Editions, London, 1967.
