

B.ARCH SYLLABUS: 2015-2016 BATCH

SEMESTER 1

15ART101 Communicative English

OBJECTIVE:

To encourage students to actively indulge in participative learning of English and acquire better communication skills.

UNIT-1

LANGUAGE FOCUS

Technical vocabulary – formal phrases and idioms – homophones, homonyms, often mis-spelt words – conjunctions – formation of new words – irregular verbs – plurals, gender sounds, words ending with phobia, logy etc. Grammar: Finite and infinite verbs – transformation of sentences – simple, complex and compound – phrases and clauses – question forms – question tags – expression of cause and effect, purpose and function.

UNIT-2

READING & LISTENING

Extensive and Intensive reading – active and passive reading – eye reading and visual perception – reading for a purpose – speed reading – reading with expression – story telling – critical and analytical reading – Listening to debates and discussions for making suitable responses.

UNIT-3

WRITING & SPEAKING

Cohesion and coherence in sentences and paragraphs – business letters of different kinds – report writing – writing strategies – writing comments, procedures, inferences, instructions and recommendations – writing articles.

Applied English Communication – Welcome address, vote of thanks, compeering, debates, role plays, demonstration of advertisements – group discussions – mock interviews and dialogues – checklist of making oral presentations – vocal communication techniques – voice, quality, volume, pitch, rate of delivery.

UNIT-4

HARD AND SOFT SKILLS

Personal attributes – verbal and non verbal communication – interpersonal abilities/ skills – empathy, leadership, good manners and sociability – problem solving – reasoning and flexibility – intrapersonal abilities – self communication – self control and self esteem.

UNIT-5

SOCIAL SKILLS

Facilitating interactions, understanding social roles – making a team – leading a team – dealing with different kinds of people and situations – emotional quotient and intelligent quotient – personality development – communication and body language, social etiquette –goal setting – determination, discipline and direction.

REFERENCES

1. Sasikumar.V. and P.V.Damija, “ Spoken English”, Tata Mc Graw Hill Publishing Corporation Ltd, New Delhi, 1997
2. Ashraf Rizvi M, Effective Technical Communication, Tata McGraw Hill, Delhi 2008
3. Stanton Nicky, “ Mastering Communication”, Mc Millan Master Series, London,1996
4. Robert M Sherfield “Developing softskills”, Dorling Kindersley (India)

OBJECTIVE:

To gain an understanding of the Architecture from the Prehistoric age to the ancient civilizations of the world in the light of its Social Fabric, Relevance, Design Principles & Construction Materials and Methods.

UNIT-1

INTRODUCTION AND WEST ASIAN ARCHITECTURE

Relevance of History - Old Stone Age - the Middle Stone age – The New Stone Age - Development of Shelter. – catal huyuk, Indus Civilization (Harappa and mohenjadero)

West Asia: Evolution of Sumerian and Persian cultures - Outline of architectural character –

Ziggurat at Urnammu - Palace of Sargon, Khorsabad - Palace at Persepolis.

UNIT-2

EGYPT

Egypt: Factors influencing Architecture - Outline of Architectural Character, Evolution of Pyramids – Great Pyramid of Cheops, Giza, , Architecture characteristics of Egyptian temples - Great temple of Ammon, Karnak, Temple of ramses, Abu Simbel.

UNIT-3

MAYAN

Mayan: Outline of Architectural Character – City of Chichen Itza- El Castillo, Temple of Warriors, The Great Ballcourt – Tikal and Teotihuacan - Pyramid of the Sun, Pyramid of the Moon.

UNIT-4

CHINA

China: Outline of Architectural Character - Great Wall of China, Fogong Temple, Temple of Heaven, Forbidden City (Palace Museum)

UNIT-5

GREEK

Outline of architectural character - Orders in architecture - Doric Ionic, Corinthian, Acropolis, Athens ; Parthenon, Erechthion, , Theatre Epidauros – Agora – Athens – Character theater – temples – Greek Architectural features.

REFERENCES:

1. Sir Banister Fletcher, A History of Architecture, University of London, The Antholone Press, 1986.
2. S.Lloyd and H.W.Muller, History of World Architecture - Series, Faber and Faber Ltd., London, 1986.
3. Francis D.K. Ching, A Global History of Architecture, John Willey & Sons Publishers, New Jersey,2007.
4. Provide Educational movies for each topic.

15ART103 MATHEMATICS IN ARCHITECTURE

OBJECTIVE:

To develop analytical skills needed for problem solving and creative thinking as well as an understanding of the application of mathematical concepts in architecture.

UNIT-1

CO-ORDINATE GEOMETRY

Points, vectors and coordinate systems – Vector Algebra – Points vs Vectors – Rotation about an arbitrary axis – Parametric, Implicit and Explicit Equations – Lines – Parametric equations of lines – Implicit equation of lines – Distance from a point to a line – Conic sections – Parametric equation of conics.

UNIT-2

BASIC STATISTICS

Arithmetic Mean, Median, Mode, Standard Deviation and Variance – Graphical display of data in statistics through charts and graphs such as bar charts, histograms etc

UNIT-3

AREA AND VOLUME CALCULATIONS

Surface Area and Volume Calculations for simple 3D objects such as cube, cuboid, cylinder, cone, sphere, pyramid, prisms and their frustrums.

UNIT-4

GEOMETRY IN ARCHITECTURE

Ratio and Systems of proportion – definition and derivation of golden ratio – Fibonacci series. Geometry of Muqarnas. – Making models for understanding the dimensions .

UNIT-5

PLATONIC SOLIDS

Geometry of Platonic Solids. (Concept and Application). Physical modeling of simple and complex geometric forms. - Making models for understanding the dimensions.

REFERENCES:

1. T Veerarajan, Engineering Mathematics, Tata McGraw-Hill Publishing Company Ltd, NewDelhi, 2002.
2. B.S.Grewal, Engineering Mathematics, Khanna Publishers, Delhi 1998.
3. P.Kandaswamy, P.Thilakavathy and K.Gunavathy, Engineering Mathematics Vol I and II, S.Chandan Publishers, 1998.
4. Kappraff Jay, Connections: The Geometric bridge between art and science, McGraw Hill, USA,1991.
5. Geometry of Design: Studies in Proportion and Composition, Kimberly Elam.David Gibson
6. Computer aided geometric design by Thomas W.Sederberg 2014

OBJECTIVE:

To familiarize the students on the basic concepts of various art forms and craftsmanship.

UNIT 1 TO 5

Exploration in mixed media & collage to convey specific theme and meaning. Analytical Studies will be undertaken in two and three dimensions using various media.

Use of hand tools and materials: working with wood, metals, plaster, plastic, foam boards etc; techniques, safety & practice. Suggestive exercises are:

Type 1: Making mount board models employing cubes cuboids, pyramid, cylinder and cones.

Type 2: Space frame models using match sticks straw, steel wires, bamboo splits.

Type 3: Texture applicability to murals and interior decoration.

Making craft objects and sculpture using different materials such as clay, metal, etc.

References:

1. Design Methods (Architecture) (Paperback), by John Chris Jones (Author).
2. Basics Design Ideas (Paperback) by Bert Bielefeld (Author), Sebastian El khouli (Author).
3. Design Drawing, Francis D. K. Ching.
4. The Nature of Design, Peg Faimon & John Weigand.
5. Foundations of Art and Design (Paperback) by Alan Pipes (Author)
6. John W.Mills - The Technique of Sculpture, B.T.Batsford Limited, New York - Reinhold Publishing Corporation, London, 1966.
7. C.Lawrence Bunchy - Acrylic for Sculpture and Design, 450, West 33rd Street, New York, N.Y.10001, 1972.
8. The Elements of Graphic Design: Space, Unity, Page Architecture, and Type (Paperback) by Alexander W. White (Author)
9. Geometry of Design: Studies in Proportion and Composition, Kimberly Elam.David Gibson

OBJECTIVE:

To provide a comprehensive introduction to the discipline of Architectural Design Fundamentals and Visual Arts. To encourage creative thinking, analysis and dialogue. To develop graphic thinking ability and provide a platform for graphical representation. To develop an understanding of the design process and develop aesthetic judgment.

UNIT-1

DESIGN DEFINITION:

Design Thinking: What is Design? Changing Role of the Designer; Route map of the Design Process; Components of Design Problems; Measurement, Criteria & Judgment in Design; Types and Styles of Thinking – Creative thinking, Guiding Principles.

UNIT-2

BASIC ELEMENTS & PRINCIPLES OF DESIGN:

Introduction to Elements of design. Properties, qualities, and characteristics of principles of design Focus on Composition and Character of the elements of design addressed visually and conceptually (Exploration in any 2- Dimensional media). Exploration in mixed media & collage to convey a specific theme and meaning. Analytical Studies to be undertaken in two and three dimensions using various materials and tools.

UNIT-3

BASIC ELEMENTS & PRINCIPLES OF DESIGN:

The principles of design relationships/ Composition. - The analysis of design elements - Exercises involving the same. - Focus on Composition and Character of Basic elements of design addressed visually, and conceptually (Exploration in any 2- Dimensional media). - Exploration in mixed media & collage to convey specific theme and meaning. - Analytical Studies will be undertaken in two and three dimensions using various media.

UNIT-4

DESIGN MODELLING:

Use of hand tools and materials: working with wood, metals, plaster, plastic, foam boards etc; techniques, safety & practice. Suggestive exercises are:

Type 1: Making mount board models employing cubes cuboids, pyramid, cylinder and cones.

Type 2: Space frame models using match sticks straw, steel wires, bamboo splits.

Type 3: Texture applicability to murals and interior decoration.

UNIT-5

INTRODUCTION TO ARCHITECTURAL DESIGN:

Simple Exercise exploring multi dimensional elements by making models – Art work – composition – Graphical representation – fundamentals of design drawing.

REFERENCES

1. Design Methods (Architecture) (Paperback), by John Chris Jones (Author).
2. Basics Design Ideas (Paperback) by Bert Bielefeld (Author), Sebastian El khouli (Author).
3. Foundations of Art and Design (Paperback) by Alan Pipes (Author)
4. John W.Mills - The Technique of Sculpture, B.T.Batsford Limited, New York - Reinhold Publishing Corporation, London, 1966.
5. The Elements of Graphic Design: Space, Unity, Page Architecture, and Type (Paperback) by Alexander W. White
6. Geometry of Design: Studies in Proportion and Composition, Kimberly Elam.David Gibson
7. Ching, F.D.K., "Design Drawing", Van Nostrand Reinhold, 1998
8. Neufert, P., "Architects Data", 3rd Ed., Blackwell Science, 2000
9. Agkathidis, A Hudert M. and Schilig, G. " Form Defining Strategies : Experimenting Architectural Design". Wasmuth, 2007.

OBJECTIVE:

To provide an understanding of the construction materials and methods through construction detailing. To develop basic knowledge of the various components of a built structure.

UNIT-1

SOIL AND STONE

Soils: Formation – grain size distribution – soil classification systems.

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

UNIT-2

TRADITIONAL & RURAL MATERIALS

Mud as a building material - Soil stabilization, soil blocks - Cast- in-situ walls - flooring - roofing - plastering. Bamboo, Casuarina, Coconut, palm, Hay, Coir, Jute – properties and uses. Types of foundations - walls - simple roof trusses floors for rural structures
Lime – types - properties and uses – Manufacturing process – Mortar: functions – requirements - mixes.

UNIT-3

BRICKS AND CLAY PRODUCTS – MATERIALS

Bricks - brief study on manufacture of bricks – properties and uses - suitability - types of bricks - uses in buildings, structural tiles, ceramics, terracotta – properties and uses.

UNIT-4

BUILDING COMPONENTS

Functional requirements of a building and its components - Drawings of foundations, plinth, superstructure, roofing. Openings: Doors, Windows and Ventilators.

UNIT-5

BUILDING MATERIALS

Introduction to basic building materials- Observation of work at site – mixture ratio – material standards – material sample collections form market – Market study – local materials – imported materials – assignments – Introduction to bill of quantities – rates – small material volume and cost.

REFERENCES

1. J.S.Spencke and D.J.Cook, Building Materials in Developing Countries, John Wiley and Sons, 1983.
2. Kumar, S.K., “Building Construction”, 19th Ed., Standard Publishers Distributors, 2001
3. Allen, E. and Iano, J., “Fundamentals of Building Construction: Materials and Methods”, Wiley, 2004
4. Mehta, M., Scarborough, W. and Armpriest, Diane, “Building Construction: Principles, Materials and Systems”, Pearson Prentice Hall, 2008

OBJECTIVE

To involve students in a number of exercises that will help them to understand the nature of geometrical forms in terms of drawing plane and solid projections. .

To involve students in a number of exercises that will help to understand the representation of 2 dimensional and 3 Dimensional forms through plans, sections, isometric and axonometric drawings.

UNIT 1

GEOMETRICAL DRAWING – PLANE GEOMETRY -REPRESENTATION

Introduction to fundamentals of drawing/ drafting – Construction of Lines, Planes, form – grade of pencils and usage-Understanding the scale with units and dimensions – Construction of plane, object – Hollow and solid geometry – Development of surfaces and multifaceted forms – Understanding the graphical representations of arrows, lettering techniques, composition etc – Lineweights, Line type etc

UNIT 2

GEOMETRICAL DRAWING – ORTHOGRAPHIC PROJECTION

Isometric, Axonometric, Oblique and multiview orthographic projections to scale of various forms- Simple and complex objects- straight, curvilinear etc – Sections, Elevations of solid geometry – hollow objects etc

UNIT 3

PERSPECTIVE AND SCIOGRAPHY – SIMPLE & COMPLEX OBJECTS – SCIENTIFIC METHOD

Introduction to perspective projections – One point perspective, Two point perspective, Three point perspective, Shade and shadow of the object- Light source- Cone of Vision – Sciography of plan , isometric, axonometric views.

UNIT 4

PERSPECTIVE AND SCIOGRAPHY – SHORT CUT METHOD

Introduction to short cut perspective method-small buildings – exterior views-adding of figures, trees, elements etc and applying rendering techniques

UNIT 5

MEASURED DRAWING AND GRAPHICAL REPRESENTATION

Introduction to fundamentals of measured drawing- format for presentation- measured drawing of simple objects like furniture, ornamentation, door, window etc -Introduction to representations of materials- building materials – Stone, brick, glass, grass etc- usage of various mediums –watercolor, pastels, color pencils , pens etc-Sketching- composition of documents, title blocks, posters, logos etc

REFERENCES

1. Robert S. Oliver,, The Complete Sketch, Van Nostrand Reinhold, New York, 1989.
2. Tokyo Musashino Academy of Art - Introduction to Pencil Drawing, Graphic - Shaw Publishing Co. Ltd., Japan, 1991.
3. Freehand Drawing for Architects and Interior Designers (Paperback) by Magali Delgado Yanes (Author), Ernest Redondo Dominguez (Author)
4. Alwyn Cranshaw, Learn to paint with Water colours, Acrylic colours, Boats and Harbours, Sketch, Still life, landscapes, William Collins Sons and Co. Ltd., London, 1981.
5. Francis D. K. Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.
6. Bhatt, N.D. and Panchal, V.M., “Engineering Drawing – Plane and Solid Geometry”, 48th Ed., Charotar Publishing House, 1996
7. Griffin, A.W. and Brunicardi, V.A., “Introduction to Architectural Presentation Graphics”, Prentice Hall, 1998
8. Ciriello, M., “Architectural Design Graphics”, McGraw-Hill, 2002
9. Carpo, M., “Perspective, Projections and Design: Technologies of Architectural Representation”, Routledge, 2008

15ART201 THEORY OF ARCHITECTURE I

OBJECTIVE

To introduce architecture as a discipline and to sensitize the students to the various functional aspects of architecture while looking at factors that contributes to the meaning of Architecture and its visual aesthetic.

To introduce the students to the ordering elements, principles of architecture and organisation, to understand the vocabulary of the architectural language through the analysis of selected buildings.

To engage students in seminars, case study analysis, workshops, etc that will look analytically at architecture.

UNIT-1

Introduction to Design and Architecture

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

UNIT- 2

Ordering Elements & Principals of Architecture

Point, line, plane, form, shape, motif, pattern, light, colour, texture – understanding the elements with respect to architecture-Detailed study of the visual and emotional effects of geometric forms and their derivatives: sphere, cube, pyramid, cylinder and cone – Transformation of forms, Articulation of forms – mass-space/solid-void effects, articulation of edges, corners, surfaces -Proportion, scale, balance, rhythm, axis, symmetry, hierarchy, datum, unity, harmony, dominance with respect to architecture

UNIT- 3

Organisation of Form and Space

Spatial relationships: space within space, interlocking spaces, adjacent spaces, space linked by a common space -spatial organization: centralized, linear, radial, clustered, grid -form-space relationships-

UNIT- 4

Circulation and Organisation

Circulation as organizing element: building approach, building entrance, configuration of the path, path space relationship, form of circulation space

UNIT -5

Experiencing Architecture

Understanding architecture in totality in terms of the various aspects through first hand Experience, analysis and interpretation using the case of a building, architectural style, work(s) Of the contemporary architects

REFERENCES

1. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979.
2. Lorraine Farrelly. 2007 The Fundamental of Architecture. AVA Publishing SA 2007. Switzerland.
3. Ernest Burden - Elements of Architectural Design - A visual resource, Van Nostrand Reinhold, 1994.
4. V.S.Pramar, Design Fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Nelhi, 1973
5. Edward D. Mills – Planning:The Architects Hand Book - Bitterworth, London, 1985
6. G.Muthu Shoba Mohan 2008 Principles of Architecture Oxford & IBH publishing co. pvt. ltd. New Delhi.
7. Francis D.K. Ching 1995 A Visual Dictionary of Architecture. John Wiley & Sons, INC. New Delhi.
8. Paul Alan Johnson - The Theory of Architecture - Concepts and themes, Van Nostrand Co., New York, 1994.
9. Pierre Von Meiss, Elements of Architecture, Spon Press, New York, 2007.

OBJECTIVE:

To gain an understanding of the Architecture of Europe in the light of its Social Fabric, Relevance, Design Principles & Construction Materials and Methods .

UNIT-1

ROMAN

Outline of architectural character: roman orders (Doric, ionic, Corinthian, Tuscan and composite)

Building Systems - Use of arches, vaults and columns

Building Typology: Religious Buildings – Temple (Pantheon); Civic Buildings – Baths (Thermae of Caraculla), Theatres (Colloseum), Circus (Circus Maximus), Palace (Forum Romanum); Engineering works – Aqueducts, bridges

UNIT-2

ROMANESQUE

Factors influencing architecture - Building Systems - Use of arches, vaults, columns, piers, buttresses and roofs. Outline of architectural character of Italy, France and England - Examples: Pisa complex, Italy Abbey aux Hommes, Caen, Tower of London.

UNIT-3

GOTHIC

Outline of Architectural character - evolution of vaulting and development of structural systems - Examples: Notre Dame, Paris - Westminster Abbey, Hampton Court Palace, London, Doges Palace, Venice, Milan Cathedral.

UNIT-4

ITALIAN RENAISSANCE

Renaissance – Introduction. Italian Renaissance - three phases – early Renaissance (Alberti - S. Andrea, Brunelleschi - Cathedral of Florence, Pazzi Chapel, Basilica San Lorenzo) , High Renaissance (Bramante - Santa Maria delle Grazie) , Late Renaissance (Michelangelo, Palladio -St. Peter's Basilica, Villa Capra La Rotonda)

UNIT-5

NORTHERN RENAISSANCE AND BAROQUE

Northern Renaissance – Introduction; Characteristics of English Renaissance – Works of Sir Christopher Wren, Inigo Jones.

Baroque – Features and Elements of Baroque - St Paul's Cathedral, Palace of Versailles., Winter Palace in Saint Petersburg.

REFERENCES

1. Sir Bannister Fletcher, A History of Architecture, University of London, The Antholone Press, 1986.
2. Robert Chitham, The Classical Orders of Architecture, Elsevier, London, 2005
3. Francis D.K. Ching, A Global History of Architecture, John Willey & Sons Publishers, New Jersey, 2007.
4. S.Lloyd/H.W.Muller, History of World Architecture - Series, Faber Ltd., London, 1986.
5. Spiro Kostof, A History of Architecture - Settings and Rituals, Oxford University Press, London, 1985.
6. Pierre Pichard, Tanjavur Brhadisvara, Ecole Francaise D' Extreme Orient, New Delhi, 1995

15ART203 MECHANICS OF STRUCTURES I

OBJECTIVE:

Structures form a major part of the curriculum, and are dealt with equal emphasis on theory and calculations, as well as on understanding the physical behavior of structures.

UNIT-1**INTRODUCTION TO STRUCTURES AND STRUCTURAL SYSTEMS**

Overview of Structures - Concept of Structure in Architecture -Types of Structural Systems - Components of a Structure - Materials and their Structural Properties

UNIT-2**FORCES AND STRUCTURAL SYSTEMS**

Types of force systems - Resultant of parallel forces - principle of moments - principle of equilibrium - simple problems

UNIT-3**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

UNIT-4**PROPERTIES OF SECTION**

Centroid- Moment of Inertia - Section modules - Radius of gyration - Theorem of perpendicular axis - Theorem of parallel axis

UNIT-5**ELASTIC PROPERTIES OF SOLIDS**

Stress strain diagram for mild steel, High tensile steel and concrete - Concept of axial and volumetric stresses and strains - Elastic constants - Relation between elastic constants - Application to problems.

Total: 45 hrs/ semester

REFERENCES

1. S.S.Bhavikatti, "Strength of Materials", VIKAS Publishing House Pvt. Ltd., Chennai,1997.
2. S.Ramamrotham, Strength of materials - Dhanpatrai & Sons, Delhi, 1990.
3. W.A.Nash, Strength of Materials - Schaums Series - Mcgraw Hill Book Company, 1989.
4. Building Structures--From Concepts to Design. Second Edition, by Malcolm Millais. Spon Press, London 2005
5. Buildings from Caves to Skyscrapers, Mario G Salvadori, Holiday House, 1985

OBJECTIVE:

To familiarize the students to the concepts of internet and digital sketching and imaging.

UNIT-1

SIMPLE APPLICATIONS

Creating technical documents and reports, Cost estimates with simple calculations, Presentations with graphics. Suggested Software – MS Word, Excel, Open Office,

UNIT-2

SKETCH UP TOOL AND APPLICATIONS

Introduction to Sketch up – Simple Buildings – Material Application– Vray rendering

UNIT-3

AUTOCAD AND ITS APPLICATION

Introduction to AutoCAD 2D, 3D, Render, Layer Applications – Plot Setup – View port – Scale Setup – Metric and imperial systems.

UNIT-4

ADOBE PHOTOSHOP AND ITS APPLICATIONS

Introduction to Adobe Photoshop – layers – editing – filter – image – color – balance

UNIT-5

INTERNET APPLICATION

World Wide Web, Electronic Mail, Blogging, Ethical use of the Internet

REFERENCES

1. MS Office 2010 Product Guide by Microsoft
2. First Look Microsoft Office 2010, Katherine Murray, Microsoft
3. Sketchup 7 User Self help Tutorials and Video Tutorials
4. Cherly R. Shrock Beginning AUTOCAD. New Age International Publishers. New Delhi. 2006.
5. AutoCAD architectural users guide - Autodesk Inc., 1998.
6. AutoCAD 2011 User Manual, Autodesk 2011.

15ARS221 ARCHITECTURAL DESIGN II

OBJECTIVE:

Understanding a Simple Design Programme and the Components of the Design Problem.

Investigate and Acquire the Knowledge to address the various aspects of the Design Problem .

Acquire the Discipline to follow the Design Process through its Stages and arrive at completion.

Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.

UNIT-1

Design Process: Basics: Drawing skills, Conventions, Abstraction and Expression; Application: Analysis, Exploration, Discovery and Verification; Communication: Process, Individual Design, Team Design, and Public Design. Evolution from Program and Conditions to Concept & Design - Graphical Representation of the Process.

UNIT-2

The study of space standards and anthropometrics related to each problem. Anthropometry as related to physically handicapped and elderly persons is required to be studied. Different Techniques shall be used for presentation.

UNIT-3

Design Strategies and Methods. Designing in Context; Design & Function; Constituents of Design; Working with materials and Structures; Arriving at Ideas. Methods: Nature & Geometry as generators; Music and Mathematics as models; Accident and the unconscious as sources; Rationalist Approaches; Precedent; Responses to Site; Generative Processes. Traditional Methods, New Methods, The Three Stage Process – Divergence, Transformation, Convergence; Choosing Design Strategies.

UNIT-4

Horizontal movement - single bay - passive energy type spaces. Design Exercises shall be simple functional units with universal access compliance such as : Toilet for a physically handicapped person. Hostel room, bed room, kitchen, Shop, Workshop, pavilions, snack bar;

UNIT-5

The problems involve simple space organization. Design Exercises shall be multiple spaces and understanding their inter-relationships, such as : Residence, petrol bunk, fire station, police station, Cottage for an elderly couple.

The basics of building anatomy from parapet to foundation and an overview of the different building materials shall be explained at the beginning of the design studio.

REFERENCES

1. Paul Laseau, Graphic Thinking for Architects.
2. E and O.E. Planning, Liffé Books Ltd., London, 1973.
3. De. Chiara and Callender, Time-saver Standards for Building Types, McGraw Hill Co., New York, 1973.
4. Sid Del Mar Leach, Techniques of Interior Design Rendering and presentation, McGraw Hill Co., New York, 1973.
5. Mike K. Lin, Drawing and Designing with Confidence: A Step by Step Guide.
1. Rendow Yee, Architectural Drawing: A visual Compendium of types and Methods.
2. Francis D Ching, Design Drawing.
3. Francis D Ching, Drawing a Creative Process.
4. Mike. W. Lin, Architectural Rendering Techniques: A Colour Reference.
5. Richard M. Mc Garry, Marker Magic: The Rendering Problem Solver for Designers.
6. Michael. E. Doyle, Color Drawing: Design drawing Skills & Techniques for Architects, Landscape Architects & Interior Designers.

OBJECTIVES:

To provide an understanding of the construction materials and methods through construction detailing.

To develop basic knowledge of the various components of a built structure.

UNIT-1

BRICKS PRODUCTS - CONSTRUCTION

Structural members in brickwork – Brick piers, footings, load bearing walls.

Reinforced brick masonry - Arches - Lintels – Corbels - copings.

UNIT-2

CLAY PRODUCTS CONSTRUCTION

Hollow clay blocks - for walls - partitions - roofs.

Roofing - Flat Roofs - Terrace roofs - Sloping roofs.

UNIT-3

TIMBER CONSTRUCTION – DOOR, WINDOWS AND PANELLING

Fundamentals of timber- manufacture – uses – current developments – physical properties - Drawings of timber joinery for Windows, doors, ventilators. Timber partitions, paneling, false ceiling, fixed partitions, sliding, folding, top hung bottom rested false ceiling - wall paneling

UNIT-4

TIMBER CONSTRUCTION – STAIRCASE

Timber staircases - Designed staircase

UNIT-5

TIMBER CONSTRUCTION – TRUSS

Timber trusses - Lean to - close couple - Kingpost - Queen post - Trusses.

Exercise involving simple bill of quantities

REFERENCES

1. Don A.Watson, Construction Materials and Processes, McGraw Hill Co., 1972.
2. W.B.Mckay, 'Building Construction', Vol.1, 2, 3 Longmans, U.K. 1981.
3. Alanwerth, Materials, The Mitchell Pub. Co. Ltd., London, 1986.
4. R.Chudleu, 'Building Construction Handbook', British Library Cataloguing in Publication Data, London, 1990.
5. S.C.Rangwala, Engineering Materials, Charotar Pub.House, Anand, 1997.

OBJECTIVE:

To involve students in a number of exercises that will help them develop the skill of representation in advanced drawing techniques, involving perspective and sciography.

To involve students in a number of exercises that will help to understand the measured drawing method to document buildings of architectural interest using simple and advance techniques of representation.

UNIT-1

Architectural drawing & representation

Introduction to basic building components representation - Typical section of a building – simple specifications and - line weight, line type etc. Types of Drawings.

UNIT-2

Orthographic projection – Exterior and Interior spaces

Isometric, Axonometric, Oblique and orthographic projections to scale of Exterior and interior spaces-multi level spaces in buildings –interior furniture etc – shade and shadow

UNIT-3

Building perspective-Manual & Digital rendering

Perspective of large spaces and buildings – One point perspective, Two point perspective, Three point perspective – scientific method, short cut method -pencil ,pen rendering ,stippling-Shade and shadow- Sciography of plan ,elevation, isometric, axonometric views-rendering of the building silhouette by manual and digital techniques.

UNIT- 4

Measured Drawing – Historic building document Study

Introduction to fundamentals of measured drawing, line value, lettering, drawing representation, methods and technique of measuring objects by measuring tape –photographs – aesthetic components and details

UNIT-5

Measured Drawing – Detailed Documentation of a Public building

Documentation of a complete building of a special interest in terms of history, building Construction- architectural excellence or technology – examples like Post office, Police Station, Public School

REFERENCES

1. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, New York, 1975.
2. Edward J.Muller,Jemes G. Fauselt, Philip A. Graw Architecture Drawing and Light Construction Prentice hall Publishers Columbus. 1999.
3. Ernest Norling, Perspective drawing, Walter Fostor Art Books, California, 1986.
4. Bernard Alkins - 147, Architectural Rendering, Walter Foster Art Books, 1986.
5. Learn to paint with Water Colours, Acrylic colours, Boats and Harbours, Sketch, Still life, landscapes. Author: Alwyn Cranshaw, Publisher: William Collins Sons & Co. Ltd., London, 1981.
6. Architectural Rendering, A Technique of Contemporary Presentation, Author: Albert O. Halse, Publisher, Mc Graw Hill Book Company, New York, 1972.
7. Elisabetta Drudi, Figure Drawing for Fashion Design, The Pepin Press Singapore. 2001.
8. K.Venugopal, Engineering Drawing and Graphics + AutoCAD, New Age International Publishers, New Delhi,2007.
9. Kendra Schank Smith, Architects' Drawings, Architectural Press- An imprint Elsevier Burlington 2006.

SEMESTER 3

15ART301 BUILDING SERVICES I

OBJECTIVE :

To develop basic technical knowledge in water supply, sanitation, electrical, air conditioning, mechanical and fire fighting systems.

UNIT-1

WATER CHARACTERISTICS AND QUALITY

Surface and ground water sources - quality/quantity - nature of impurities – need for treatment

UNIT-2

FUNDAMENTALS OF SEWAGE TREATMENT AND SEWERAGE SYSTEMS

Environmental sanitation - Sanitation in buildings. Arrangement of sewerage systems in Housing, large factories, towns and cities - sewage pumping station - Rainwater disposal and storm water drainage from buildings.

UNIT-3

ELECTRICAL SYSTEMS AND ILLUMINATION

a) Basics of electricity - Single/Three phase supply - Protective devices in electrical installations - Earthing for safety - Types of earthing - ISI specifications.

b) Principles of illumination: Modern theory of light - Synthesis of light - Additive and subtractive synthesis of colour - Luminous flux - Candela - Solid angle illumination - Utilization factor - depreciation factor - MSCP - MHCP - Laws of illumination.

UNIT-4

MECHANICAL SYSTEMS

a) Pumps – uses & types and their selection, installation and maintenance, Hot Water Boilers.

b) Basic refrigeration principles: Thermodynamics - Heat - Temperature, measurement transfer - Change of state - Sensible heat - Latent heat of fusion, evaporation, sublimation - Saturation temperature - Super heated vapour - subcooled liquid - pressure temperature relationship for liquids – Refrigerants

UNIT-5

FUNDAMENTALS OF ACOUSTICS

Sound waves, frequency, intensity, wave length, measure of sound, decibel scale, speech and music frequencies.

Types of noises, transmission of noise, transmission loss, noise control and sound insulation and remedial measures, determination of density of a given building material, absorption co-efficients and measurements, choice of absorption material, resonance, reverberation, echo, exercises involving reverberation time and absorption co-efficient.

REFERENCES:

1. William H. Severns and Julian R. Fellows, Airconditioning and Refrigeration, John Wiley and Sons, London, 1988.
2. Robert D. Finch, Introduction to Acoustics, Prentice Hall of India Private Limited, New Dehli, 2008.
3. MARK J. HAMMER MARK J. HAMMER, JR, Water and Wastewater Technology, PHI Learning Private Limited, New Delhi. 2009.
4. M.N. Rao, A.K. Datta, Waste Water Treatment, Oxford & IBH PUBLISHING CO. PVT. LTD, New Delhi, 2007.
5. Section 11. Sanitary Appliances and Water Fittings. IS Code- SP: 21-1983.
6. Hand book on Water Supply and Drainage with Special emphasis on plumbing IS Code – SP : 35 – 1987.
7. Part of Section 1: Water Supply. IS CODE – SP : 7 – 1992.
8. IS Code of Basis Requirements for Water supply drainage and sanitation. IS Code – IS 1172: 1983.
9. Code of Practice for Water Supply in Buildings. IS Code – IS 2065: 1983.

OBJECTIVE:

To gain an understanding of the Architecture of Ancient India in the light of its Social Fabric, Relevance, Design Principles & Construction Materials and Methods .

UNIT-1

HINDU & INDO-ARYAN STYLES

Evolution of Hindu temple - Early shrines of the gupta and chalukyan periods - Tigawa temple, Ladh Khan and Durga temple, Aihold, Papanatha and Virupaksha temples, Pattadakal.

Indo-Aryan: Salient features of an Indo Aryan temple - Lingaraja Temple, Bhuvaneshwar - Sun temple, Konarak. Kunds and Vavs – - Adalaj - Surya kund, Modhera.

UNIT-2

DRAVIDIAN STYLE

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

UNIT-3

BUDDHIST STYLE

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

Salient features of a Chaitya hall and Vihara, Rock cut architecture in the Western and Eastern ghats - Karli, Viharas at Nasik, Rani gumpha, Udaigiri. Takti Bahai, Gandhara.

UNIT-4

INTRODUCTION TO ISLAMIC ARCHITECTURE

History of Islam- Influences on Islamic Architecture - character of Islamic architecture with examples. sources of Islamic Architecture in India and influences on them - Brief history development of architectural style during the rule of the slave, Khilji, Tuqlaq Sayyid and Lodhi Dynasties - important examples for each period.

UNIT-5

PROVINCIAL & MUGHAL STYLES

Development of the provincial styles in different regions - Punjab, Jaunpur, Bengal, Gujarat, Malwa, the Deccan (Bijapur, Golconda, Bidar and Gulbarga) - important examples for each style.

Development of the Mughal style under the different rulers - Babur, Shershah, Humayun, Akbar, Jahangir, Shahjahan, Aurangzeb - important examples - development of the Mughal garden - important examples.

REFERENCES

1. Percy Brown, Indian Architecture (Buddhist and Hindu Period), Taraporevala and Sons, Bombay, 1983.
2. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981.
3. Christopher Tadgelli, The History of Architecture in India from the Dawn of civilization to the end of the Raj, Longman Group U.K.Ltd., London, 1990.
4. Islamic Architecture, Form, Function and Meaning, Robert Hillenbrand, Edinburgh University Press, 1994.
5. Brown Percy, Indian Architecture (Islamic Period) Taraporevala and Sons, Bombay, 1983.
6. Satish Grover, The Architecture of India (Islamic) Vikas Publishing House Pvt. Ltd., New Delhi, 1981.
7. Christopher Tadgell - The History of Architecture in India - Penguin Books (India) Ltd., New Delhi 1990.
8. Francis D.K. Ching, A Global History of Architecture, John Wiley & Sons Publishers, New Jersey, 2007.

15ART303 MECHANICS OF STRUCTURES II

OBJECTIVE:

To understand the concepts of structures in architecture and also to understand the different structural materials used for various buildings.

UNIT-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

UNIT-2

STRESSES IN BEAMS

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

UNIT-3

DEFLECTION OF BEAMS

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

UNIT-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

UNIT-5

INTRODUCTION TO INDETERMINATE STRUCTURES

Introduction – Determination of degree of statical indeterminacy for beams and frames – Concept of Analysis (No Problems)

Total 45 Hrs/Semester

REFERENCES:

1. S.S.Bhavikatti, "Strength of Materials", VIKAS Publishing House Pvt. Ltd., Chennai, 1997.
 2. S.Ramamrotham, Strength of materials - Dhanpatrai & Sons, Delhi, 1990.
 3. W.A.Nash, Strength of Materials - Schaums Series - Mcgraw Hill Book Company, 1989.
 4. R.K.Bansal - Engineering Mechanics and Strength of Materials - Lakshmi Publications, Delhi, 1990.
- R.K. Rajput - Strength of Materials , S. Chand & Company Ltd., New Delhi 1996.

15ARP311 COMPUTER APPLICATIONS II

OBJECTIVE:

To develop in depth understanding of advanced concepts in computer applications relevant to architecture through building information modeling.

Unit 1 to 5:

INTRODUCTION TO BUILDING INTEGRATED MODELLING

New Features , Editing and Working with Families in a Project, Concepts, creating a sharedFamily, Project and System settings. Suggested Software: REVIT, ARCHICAD.

BASIC MODELLING AND DOCUMENTATION

Creating the Basic Model, Adding Doors and Windows, Floors and Floor Openings, Roof and Ceiling,Staircases. Suggested Software: REVIT, ARCHICAD.Creating drawings, Creating detail from Building Model, Scheduling, Annotating and Dimensioning, Viewing the Mode

RENDERING

Applying Materials and textures, creating a perspective vies, rendering an Exterior view, rendering an Interior views, Creating and Recording Walkthroughs, creating 3D cutaways with Section Boxes

Suggested Software: Archi CAD, Revit

REFERENCES

1. AutoCAD 2011 User Manual, Autodesk 2011.
2. Revit reference manual - Autodesk UNC, 2010.
3. ArchiCAD architectural users guide - Graphisoft Inc., 2010.

OBJECTIVES:

Understanding a Design Program and its Components.

Investigate and Acquire the Knowledge to address the various aspects of the Design Problem

Acquire the Discipline to follow the Design Process through its Stages and arrive at completion.

Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.

TOPICS

Introduction to site – inventory and Analysis – Graphical representation - time space activity analysis.

Single level planning in small scale, small span, horizontal movement and simple vertical movement, data collection, case studies, analysis and presentation of studies – Data collection with respect to design and detailing for physically handicapped persons - Concepts and presentation of design with scaled models - Examples: Residential buildings, Institutional buildings: banks, nursery or primary schools, primary health center, school for children with learning disabilities, neighborhood market, etc.

Design Process to be approached stage wise through Architectural Programming

REFERENCES:

1. De Chiara and Callender, Time Saver Standards Building Types, McGraw Hill Co., 2nd Edition, 1980.
2. Edward D.Mills, Planning - The Architects Handbook - 10th Edition, British Library Cataloguing in Publication Data, 1985.
3. Wakita Linde, The Professional practice of Architectural working, drawing John Wiley & Sons, 1984.
4. Andrew Alpern, Handbook of Speciality Elements in Architecture, McGraw Hill Book Co., 1982.
5. Julius Panero & Martin Zelnik, Human Dimension and Interior Space, Whitney Library of Design Publication, 1979.
6. Neufert Architect's Data, Rudoll Herg, Crosby Lockwood and Sons Ltd., 1970.

OBJECTIVE:

To expose the students to concrete construction methods and special concretes.

UNIT 1

CONCRETE, ITS INGREDIENTS MANUFACTURE & PROPERTIES

Ingredients - suitability requirements for aggregates, grading of aggregates - role of water in concrete - reinforcement - admixtures - properties of concrete.

Manufacture of concrete and concreting - mix proportioning - batching, mixing, transporting, placing, compaction, curing formwork - quality control - outline of tests for concrete - joints in concrete - concrete finishes.

UNIT 2

SPECIAL CONCRETE AND CONCRETING METHODS

Lightweight, high density, fibre reinforced, polymer concrete - outline of manufacture properties and uses of the above - ready mixed concrete - guniting - cold weather and underwater concreting - current developments in concrete products and methods of concreting.

FOUNDATIONS

Pile foundation, different types of piles, precast and cast insitu with reinforcement details for different types of grids, details of pile capping, jointing of precast piles and columns.

UNIT 3

CONCRETE CONSTRUCTION

Introduction to framed structures. Concrete in foundations - types of footings - isolated, combined, continuous, strap.

Concrete floors, walls and partitions. Concrete lintels, arches, sunshades - Concrete slabs - types - concrete beams and columns.

UNIT 4

CONCRETE STAIRCASES

Factors involving staircase design - types of staircases like straightflight, doglegged, quarterturn, bifurcated, spiral helical, etc. - different support conditions like inclined slab, cranked slab, continuous, cantilever - foundations finishes for staircases - detailing out of handrails and balusters. Designing and detailing for physically handicapped.

UNIT 5

D.P.C- WEATHERING COURSE – WATER PROOFING

Introduction to DPC – Damp Proof Course – Water Proofing – Details and techniques – types

Exercises involving simple bill of Quantities

REFERENCES:

1. M.S.Shetty, Concrete Technology, S.Chand & Co. Ltd., New Delhi, 1986.
2. Dr.B.C.Punmia, Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 1993.
3. Arthur Lyons, Materials for Architects and Builders - An introduction, Arnold, London, 1997.
4. W.B.Mckay, Building Construction, Longmans, UK, 1981.
5. Francis D.K.Ching, Building Construction Illustrated VNR, 1975.

15ARS323 CLIMATE RESPONSIVE ARCHITECTURE I

OBJECTIVES:

To study human heat balance and comfort.

To familiarize students with the design and settings for buildings for daylight and factors that influence temperature

To inform about the air pattern around buildings and the effect of wind on design and siting of buildings

To expose the students to the various design strategies for building in different types of climatic zones.

UNIT 1

CLIMATE AND HUMAN COMFORT

Factors that determine climate of a place – Components of Climate – Climate classifications for building designers in tropics – Climate characteristics. Human body heat balance – Human body heat loss – Effects of climatic factors on human body heat loss – Effective temperature – Human thermal comfort – Use of C.Mahony's tables.

UNIT 2

DESIGN OF SOLAR SHADING DEVICES

Movement of sun – Locating the position of sun – Sun path diagram – Overhead period–Solar shading–Shadow angles – Design of appropriate shading devices

UNIT 3

HEAT FLOW THROUGH BUILDING ENVELOPE CONCEPTS

The transfer of heat through solids – Definitions – Conductivity, Resistivity, Specific heat, Conductance, Resistance and Thermal capacity – Surface resistance and air cavities– Air to air transmittance (U value) – Time lag and decrement

UNIT 4

IMPACT OF AIR MOVEMENT DUE TO NATURAL AND BUILT FORMS

The wind – The effects of topography on wind patterns – Air currents around the building – Air movement through the buildings – The use of fans – Thermally induced air currents – Stack effect, Venturi effect – Use of court yard.

UNIT 5

CLIMATE AND DESIGN OF BUILDINGS

Design strategies in warm humid climates, hot humid climates, hot and dry climates and cold climates – Climate responsive design exercises

References :

1. O.H. Koenigsberger and others (1993), Manual of Tropical Housing and Building – Part I - Climate design, Orient Longman, Madras, India.
2. Bureau of Indian Standards IS 3792 (1987), Hand book on Functional requirements of buildings other than industrial buildings, (Part I – IV), Manakbhavan, 9, Bahadur Shah Zafar Marg, New Delhi – 110002 REFERENCES:
3. Martin Evans (1980), Housing Climate and Comfort – Architectural Press, London
4. B. Givoni (1981), Man, Climate and Architecture, Architectural Sciences Series - Applied Science Publishers Ltd., London
5. B. Givoni (1994) Passive and Low Energy Cooling of building, Van Nortrand Reinhold New York, USA..
6. Galloe, Salam and Sayigh A.M.M. (1998) “Architecture, Comfort and Energy”, Elsevier Science Ltd. , Oxford, U.K.
7. Arvind Krishan “ Climate responsive Architecture”.

SEMESTER 4

15ART401 BUILDING SERVICES II

OBJECTIVE:

To impart advanced technical and practical knowledge in building services.

UNIT-1

Water Distribution

Water supply systems – Domestic – Commercial – usages - Distribution systems in buildings - Types of pipes used - Laying, jointing, testing - prevention of water wastage and reuse of water - Internal water supply in buildings - Relevant byelaws and regulations.

UNIT- 2

Sewage Disposal

Arrangement of sewerage systems in buildings - sewage treatment plant b) Refuse Disposal: Collection, conveyance and disposal of town refuse systems

UNIT- 3

Plumbing Systems

Materials and construction details of sewers and connections – plumbing fixtures - testing for water tightness - plumbing system for building types. – Toilets kitchen etc., Relevant Plumbing Codes

UNIT- 4

Electrical Systems And Lighting Design

Study of electrical layout for residential Building - Types of wires, wiring systems and their choice - Main and distribution boards - Electrical load calculation – Details - Classification of lighting - Artificial light sources - spectral energy distribution - luminous efficiency - colour temperature - colour rendering – lighting fixtures.

UNIT- 5

Air-Conditioning System And Applications

Vapour compression cycle - compressors - evaporators - Refrigerant control devices - electric motors - Starters - Air handling units - Cooling towers.

Window type and packaged air-conditioners - chilled water plant - fan coil systems - water piping - cooling load - Airconditioning systems for different types of buildings - Protection against fire to be caused by A.C.systems.

REFERENCES

1. Robert D.Finch, Introduction to Acoustics, Prentice Hall of India Private Limited, New Dehli, 2008.
2. MARK J. HAMMER MARK J. HAMMER, JR, Water and Wastewater Technology, PHI Learning Private Limited, New Delhi. 2009.
3. M.N.Rao, A.K.Datta, Waste Water Treatment, Oxford & IBH PUBLISHING CO. PVT. LTD,New Delhi,2007.
4. S.P.Arora,S.P.Bindra, Building Construction, dhanpat rai publication, New Delhi. 2009.
5. Section 11. Sanitary Appliances and Water Fittings. IS Code- SP: 21-1983.
6. Hand book on Water Supply and Drainage with Special emphasis on plumbing IS Code – SP : 35 – 1987.
7. Part of Section 1: Water Supply. IS CODE – SP : 7 – 1992.
8. IS Code of Basis Requirements for Water supply drainage and sanitation. IS Code – IS 1172: 1983.
9. Code of Practice for Water Supply in Buildings. IS Code – IS 2065: 1983.
10. William H.Severns and Julian R.Fellows, Airconditioning and Refrigeration, John Wiley and Sons, London, 1988.
11. D.J.Groomet - Noise, Building and People - Pergumon Press - 1977.

15ART402 CONTEMPORARY ARCHITECTURE I

OBJECTIVE:

To provide the student an in-depth knowledge of modern design philosophies in the evolution of innovative Architectural forms and designs.

UNIT-1

EVOLUTION OF MODERN ARCHITECTURE & INFLUENCE OF NEW MATERIALS

Reasons for the evolution of Modern Architecture, origins-Neo Classicism Industrial revolution and its impact – Emergence of new building typologies, New Materials and Technologies- steel, glass and concrete

UNIT- 2

REVIEWING INDUSTRIALISATION

Arts & Crafts movement in Europe and America; Art nouveau, and the works of Horta, Guimard, Gaudi and Macintosh; Organic Architecture -Early works of F.L.Wright. Chicago school; Art deco Architecture in Europe and America.

UNIT- 3

EVOLUTION OF MODERNISM, POST MODERNISM AND CRITIQUE

Viennese secession, Adolph Loos and debates on ornamentation ; Futurism, Expressionism works of Mendelssohn &Taut, Cubism, Constructivism, De stijl and their influence on Architecture. Bauhaus school &Walter gropius, Modernism and the International style, Brutalism, Writings of Venturi - Jane Jacobus - Aldo Rossi - Christopher Alexander.

UNIT- 4

WESTERN ARCHITECTURE

Ideas and works of Richard Meier (Smith House, Connecticut and Getty Centre, Brent Wood, LosAngeles), Charles Moore (Architect's Own House at Orinda and Piazza d'Italia, New Orleans), Bernard Tschumi (Kyoto Railway Station Project and Parc de la Villete, Paris), Frank Gehry (AeroSpace Museum, Santa Monica and Guggenheim Museum, Bilbao), Norman Foster (Hong Kong Shanghai Bank and Renault Distribution Centre, Swindon, England),

UNIT-5

MODERN ARCHITECTURE

Zaha Hadid (The Peak Club, HongKong and IBA Housing Block 2, West Berlin), Daniel Libeskind(Jewish Museum, Berlin and World Trade Centre, New York), Rem Koolhaas(Dance Theatre, The Hague and Netherlands Sports Museum), Santiago Calatrava(Lyon- Satolas Railway Station and Olympic Stadium at Athens), Renzo Piano(Pompidou Centre, Paris and Menil Museum, Houston) - Deconstructivist Theory – Parametric.

REFERENCES:

1. Charles Jencks, The Language of Post-Modern Architecture, 1984.
2. D.Ghirardo, Architecture After Modernism, Thames and Hudson, London, 1990.
3. Kenneth Frampton, Modern Architecture: A Critical History, Thames and Hudson, London, 1994.
4. Miki Desai et.al, Architecture and Independence, Oxford University Press, New Delhi, 1998.
5. Peter Szalapaj, Contemporary Architecture ,Architectural Press- An imprint Elsevier, Burlington, 2008.
6. Catherine Slessor Contemporary Architecture Images Publishers Australia. 2002.

15ART403 DESIGN OF STRUCTURES I

OBJECTIVE:

By the end of the course the students shall be confident enough to independently workout the loads coming over structural components like timber and steel tension members, compression members, beams and design them as per BIS codes.

UNIT 1

TIMBER – BEAMS

Grading of Timber – Permissible Stresses – Design of timber beams – Madras terrace roof.

UNIT 2

STEEL SECTIONS AND WELDED JOINTS

Properties of rolled steel sections, Types of welded joints – Advantages and disadvantages – Design of Fillet welds (Excluding eccentric connections).

UNIT 3

TENSION MEMBERS

Introduction – Net sectional area – permissible stresses. Design of Axially loaded Tension member

UNIT 4

COMPRESSION MEMBERS

Introduction – various sections – built up section – Design of columns (excluding Lacing, Battening and other connections.)

UNIT 5

STEEL BEAMS

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

Total : 45 Hrs/Semester

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.
 6. Elias G.Abu-Saba Design of Steel Structures CBC Publishers New Delhi. 1997.
 7. IS Code of practice for BIS 800:2007
- IS Code of practice for Timber design.

15ARP411 SURVEYING AND LEVELING

OBJECTIVE:

To develop the knowledge and skills related to surveying and leveling principles and practice.

UNIT 1

SURVEYING

Definition, classification, principles of surveying, chain surveying and compass surveying.

UNIT 2

PLANE TABLE SURVEY

Plane table and accessories, methods of plane table survey, Radiation, Intersection, traversing and resection.

UNIT3

LEVELING.

Definition, classification, booking and reduction of levels.

Theodolite – study of instruments, definition of different terms, temporary adjustments, uses, measuring horizontal and vertical angles, method of repletion, extension lines.

UNIT 4

CONTOURING

Characteristics of contours, direct and indirect methods of contouring, interpolation, uses of contours, setting out works such as centre lines of a building, grade for sewer. Earth work calculation , area and volume.

UNIT 5

TOTAL STATION & GIS

Introduction and Characteristics – Handling and setting up a Total Station – Angle and Distance Measurement – Traversing – Introduction to GIS – Concept of GIS Mapping

REFERENCES

Rangwala, Surveying & Levelling, Charotar Publishing House, Gujarat, 2005.

Duggal, S. K. “Surveying (Vol – I)”, Tata McGraw-Hill publishing Company Ltd., New Delhi, 1996.

Surveying and leveling (Part I) by Kanetkar TP and Kulkarni SV

Wolf, Paul R. and Ghilani, Charles D., Elementary Surveying an Introduction to Geomatics: Fifth Edition, Upper Saddle River, New Jersey: Pearson Prentice Hall, 2006

Banister.A & Raymond.S – 1992, Surveying , ELBS 6th Edition

Punmia.B.C, 2000, Surveying, Volumes I, II. III, Laxmi publications.

OBJECTIVES:

Understanding a Design Programme and the Components of the Design Problem.
Investigate and Acquire the Knowledge to address the various aspects of the Design Problem
Acquire the Discipline to follow the Design Process through its Stages and arrive at completion.
Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.

UNIT 1 to 5:

RURAL PROJECT

Problems related to Rural Housing - Visits to selected village – based on Rural surveys on socio-economic, physical, housing and visual surveys, etc. to study existing conditions - analysis of survey data - preparation of report and presentation in a seminar - preparation of design brief solutions for housing and community facilities.

REFERENCES:

1. De Chiara and Callender, Time Saver Standard for Building Types, McGraw Hill Co., 2nd Edition, 1980.
2. Edward D.Mills, Planning - The Architects Handbook - 10th Edition, British Library Cataloguing in Publication Data, 1985.
3. Wakita Linde, The Professional Practice of Architectural Working, Drawing John Wiley & Sons, 1984.
4. Andrew Alpern, Handbook of Speciality Elements in Architecture, McGraw Hill Book Co., 1982.
5. Julius Panero & Martin Zelnik, Human Dimension and Interior Space, Whitney Library of Design Publication, 1979.
6. Neufert Architect's Data, Rudolf Herg, Crosby Lockwood and Sons Ltd., 1970.

OBJECTIVE:

To expose the students to different materials of construction, progressively and to enable them to represent the different building components through relevant drawings.

UNIT 1

FERROUS METALS

Brief study on manufacture, properties and uses of cast iron, wrought iron, pig iron and steel - anticorrosive measures for steel - mechanical and heat treatment of steel - market forms of steel - structural steel, stainless steel, steel alloys - properties and uses - current developments.

UNIT 2

STEEL CONSTRUCTION

Structural steel sections - types of connections in steel - steel in foundations, columns and beams - different types of steel roof trusses including northlight truss - space frames - materials for roofcovering. Steel staircases and handrails, salusters..

UNIT 3

STEEL STAIRS, DOORS, WINDOWS

Steel doors and windows – safety doors, dock doors, cold storage doors, revolving doors - collapsible gates - rolling shutters. Steel in furniture and other interior uses

UNIT 4

NON FERROUS METALS

Aluminium and Aluminium Alloys - brief study on manufacture, properties and uses - Aluminium products - extrusions, foils, castings, sheets, etc. - brief study of other non-ferrous metals like copper, bronzebrass, tin and lead, properties and uses - current developments.

UNIT 5

CONSTRUCTION USING NON-FERROUS METALS

Aluminium doors - revolving, sliding, pivoted. Aluminium windows and ventilators - sliding, fixed, pivoted, top hung, bottom hung, louvred, fixed. Aluminium partitions, false ceiling, Aluminium roofing - northlight glazing bar. Use of other nonferrous metals like copper, bronze, brass, etc. in architectural construction.

REFERENCES:

1. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India, 1997.
2. B.C.Punmia, Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 1993.
3. Arthur Lyons - Materials for Architects and Builders - An Introduction - Arnold, London, 1997.
4. Harold B.Olin, Construction Principles Materials and Methods, The Institute of Financial Education, Chicago, 1980.
5. W.B.Mckay Building Construction, Longmans, U.K. 1981.

OBJECTIVE:

To develop climatic design skills and techniques relevant to responsive built environmental design

UNIT-1

CLIMATE & SHELTER

Over view of the different Passive Solar Techniques & Climate responsive design features adopted in the traditional / vernacular architecture of various places in different climate zones – Control of Micro-climate around the building by settlement pattern, built form – open space relationship & façade articulation & appropriate use of building materials in historic buildings

UNIT-2

SOLAR ENERGY & BUILDING

Solar geometry and built form – Various techniques of shading to reduce heat gain in tropical climate –

Various methods of Maximising exposure to solar radiation in cold & temperature climate. Heating & cooling loads – Energy estimates - Energy conservation – Efficient day lighting – Solar Water heating system. Exercises on heating and cooling load calculations in buildings.

UNIT-3

PASSIVE HEATING & COOLING

Heating: General principles – Direct gain systems - Glazed walls, Bay windows, Attached sun spaces etc. Indirect gain systems – Trombe wall, Water wall, Solar Chimney, Transwall, Roof pond, Roof radiation trap, Solarium etc - Isolated gain systems – Natural convective loop etc. Cooling: General principles – Evaporative cooling, Nocturnal radiation cooling, Passive Dessicant cooling, induced ventilation, earth sheltering, Berming, Wind Towers, earth – Air tunnels, Curved Roofs & Air Vents, Insulation, Vary Thermal wall etc.

UNIT-4

BUILDING DESIGN CONCEPTS

Land form & orientation – Vegetation & Pattern – Water Bodies – Open Space & Built form - Plan form & Elements – Roof form – Fenestration pattern & Configuration – Building envelope & finishes. Choosing between Active-Passive-Hybrid Design Systems .

UNIT-5

SUSTAINABLE ARCHITECTURE

Sustainability – Design Methods – Resource Optimization – Biomimetics – Green Architecture - Green Building Rating Systems – Case studies of selected sustainable buildings.

REFERENCES

1. Mili Majunder, Teri – Energy – Efficient Bldg in India – Thomson Press , New Delhi – 2001
2. Arvind Krishnan & Others – Climate Responsive Architecture, Tata Mcgraw –Hill New Delhi 2001.
3. Ralph M .Lebens – Passive Solar Architecture in Europe – 2, Architecture Press, London 1983.
4. Charles. J. Kibert, ‘Sustainable Construction’ John Wiley and sons Inc, USA.
5. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.

SEMESTER 5

15ART501 CONTEMPORARY ARCHITECTURE II

OBJECTIVE:

To provide the student an in-depth knowledge of modern design philosophies in the evolution of innovative architectural forms and designs in the Indian context.

UNIT-1

ALTERNATIVE PRACTICE

Ideas and Works of Fathy - Baker - Ando - Soleri – Bawa – Buckminster fuller
Architects of Auroville .

UNIT-2

PRE – INDEPENDENT ARCHITECTURE IN INDIA

Monumental buildings of Early colonial period – Examples – St.Pauls Cathedral, Calcutta & Bombay Townhall –Architectural character of Indo-Saracenic and Classical revival –University of Madras Senate House & Victoria Memorial hall, Calcutta – Later Colonial period – Contribution of Edwin Lutyens & Herbert Baker to the lay-out and Architecture of New Delhi – Rashtrapathi Bhavan & Parliament House.

UNIT-3

POST-INDEPENDENT ARCHITECTURE IN INDIA

Post-Independence Architecture in India – Works of Corbusier in Chandigarh and Ahmedabad (Legislative Assembly Complex including High Court, Legislative assembly and Secretariat, Chandigarh and Mill Owners’ Building, Ahmadabad) Louis Kahn’s contributions – the IIM, Ahmedabad, Koenigsberger and the Bhubaneswar experiment.

UNIT-4

POST – INDEPENDENT ARCHITECTURE IN INDIA

Ideas and works of BV Doshi (Institute of Indology Ahmedabad, IIM-Bangalore and Gufa, Ahmedabad), Charles Correa (RamaKrishna House, Ahmedabad, Kanchen Junga Apartments, Mumbai and MRF Headquarters, Chennai), Raj Rewal (Pragati Maidan, New Delhi and Asian Games Village, New Delhi), Achyut Kanvinde(IIT, Kanpur and Nehru Science Centre, Mumbai), Uttam Jain(Lecture Theatres, Jodhpur and Engineering College, Kota), Laurie Baker(Centre for Development Studies, Thiruvananthapuram and St. John Cathedral at Tiruvalla) and Anant Raje(IIFM, Bhopal and Management Development Centre, IIM-Ahmedabad)

UNIT-5

RECENT TRENDS IN INDIAN ARCHITECTURE

Recent developments in architecture of India – works of Selected architects – Current architecture practice.

REFERENCES

1. Morgan, Ann Lee & Taylor Colin, 1987, Contemporary Architecture, 2nd Edition, St.James Press
2. Sarabjit Bahga. S, Modern Architecture in India,
3. Ar.Pramod Beri, 2009, Form follows feeling, Anjali Prakashan, New Delhi

OBJECTIVE:

To introduce the material concrete, RCC and enable students to carry out limit state method of design of flat slabs, beams, columns and foundation using BIS codes and hand books.

UNIT-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.

UNIT-2

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.

UNIT-3

LIMIT STATE DESIGN OF BEAMS & SLABS

Analysis and Design of rectangular sections for bending - singly and doubly reinforced. Design of one way and two way slabs using IS Code co-efficients for various edge conditions.

UNIT-4

LIMIT STATE DESIGN OF COLUMNS

Types of columns – Analysis and Design of Short Columns for Axial, Uniaxial and biaxial bending – Use of Design aids.

UNIT-5

LIMIT STATE DESIGN OF STAIRCASE

Types of staircases - Design of doglegged staircase.

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, Standard Laxmi publication , Delhi, 1994.
 5. Chu-Kia Wang, Charles G.Salmon, Reinforced Concrete Design, Addison Wesley Educational Publishers, New Delhi,1998.
 6. SS Mahadevan , Reinforced Concrete Design, The Science & Technology Book Publishers, Chennai. 2007.
- S.Unnikrishna Pillai, Devdas Menon, Reinforced Concrete Design, Tata McGraw-Hill Publishing Company Ltd, New Delhi. 2008.

OBJECTIVES:

Understanding a Design Programme and the Components of the Design Problem.
Investigate and Acquire the Knowledge to address the various aspects of the Design Problem
Acquire the Discipline to follow the Design Process through its Stages and arrive at completion.
Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.

TOPICS

Small complexes - multi planning circulation analysis - massing problems involving building technology - Design and detailing for movement of physically handicapped and elderly persons within and around buildings. examples, shopping centre (Commercial) , apartments (residential)Nursing home (institutional) home for aged. Construction and manipulation of three dimensional building data bases, Rendering 3D images. Presentation techniques, preparing scaled models using different materials.

Design Process to be approached stage wise through Architectural Programming. Site Planning fundamentals as relevant to small projects to be introduced in the design.

REFERENCES

1. Edward D.Mills, Planning, 4 volumes, Newnes, Butterworths, London, 1976.
2. E and O.E. Planning. Liffie Books Ltd., London, 1973.
3. National Building Code IST
4. De Chiara Callender, Time Saver Standard for Building Types, McGraw Hills Co., 1973.

OBJECTIVES:

To provide an understanding of the construction materials and methods through construction detailing.

To develop basic knowledge of the various components of a built structure

UNIT I

GLASS

Composition of glass - brief study on manufacture, treatment, properties and uses of glass - special types of glass, sheet glass, plate glass, safety glass, tint coated glass - Glass blocks - properties and applications in the building industry - current developments

UNIT II

PLASTICS, COMPOSITE MATERIALS

Primary Plastic building products – walls, partitions and roofs – design and construction details

Secondary Building products – windows, doors, sky light domes – handrail - design and construction details

UNIT III

TIMBER, ALLIED PRODUCTS

Timber floors , build in furnitures , interior details

UNIT IV

CLADDING, FALSE CEILING, FLOORING AND PAINTING

Stone, ACP, wood, Glass, curtain wall, Structural glazing,(reflected ceiling plan), Flooring and painting

UNIT V

INTRODUCTION TO CURRENT DEVELOPMENTS IN BUILDING INDUSTRY

Smart Materials: Characteristics, classification, properties, energy behaviour, intelligent environments.

Recycled and ecological materials and energy saving materials: Straw-bale, card board, earthsheltered structures, recycled plastics, recycled tyres, paper-crete, sandbags, photovoltaic, solar collectors, light-pipes, wind catchers. Exercises of the above through case studies and drawings.

REFERENCES

1. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India, 1997.
2. B.C.Punmia, Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, 1993.
3. Arthur Lyons - Materials for Architects and Builders - An Introduction - Arnold, London, 1997.
4. Harold B.Olin, Construction Principles Materials and Methods, The Institute of Financial Education, Chicago, 1980.
5. W.B.Mckay Building Construction, Longmans, U.K. 1981.

15ARS523 BUILDING SERVICES III

OBJECTIVE :

To develop basic technical knowledge in water supply, sanitation, electrical, air conditioning, mechanical and fire fighting systems

UNIT-1

WATER CHARACTERISTICS AND QUALITY

Surface and ground water sources - quality/quantity - nature of impurities – need for treatment

UNIT-2

FUNDAMENTALS OF SEWAGE TREATMENT AND SEWERAGE SYSTEMS

Environmental sanitation - Sanitation in buildings. Arrangement of sewerage systems in Housing - Rainwater disposal and storm water drainage from buildings.

UNIT-3

ELECTRICAL SYSTEMS AND ILLUMINATION

a) Basics of electricity - Single/Three phase supply - Protective devices in electrical installations - Earthing for safety - Types of earthing - ISI specifications.

b) Principles of illumination: Modern theory of light - Synthesis of light - Additive and subtractive synthesis of colour - Luminous flux - Candela - Solid angle illumination - Utilization factor - depreciation factor - MSCP - MHCP - Laws of illumination.

UNIT-4

MECHANICAL SYSTEMS

a) Pumps – uses & types and their selection, installation and maintenance, Hot Water Boilers.

b) Basic refrigeration principles: Thermodynamics - Heat - Temperature, measurement transfer - Change of state - Sensible heat - Latent heat of fusion, evaporation, sublimation - Saturation temperature - Super heated vapour - subcooled liquid - pressure temperature relationship for liquids – Refrigerants.

UNIT-5

FUNDAMENTALS OF ACOUSTICS

Sound waves, frequency, intensity, wave length, measure of sound, decibel scale, speech and music frequencies. Types of noises, transmission of noise, transmission loss, noise control and sound insulation and remedial measures, determination of density of a given building material, absorption co-efficients and measurements, choice of absorption material, resonance, reverberation, echo, exercises involving reverberation time and absorption co-efficient.

REFERENCES:

1. William H. Severns and Julian R. Fellows, Airconditioning and Refrigeration, John Wiley and Sons, London, 1988.
2. Robert D. Finch, Introduction to Acoustics, Prentice Hall of India Private Limited, New Delhi, 2008.
3. MARK J. HAMMER MARK J. HAMMER, JR, Water and Wastewater Technology, PHI Learning Private Limited, New Delhi, 2009.
4. M.N. Rao, A.K. Datta, Waste Water Treatment, Oxford & IBH PUBLISHING CO. PVT. LTD, New Delhi, 2007.
5. Section 11. Sanitary Appliances and Water Fittings. IS Code- SP: 21-1983.
6. Hand book on Water Supply and Drainage with Special emphasis on plumbing IS Code – SP : 35 – 1987.
7. Part of Section 1: Water Supply. IS CODE – SP : 7 – 1992.
8. IS Code of Basis Requirements for Water supply drainage and sanitation. IS Code – IS 1172: 1983.
9. Code of Practice for Water Supply in Buildings. IS Code – IS 2065: 1983.

Elective - PHYSICAL PLANNING

OBJECTIVE:

To give an introduction to the discipline of urban and regional planning

UNIT-1**HUMAN SETTLEMENTS AND PLANNING THEORIES**

Origins, evolution and growth of settlements. Relation between urban and rural settlements

Urbanisation, Industrialisation and urban growth, definitions and inter relationship. Trends in urbanization in India since Independence. Growth of metropolitan cities and their management.

UNIT-2**PLANNING THEORIES**

Enunciated by Ebenezer Howard, Patrick Geddes, Soria Y Mata, Doxiadis, Le-Corbusier, Clarence Stein, Clarence Arthur Perry, Hilberseimer.

UNIT-3**EVOLUTION OF CITY**

Evolution of city and Components of a city - Central business district of a city, Special economic zone, coastal regulatory zone, fringe area.

UNIT-4**LANDUSE PLANNING**

Land use classification for cities, analysis of land uses in Indian cities. Demography pattern, social & physical infrastructure, environmental and pollution, traffic and road network.

UNIT-5**PLANNING TECHNIQUES**

Study and analysis of existing settlements, methodology of conducting diagnostic surveys and studies, land use survey, socio economic survey, traffic surveys and presentation of data

REFERENCES

1. Gallion and Eisner, The Urban Pattern: City Planning and Design, Van Nostrand, 5th Edition, 1986
2. Chapin, Urban Landuse Planning, University of Illinois Press, Chicago, 1995.

Elective - STRUCTURES AND ARCHITECTURE

OBJECTIVE:

To study evolution of structural systems through history.

To familiarise the students with concepts of structural design through works of architects / engineers.

To study architectural expression through relevant case studied.

To evaluate the understanding of the relationship between form & structure through a seminar.

UNIT 1

HISTORY OF STRUCTURAL DESIGN IN THE PRE INDUSTRIAL ERA

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

UNIT 2

HISTORY OF STRUCTURAL DESIGN IN THE POST INDUSTRIAL PERIOD

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

UNIT 3

CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY

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

UNIT 4

CONTEMPORARY STRUCTURAL EXPRESSION THROUGH CASE STUDY – II

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

UNIT 5

SEMINAR

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

REFERENCES

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

Elective- SUSTAINABLE ARCHITECTURE

OBJECTIVE:

To understand the concept of sustainability and sustainable development

To inform the various issues like climate change, ecological footprint, etc.

To understand low impact construction practices, life cycle costs and alternative energy resources.

To familiarize the students with the various rating systems for building practices with case studies.

Through case studies to understand the concept of sustainable communities and the economic and social dimensions.

UNIT 1

Concept of Sustainability – Carrying capacity, sustainable development – Bruntland report – Ethics and Visions of sustainability.

UNIT 2

Eco system and food chain, natural cycles – Ecological foot print – Climate change and Sustainability.

UNIT 3

Selection of materials Eco building materials and construction – Biomimicry, Low impact construction, and recyclable products and embodied energy. Life cycle analysis. Energy sources – Renewable and non-renewable energy.

UNIT 4

Green building design – Rating system –LEED, GRIHA, BREEAM etc., case Studies.

UNIT 5

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

REFERENCES:

1. Sustainable Architecture and Urbanism: Concepts, Technologies and examples by Gauzin-Muller(D) – Birkhauser 2002.
2. Eco-Tech : Sustainable Architecture and High Technology by Slessor© - Thames and Hudson 1997.
3. Ecodesign : A manual for Ecological Design by Yeang(K) – Wiley Academy 2006.
4. Sustainable Architecture : Low tech houses by Mostaedi (A) – Carles Broto 2002.
5. HOK guide book to sustainable design by Mendler (S) & Odell (W) – John willey and sons 2000.
6. Environmental brief : Path ways for green design by Hyder(R) – Taylor and Francis 2007.
7. Green Architecture: Design for a sustainable future by Brenda and Vale (R) – Thames and Hudson 1996.

Elective - ACOUSTICS

OBJECTIVES:

- . To understand the science behind acoustical design.
- . To expose students to understand noise control and sound transmission and absorption.
- . To familiarize the students with various building and interior elements which lead to better hearing conditions.
- . To familiarize the students with the basic principles of acoustic design for spaces and building types which require good hearing conditions.

UNIT 1

FUNDAMENTALS

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

UNIT 2

SOUND TRANSMISSION AND ABSORPTION

Outdoor noise levels, acceptable indoor noise levels, sonometer, determinate of density of a given building material, absorption co-efficient and measurements, choice of absorption material, resonance, reverberation, echo, exercises involving reverberation time and absorption co-efficient.

UNIT 3

NOISE CONTROL AND SOUND ABSORPTION

Types of noises, transmission of noise, transmission loss, noise control and sound insulation, remedial measures and legislation.

UNIT 4

CONSTRUCTIONAL MEASURES

Walls/partitions, floors/ceilings, widow/doors, insulating fittings and gadgets, machine mounting and insulation of machinery.

UNIT 5

ACOUSTICS AND BUILDING DESIGN

Site selection, shape, volume, treatment for interior surfaces, basic principles in designing open air theatres, cinemas, broadcasting studios, concert halls, class rooms, lecture halls, schools, residences. Call Centers, Office building and sound reinforcement systems for building types.

REFERENCES:

1. Dr.V.Narasimhan - An Introduction to Building Physics - Kabeer Printing Works, Chennai-5 - 1974.
2. D.J.Groomet - Noise, Building and People - Pergumon Press - 1977.
3. Thomas D.Northwood - Architectural Acoustics - Dowden, Hutchinson and Ross Inc. – 1977.
4. B.J.Smith, R.J.Peters, Stephanie Owen - Acoustics and Noise Control - Longman Group Ltd., - New York, USA 1982.
5. David Eagan concepts in Architectural Acoustics.
6. Harold Burris – Meyer and Lewis Good friend, Acoustics for Architects – Reinhold

Elective - ENVIRONMENTAL PLANNING
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OBJECTIVE :

To understand the impact of man's activities on the environment and knowledge about the methods-

UNIT 1 to 5

Man – biosphere – ecosystems – resource identification and its implications for development – soil water , land , plants , animals , renewable energy and non renewable energy . preparation and analysis or resource inventories

Environmental Impact Assessment – methodologies and techniques

Environment legislation – significance of law – relationship to development – evolution of planning legislation – National environmental policy

REFERENCES:

- 1.Richard p. Dober – Environmental design – VNR company – Newyork 1969
- 2.Albert J. Rutledge – Anatomy of a Park – Mc Graw hill book co., USA 1971
- 3.Harvey m. Rubenstein – A Guide to site and environmental planning , vol 3 – John wiley and sons , Newyork, 1987

Elective- VERNACULAR ARCHITECTURE

OBJECTIVE:

- . To introduce the study of vernacular architecture as a process and not a product.
- . To provide an overview of the various approaches and concepts to the study of vernacular architecture.
- . To study the various vernacular architecture forms in the various regions of the country.
- . To look at the impact of Colonial rule on the vernacular architecture of India.

UNIT 1

INTRODUCTION

Definition and classification of Vernacular architecture – Vernacular architecture as a process – Survey and study of vernacular architecture: methodology- Cultural and contextual responsiveness of vernacular architecture: an overview

UNIT 2

APPROACHES AND CONCEPTS

Different approaches and concepts to the study of vernacular architecture: an over view – Aesthetic, Architectural and anthropological studies in detail

UNIT 3

VERNACULAR ARCHITECTURE OF THE WESTERN NORTHERN REGION OF INDIA

Forms spatial planning, cultural aspects, symbolism, colour, art, materials of construction and construction technique of the vernacular architecture of the following: - Deserts of Kutch and Rajasthan; Havelis of Rajasthan
- Rural and urban Gujarat; wooden mansions (havelis); Havelis of the Bohra Muslims - Geographical regions of Kashmir; house boats

UNIT 4

VERNACULAR ARCHITECTURE OF SOUTH INDIA

Forms, spatial planning, cultural aspects, symbolism, art, colour, materials of construction and construction technique, proportioning systems, religious beliefs and practices in the vernacular architecture of the followin - Kerala: Houses of the Nair & Namboothri community; Koothambalam, Padmanabhapuram palace.

- Tamil Nadu: Houses and palaces of the Chettinad region; Agraharams.

UNIT 5

WESTERN INFLUENCES ON VENRACULAR ARCHITECTURE OF INDIA

Colonial influences on the Tradition Goan house

Evolution of the Bungalow from the traditional bangla, Victoria Villas – Planning principles and materials and methods of construction. Settlement pattern and house typologies in Pondicherry and Cochin.

REFERENCES:

1. Paul Oliver, Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.
2. Amos Rapoport, House, Form & Culture, Prentice Hall Inc. 1969.
3. R W Brunskill: Handbook on Vernacular Architecture
4. V.S. Pramar, Haveli – Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad, 1989.
- 5.. Kulbushanshan Jain and Minakshi Jain – Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad 1992.
6. G.H.R. Tillotsum – The tradition of Indian Architecture Continuity, Controversy – Change since 1850, Oxford University Press, Delhi, 1989.
7. Carmen Kagal, VISTARA – The Architecture of India, Pub: The Festival of India, 1986.
8. S. Muthiah and others: The Chettiar Heritage; Chettiar Heritage 2000

SEMESTER 6

15ART601 PROFESSIONAL PRACTICE

OBJECTIVE:

To develop understanding of the duties and liabilities of an architect that relate to the building & the environment in the Indian context.

UNIT-1

ARCHITECT AND PROFESSION

Role of architect in society - relationship with client and contractor - code of conduct – management of an architect's office - elementary accountancy

UNIT-2

ARCHITECT'S SERVICES AND SCALE OF FEES

Conditions of engagement of an architect - normal additional, special and partial services – scale of fees for various services - claiming of fees

UNIT-3

ARCHITECTURAL COMPETITIONS

Open and closed competitions - appointment of assessors - duties of assessors - instructions to participants - rejection of entries - award of premium - guidelines prescribed by COA AND IIA for promotion and conduct of competitions

UNIT-4

TENDER & CONTRACT

Calling for tenders - tender documents - open and closed tenders - item rate, lumpsum, labor and demolition tender - conditions of tender - submission of tender - scrutiny and recommendations

Conditions of contract - Form of contract articles of agreement - Contractor's bill certification

UNIT-5

ARBITRATION & EASEMENTS

Arbitration in disputes - arbitration agreement - sole arbitration - umpire - excepted matters - award .

Definition - types of easement – acquisition extinction and protection of easements

REFERENCES

1. J.J. Scott, Architect's Practice, Butterworth, London 1985
2. Publications of COA IIA Hand book on Professional Practice, The Architects publishing Corporation of India, Bombay 1987
3. Derek Sharp, The Business of Architectural Practice William Collins Sons & Co. Ltd, 8 Erafton St., London W1 1986
4. Roshan Namavathi, Professional Practice, Lakshmi Book Depot, Mumbai 1984
5. Publication of IIA
6. Environmental Laws of India - by Kishore Vanguri, C.P.R. Environmental Education Centre, Chennai
7. The Tamil Nadu Hill Areas Special Building Rules - 19
8. Heritage Act
9. Consumer Protection Act
10. Indian Easements Act

OBJECTIVE:

Understanding of the various issues involved in urban and rural housing and knowledge about the planning and design solutions for low income groups.

UNIT-1

INTRODUCTION

Review of housing typology, Housing demand and supply – Calculation of future need.

Housing resources and options available in housing

UNIT-2

HOUSING AGENCIES AND POLICIES

Housing Agencies and their contributions to housing development – HUDCO, State Housing Boards, Housing Co-operatives and Banks. Housing Policies in India and other countries.

UNIT-3

SOCIO ECONOMIC ASPECTS

Social factors influencing Housing Design, affordability, economic factors and housing concepts – Slum upgrading and sites and services schemes.

UNIT-4

HOUSING STANDARDS

Different types of Housing standards – Methodology of formulating standards – Relevance of standards in Housing Development.

UNIT-5

HOUSING DESIGN PROCESS

Different stages in project development – Layout design including utilities and common facilities – Housing design as a result of environmental aspects, development of technology and community interests. Case studies of Public Sector housing, Government housing, Private and Co-operative housing – their Advantages and disadvantages.

REFERENCES

1. Babur Mumtaz and Patweikly, Urban Housing Strategies, Pitman Publishing, London, 1976.
2. Geoffrey K. Payne, Low Income Housing in the Development World, John Wiley and Sons, Chichester, 1984.
3. John F.C. Turner, Housing by people, Marison Boyars, London, 1976.
4. Martin Evans, Housing, Climate and Ocmfort, Architectural Press, London, 1980.
5. Forbes Davidson and Geoff Payne, Urban Projects Manual, Liverpool University Press, Liverpool, 1983.

15ARP611 COMPUTER APPLICATION - III

OBJECTIVE:

To develop the advanced knowledge and skills related to building visualization and rendering and create simple multimedia presentations, brochures, videos as required in architectural practice.

TOPICS

1. Advanced techniques in rendering with differential lighting for realistic rendering
2. Animations and Walkthroughs
3. Simulating gravity, wind and other effects in the scene, distributed rendering
4. Application of videography in architecture
5. Basics of developing and hosting websites

Recommended Software: 3ds Max, rhino, lumion, vector works, BIM, Ecotect, v-ray rendering techniques

REFERENCES

1. Rendering Techniques for mixed reality, Thomas Grlinger, Daniel Dauch, Andre Stork, Springer, Berlin, October 2009
2. 3D Computer Animated Walk Throughs, Clark Cory, Scott Meador, William Rosi, McGraw Hill 2009.
3. The Animation Book: A complete guide to animation and film making, Kit Laybourne, Three Rivers Press, December 1998
4. Creating a website, Matthew McDonald, Pogue Press, January 2009

OBJECTIVES:

Understanding a Design Programme and the Components of the Design Problem.
Investigate and Acquire the Knowledge to address the various aspects of the Design Problem
Acquire the Discipline to follow the Design Process through its Stages and arrive at completion.
Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.

TOPICS

Design of large structures - Multiuse multi span - non masonry building types involving buildings – Design and detailing for movement and use by physically handicapped people within and around building technology and services. Examples: college (Institutional) office buildings Resorts - etc. Preparation of working drawings using CAD for the design exercises.

Design Process to be approached stage wise through Architectural Programming. Advanced concepts of Site Planning as relevant to small and medium sized campuses to be introduced in the design.

REFERENCES

1. Edward D mills, planning, 4 volumes, Newnes Butterworths, London 1976
2. E and OE planning 11ffe Books Ltd., London, 1973
3. National Building Code 151
4. De Chara and Callendar, Tune, saver standards for building types. McGraw Hall Col. 1983.

OBJECTIVES:

To enable students to appreciate the challenges in detailing for both the newly designed buildings as well as while carrying out additions and alterations to existing buildings.

To enable students to understand the various Fittings, Furniture & Equipment (FFE) that are needed in buildings and their installation methods.

To train students towards adopting an integrated approach while dealing with complex buildings incorporating various allied requirements.

UNIT 1

DETAILING OF WALLS, ROOFS AND FLOORING FOR INSTITUTIONAL BUILDINGS

- a) Detailing of a residence - selected spaces.
 - b) Detailing of classrooms, library (in school, college)
 - c) Detailing of lecture hall, auditorium, exhibition spaces
- Exercises of the above through case studies and drawings.

UNIT 2

DETAILING OF WALLS, ROOF, FLOORING FOR COMMERCIAL BUILDINGS

- a) Detailing of shop-fronts, office spaces for commercial buildings including detailing of crucial elements such as entrance porches, main doors, staircases, show-windows, enclosed and air-conditioned atrium spaces.
 - b) Detailing of façade and selected spaces for apartment buildings, hotels and hostels.
- Exercises of the above through case studies and drawings.

UNIT 3

DETAILING OF BUILT-IN FURNITURE AND FITTINGS

Detailing of built-in elements like kitchen counters, cupboards, cabinets, toilets, toilet fitting. Exercises of the above through case studies and drawings.

UNIT 4

DETAILING OF EXTERIOR AND INTERIOR ARCHITECTURAL ELEMENTS

Detailing of architectural elements like indoor fountains, water walls, transparent floors, street furniture, hard and soft landscape, swimming pools, water bodies and courtyard spaces. Detailing of interior architectural elements in existing buildings (e.g. Staircase in bookshops, restaurants, playpen in restaurants, reception areas in hotel lobbies etc.) Exercises of the above through case studies and drawings.

UNIT 5

DETAILING OF EXTERIOR AND INTERIOR SERVICES

Detailing of building services – Toilet Water & Plumbing Details – Air conditioning details – Fire suppression & alarm – Electrical Layouts – Lift & Escaltors etc.

REFERENCES

1. De Chiara and Callendar, Time Saver Standard Building Types, McGraw Hill Co,1980.
2. Richardson Dietruck, Big Idea and Small Building, Thames and Hudson, 2002
3. Edward D Mills, Planning – The Architecture Handbook, British Library Cataloguing in Publication Data, 1985
4. Susan Dawson, Architect's Working Details(Volume 1-10), 2004
5. Swimming Pools, Lane Book Company, Menlo Park, California
6. Nelson L Burbank, House Carpentry Simplified, Simmons-Board- Man
7. Publishing Corporation, New York,
8. Landscape Construction
9. Grant W. Reid , Landscape Graphics, Whitney Library of Design, 1987

Elective- LANDSCAPE ARCHITECTURE

OBJECTIVES

Exposure to various concepts, ideas and techniques prevalent in landscape architecture.

UNIT-1**INTRODUCTION**

Introduction to landscape architecture; role of landscape design in architecture; Introduction to site planning, site analysis & landscape design. Site selection criteria for landscape projects.

UNIT-2**ELEMENTS IN LANDSCAPE DESIGN**

Hard and soft landscape elements, Plant materials, classification, characteristics, use and application in landscape design; Water and Landform.

UNIT-3**GARDEN DESIGN IN HISTORY**

Landscape and garden design in history - French, English, Japanese, Renaissance and Moghul . Study of notable examples.

UNIT-4**URBAN LANDSCAPE**

Significance of landscape in urban areas; road landscaping; waterfront development, landscaping of residential areas , Industrial landscaping .

UNIT-5**LANDSCAPE DESIGN**

Basic principles of planting design; Spatial development in landscape design; Detailed landscape design of any small project including paving and street furniture design

REFERENCES

1. Michael Laurie , An Introduction to Landscape Architecture, Elsevier, 1986.
2. Geoffrey And Susan Jellicoe, The Landscape of Man, Thames And Hudson, 1987.

ELECTIVE - PRODUCT DESIGN

OBJECTIVE:

Knowledge about the various styles of furniture manufactured in various materials is vital to an architect. Understanding the methods and techniques involved in furniture and product design.

UNIT-1

INTRODUCTION

An brief introduction to Product Designing – Various elements – History of Product Design – Definition of Product Design, understanding of Product Design - Purpose of Product Design – Role of Product Designers.

UNIT-2

HUMAN FACTORS

Definition of human factors, Application of human factors data. Human activities, their nature and effects. Man-machine system and physical environment. Human performance and system reliability. Information input and processing. Human control systems. Applied anthropometry – Human response to climate.

UNIT-3

ASPECTS OF PRODUCT DESIGN

Visual, Auditory, Tactual, Olfactory human mechanisms, Physical space and arrangement. Visual display, process of seeing, visual discrimination, quantitative and qualitative visual display, Alphanumeric and related displays, Visual codes and symbols.

UNIT-4

PRODUCT DESIGN

Form, Colour, Symbols, User specific criteria, Material, Technology and recyclability, Packaging. Multiple Utility oriented approach to Product Design.

UNIT-5

DESIGN EXERCISES

Design of Household elements, tools and devices – Spoon/Cutlery. Design of furniture – Chairs/Computer table, Kitchen racks, Cabinets etc. Design of Industrial Product – Watch Dial, Gear Wheels, Automobile Headlights etc. Element design for the physically and mentally different people.

REFERENCES:

1. Time Saver Standards for Interior Design
2. Andrew Alpern, Handbook of Speciality Elements in Architecture, McGrawhill Co., USA, 1982.
3. Francis D.K.Ching, Interior Design Illustrated, VNR Publications, New York, 1987.
4. An invitation to Design, Helen Marie Evans.

ELECTIVE – INTERIOR DESIGN

OBJECTIVE:

To develop an understanding of the methods, process and techniques involved in interior design.

UNIT-1

INTRODUCTION TO INTERIOR DESIGN

Definition of interior design - design of interior spaces as related to typologies and functions, themes and concepts - Study of the history of interior design through the ages relating to historical context, design movements and ideas etc.

UNIT-2

ELEMENTS OF INTERIOR DESIGN

Introduction to various elements in interiors like floors, ceilings, walls, staircases, openings, interior service elements, incidental elements etc. and various methods of their treatment involving use of materials and methods of construction in order to obtain certain specific functional, aesthetic and psychological effects - design projects.

UNIT-3

INTERIOR DESIGN SERVICES - LIGHTING, ACCESSORIES, LANDSCAPE

Study of interior lighting - different types of lighting, their effects, types of lighting fixtures. Other elements of interiors like accessories used for enhancement of interiors - paintings, objects de art, Interior landscaping - elements like rocks, plants, water, flowers, fountains, paving, artefacts, etc. their physical properties, effects on spaces and design values.

UNIT-4

FURNITURE DESIGN

Study of relationship of furniture to spaces and human movements furniture design as related to human comfort, function, materials and methods of construction, changing trends and lifestyles, innovations and design ideas - study on furniture for specific types of interiors like office furniture, children's furniture, residential furnitures, display systems, etc. - projects on furniture design.

UNIT-5

CASE STUDIES AND PROJECT

Study of Contemporary design in India and abroad with reference to interior design and decoration. Study of projects related to Residential Interiors, Commercial Interiors, Hospital Interiors etc. as regards to design scheme, functionalism, aesthetics, services integration, interior materials and details. Small scale interior projects such as Interior of an Office, Restaurant, Kids bedroom etc.

REFERENCES:

1. Francis D.K.Ching, Interior Design Illustrated, V.N.R. Pub. NY 1987.
2. An Invitation to design, Helen Marie Evans.
3. Steport - De - Van Kness, Logan and Szebely, Introduction to Interior Design Macmillan Publishing Co., NY 1980.
4. Inca/Interior Design Register, Inca Publications, Chennai 1989.
5. Kathryn B.Hiesinger and George H.Marcus, Landmarks of twentieth Century Design; Abbey Ville Press, 1993.
6. Syanne Slesin and Stafford Ceiff - Indian Style, Clarkson N.Potter, Newyork, 1990.
7. The Impulse to adorn - Studies in traditional Indian Architecture. - Editor Dr.Saranya Doshi, Marg Publications, 1982.

ELECTIVE – ARCHITECTURAL CONSERVATION

OBJECTIVES:

- . To introduce the various issues and practices of Conservation.
- . To familiarise the students with the status of conservation in India and the various agencies involved in the field of conservation worldwide and their policies.
- . To outline the status of conservation practice in the country and the various guidelines for the preservation, conservation and restoration of buildings.
- . To inform the students about the character and issues in our heritage towns through case studies.

UNIT 1

INTRODUCTION TO CONSERVATION

e conservation- Need, Debate and purpose.

Defining Conservation, Preservation and Adaptive reuse. Distinction between Architectural and Urban Conservation. International agencies like ICCROM , UNESCO and their role in Conservation

UNIT 2

CONSERVATION IN INDIA

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

UNIT 3

CONSERVATION PRACTICE

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

UNIT 4

URBAN CONSERVATION

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

UNIT 5

CONSERVATION PLANNING

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

REFERENCES:

1. Donald Appleyard, The Conservation of European Cities, M.I.T. Press, Massachusetts
2. James M. Fitch, Historic Preservation: Curatorial Management of the Built World by University Press of Virginia; Reprint edition (April 1, 1990)
3. A Richer Heritage: Historic Preservation in the Twenty-First Century by Robert E. Stipe
4. Conservation Manual , Bernard Fielden; INTACH Publication
5. B.K. Singh, State and Culture, Oxford, New Delhi
6. A.G. K. Memon ed. Conservation of Immovable Sites, INTACH Publication, N.Delhi.
7. Seminar Issue on Urban Conservation.

ELECTIVE- ARCHITECTURAL JOURNALISM

OBJECTIVE:

To understand and acquire knowledge in architectural journalism, Documentation and analysis of works.

UNIT-1

PHOTOGRAPHY & TECHNIQUES

Concept of color; concepts of lighting, distance, visual angle, frames; media; Types of camera, properties and priorities; Exposure, Aperture, Speed; Photographic films. Techniques of photography relevant to architecture.

UNIT-2

JOURNALISM

Analysis of recent historical and contemporary examples of written and journalistic criticism of architecture, including selected writings by Indian and overseas critics; discursive techniques, analysis of major critical themes, thematic categories in architectural writing over the past three centuries.

UNIT-3

ANALYSIS OF WORKS

Works of Indian and international writers and critics will be presented and discussed. Seminars on Indian architectural writers, journalists and critics

UNIT-4

FIELD PROGRAM

Exercise on integrating photography in architectural journalism.

UNIT-5

DOCUMENTING AND REPORTING

Preparation of documentaries and reports in any media such as Video, Still images, Reports, presentations etc., and present as a Seminar.

REFERENCES

1. Dave Sounders, Professional Advertising Photography, Merchurst, London 1988
2. Roger Hicks, Practical photography, Cassell, London 1996
3. Julian Calder and John Garrett, The 35mm Photographer's Handbook, Pan Books, London 1999
4. Julie Adair King, Digital Photography for Dummies, COMDEX, New Delhi 1998

ELECTIVE – ADVANCED STRUCTURES

OBJECTIVE:

To enable the analysis and design of masonry structures, slabs and advanced concrete structures.

UNIT-1**MASONRY**

Analysis and Design of masonry walls – use of Nomograms - code requirements

UNIT-2**CIRCULAR SLABS**

Design of RCC Circular slabs - simply supported and fixed slabs with uniformly distributed loads .

UNIT-3**FLAT SLABS**

Design principles for flat slabs- coffer slabs - code provisions.

UNIT-4**DESIGN OF FOOTINGS**

Types of footings – Design of wall footings – Design of Axially loaded rectangular footing (Pad and sloped footing). Design of Combined Rectangular footings.

UNIT-5**PRESTRESSED CONCRETE**

Principle of pre-stressing, methods of pre-stressing, advantages and disadvantages - applications to simple problems.

REFERENCES

1. P. Dayarathnam, 'Design of Reinforced Concrete Structures' second edition, Oxford and IBH publishing Co., New Delhi 1984.
2. Ashok K. Jain, Reinforced Concrete Limit State Design Nemchand and Bros., Roorkee, 1983.
3. N.L. Shinha and S.K. Roy, Fundamental of Reinforced Concrete, S.Chand and Company, New Delhi, 1983.

ELECTIVE – DISASTER MANAGEMENT

OBJECTIVE:

To create awareness about natural disasters-factors that cause them-and to foster knowledge about strategies for disaster prevention and management- understanding of fragile Eco-systems and factors that cause global climatic changes.

Overview of major natural disasters-design & planning solutions for disaster mitigation-organizational and management aspects.

UNIT-1

INTRODUCTION TO NATURAL HAZARDS

Understanding the effects of natural calamities such as floods, tropical cyclones, earthquakes, landslides, heat waves , droughts & Tsunami. Climate changes, global sea rise, coastal erosion, environmental degradation, large dams & earth tremors, roads buildings & landslides, urbanization & desertification, cyclone effects on coastal towns.

UNIT-2

CASE STUDIES OF NATURAL DISASTERS IN INDIA

Earthquakes at Bhuj, Latur, etc., Cyclones in coastal Andhra pradesh & Orissa, Landslides in Nilgiris, Himachal etc, Floods in Bangladesh, and Droughts in Rajasthan & Tsunami in Tamil Nadu.

UNIT-3

STRATEGIES FOR DISASTER PREVENTION & MITIGATION

Pre disaster, emergency, transition, and recovery. Disaster management plan, Natural crisis management committee [NCCM], State crisis management group [SCMG].

UNIT-4

DESIGN & PLANNING SOLUTIONS

Design guidelines for disaster proof construction at appropriate situations.-Engineering, architectural, landscape & planning solutions for different types of calamities.- Norms, standards and practice procedures for shelter & settlement. Seismic repairs & retrofitting of damaged and undamaged buildings.

REFERENCES:

1. Earthquake Resistant Design for Built Environment. Compiled notes by Department of Architecture and Planning, IIT-Roorkee. December 2003.
2. Das P.K, A.R.Ramanathan, An Introduction to Seismic Safety in Architecture, 2007
3. Paul D.K. Singh, Yogendra, Short Term Training Course on Earthquake Resistant Design of Buildings, ADPC, IIT Roorke & DMCC, Dehradun, 2002
4. S.Rajagopal - *Problems of housing in cyclone prone areas* - SERC, Vol.2, Chennai, 1980
5. Office of the UN Disaster Relief Co-ordinator - *Disaster prevention and mitigation*, Vol 12, Social and Sociological aspects - UNO, NY, 1986
5. F.C. Cony et.al - *Issue and problems in the prevention of disaster and housing* - A review of experiences from recent disasters - Appropriate reconstruction and training information centre, 1978
6. S.Ramani, *Disaster management - Advanced course on modern trends in housing* - SERC, Vol 2, Chennai, 1980

ELECTIVE – REGIONAL PLANNING

UNIT 1 TO 5

Origin, evolution and history of human settlements – planned cities in india and the world – town definitions and classifications, terminologies, Urban design concept and theories, Physical, Environmental, Infrastructure, Housing aspects of urban planning, planning theories, Master plans and development plans, survey and analysis in town planning, planning standards – resource allocation, Agencies involved in planning, legal aspects of planning, Acts and Polices.

REFERENCES:

1. Babur Mumtaz and Patweikly, Urban Housing Strategies, Pitman Publishing, London, 1976.
2. Geoffrey K.Payne, Low Income Housing in the Development World, John Wiley and Sons, Chichester, 1984.
3. John F.C.Turner, Housing by people, Marison Boyars, London, 1976.
4. Martin Evans, Housing, Climate and Ocmfort, Architectural Press, London, 1980.
5. Forbes Davidson and Geoff Payne, Urban Projects Manual, Liverpool University Press, Liverpool, 1983.

SEMESTER 7

15ARP711 PRACTICAL TRAINING I

OBJECTIVE:

The main objective of the training is to expose students to the practical aspects of the Architectural Profession.

TOPICS

The choice of the place of training shall be Architectural Firms, Organizations, Development Authorities, etc. which are headed by eminent architects. The choice of the office shall be approved by the Training Committee of the Faculty of Architecture. The practical training, primarily involves learning in the office and on the site. The progress of training shall be assessed periodically by reports from the employers of trainees and by the Training Committee of the Faculty of Architecture.

The evaluation of the practical training will be based on the following features.

- Client meeting and interaction
- Site visits, verification and measurements
- Concept and scheme development
- Construction documents / drawings
- Training portfolio I

SEMESTER 8

15ARP811 PRACTICAL TRAINING II

OBJECTIVE:

The main objective of the training is to expose students to the practical aspects of the Architectural Profession.

TOPICS

The choice of the place of training shall be Architectural Firms, Organizations, Development Authorities, etc. which are headed by eminent architects. The choice of the office shall be approved by the Training Committee of the Faculty of Architecture. The practical training, primarily involves learning in the office and on the site. The progress of training shall be assessed periodically by reports from the employers of trainees and by the Training Committee of the Faculty of Architecture.

The evaluation of the practical training will be based on the following features.

- Independent handling of small projects
- Contribution in medium and large scale projects
- Training portfolio II

SEMESTER 9

15ART901 DEVELOPMENTAL RULES AND REGULATIONS

OBJECTIVE:

To develop understanding of the duties and liabilities of an architect along with knowledge of bye-laws that relate to the building & the environment in the Indian context.

UNIT-1

LEGISLATION - CORPORATION AREAS

Chennai Corporation Building Rules 1972, Development control Rules for Chennai Metropolitan Area 1990

UNIT-2

LEGISLATION - PANCHAYATS

The Panchayat Building Rules 1942

UNIT-3

LEGISLATION - INDUSTRIES AND FACTORIES

The Tamil Nadu Factory Rules 1950

UNIT-4

EMERGING AREAS OF IMPORTANCE

Role of urban Arts Commissions - need for special rules on architectural control and development

UNIT-5

SPECIAL LEGISLATION

Environmental Acts and Laws - Special Rules governing Hill Area Development - coastal area development and management - Heritage Act of India - Consumer protection act and their relevant provisions

REFERENCES:

1. Publications of COA, IIA Hand book on Professional Practice, The Architects publishing Corporation of India, Bombay 1987
2. D.C. Rules for Chennai Metropolitan Area 1990
3. T.N.D.M. Building Rules, 1972
4. T.N.P. Building Rules 1942
5. Chennai City Corporation Building Rules 1972
6. Environmental Laws of India - by Kishore Vanguri, C.P.R. Environmental Education Centre, Chennai
7. The Tamil Nadu Hill Areas Special Building Rules - 19
8. Heritage Act
9. Consumer Protection Act
10. Indian Easements Act

15ART902 URBAN DESIGN

OBJECTIVE:

To provide knowledge of design of urban spaces including renewal and development.

UNIT-1**INTRODUCTION**

Relationship between Architecture, Urban Design and Town Planning - Perception of city form and pattern – Townscape elements

UNIT-2**ROLE OF PUBLIC SPACE IN URBAN AREAS**

Introduction to public spaces. Evolution of public spaces. Comparative analysis of public spaces, their organization and articulation.

UNIT-3**ORGANIZATION OF SPACE**

Understanding, organizing and articulation of spaces for residential, commercial, industrial and recreational areas.

UNIT-4**URBAN RENEWAL**

Causes and consequences of urban blight and obsolescence – slums and shanties – methods of conducting surveys, analysis and presentation of data, prevention of formation of slums and squatter settlements. Environmental and management issues.

UNIT-5**URBAN REDEVELOPMENT**

Objectives, surveys programs of urban redevelopment and public involvement and participation.

REFERENCES

1. Gordon Cullen - The concise TOWNSCAPE - The Architectural Press - 1978
2. Lawrence Halprin - CITIES - Reinhold Publishing Corporation N.Y. 1964.
3. Gosling and Maitland - URBAN DESIGN - St.Martin's Press, 1984.
4. Jonathan Barnett - An Introduction to Urban Design - Harper & Row, Publishers, N.Y.,1982

15ARS921 ADVANCED DESIGN – URBAN

OBJECTIVES:

Understanding a Design Programme and the Components of the Design Problem.
Investigate and Acquire the Knowledge to address the various aspects of the Design Problem
Acquire the Discipline to follow the Design Process through its Stages and arrive at completion.
Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media

TOPICS

Design of advanced and complex problems - comprising group multi storeyed structures and infrastructure - with regard to climatic conditions, orientation, services, circulation problems relating to large developments Design and detailing for movement and use by handicapped persons within and around building and campuses to be addressed – examples: campus design, urban centers, Housing for Senior citizens.

Time problem using computer aided design such as AUDITORIUM, THEATRE etc., and Working Drawings to be done for the design projects.

REFERENCES

1. Edward D Mills, planning, 4 volumes, newness Butterworths, London 1976
2. E and OE Planning London, Books Ltd 1973
3. National Building Code ISI
4. De Chira and Callendar- Time saver standards for Building Types - Mc Graw Hill Co., 1973.

15ARS922 ESTIMATION AND COSTING

OBJECTIVES:

To provide the student adequate knowledge to write the specifications for a given item of work, to work out the unit cost of individual items based on their specifications and arrive at the overall cost of the project.

UNIT-1

SPECIFICATION

Necessity of specification, importance of specification, - How to write specification, - Types of Specification, -Principles of Specification writing, - Important aspects of the design of specification – sources of information – Classification of Specification.

UNIT-2

SPECIFICATION WRITING

Brief Specification for 1st class, 2nd class , 3rd class building. Detailed specification for earthwork excavation, plain cement concrete, Reinforced concrete, first class and second class brickwork, Damp proof course, ceramic tiles/marble flooring and dadoing, woodwork for doors, windows frames and shutters, cement plastering, painting & weathering course in terrace.

UNIT-3

ESTIMATION

Types & purpose, Approximate estimate of buildings – Bill of quality, - Requirement for preparing estimation, factors to be considered, - principles of measurement and billing, contingencies, Elementary billing and measurement of basic materials like brick, wood, concrete and unit of measurement for various items of work – abstract of an estimate.

UNIT-4

DETAILED ESTIMATE

Deriving detailed quantity estimates for various items of work of a building. Like earthwork excavation, brick work, plain cement concrete, Reinforced cement concrete works, wood work, iron works, plastering, painting, flooring, weathering course for a single storied building using centre line method and long and short wall method.

UNIT-5

COST ESTIMATING & COST BUDGETTING

Function of Cost planner – liaison with consultant, operation cost Exercise in variation, Cost adjustment and Cost analysis. Role of various financial agencies for building & land development. Economic feasibility reports – valuation, depreciation and its implications.

REFERENCES

1. Dutta, Estimating and Costing, S.Dutta and Co., Lucknow
2. S.C.Rangwala, Elements of Estimating and Costing, Charoter Publishing House, India.
3. W.H.King and D.M.R.Esson, Specification and Quantities for Civil Engineers, The English University Press Ltd.
4. T.N.Building Practice, Vol.1, Civil, Govt. Publication.P.W.D. Standard specifications, Govt. Publication.

Elective - PROJECT MANAGEMENT

OBJECTIVE:

To provide insight into tools and techniques of project management for the construction industry.

UNIT-1

INTRODUCTION TO PROJECT MANAGEMENT

Introduction to project Management concepts - background of management, purpose, goal and objectives, characteristics of projects and different aspects of management.

Traditional management system, Gantt's approach load chart, progress chart, bar chart merits and limitation. Schedule time, estimates units

UNIT-2

PROJECT PROGRAMMING

Project programming, resources balancing, phasing of activities, programs, scheduling, project control, reviewing, updating and monitoring. Exposure to relevant software such as MS Project, Primavera, Introduction to modern management, concepts, uni-dimensional management techniques - Introduction to PERT and CPM introduction to network concepts, network elements and inter-relationships.

UNIT-3

NETWORK TECHNIQUES

Network techniques, network logic - interrelationships, activity information, data sheets, development of network. CPM for management, CPM network analysis, identification of critical path float computation result sheets.

UNIT-4

PERT NETWORK

PERT Network, introduction to the theory of probability and statistics, probabilistic time estimation for the activities of PERT network

UNIT-5

PROJECT COST

Introduction to two dimensional network analysis, activity cost information. Cost time relationship, crashed estimates for the activities, compression potential, cost slope, utility, data sheet, project direct cost and indirect cost. Crashed programmes, network compression least cost solution least time solution, optimum time solution. Network techniques, PERT/CPM, generating alternative strategies using computers

REFERENCES

1. Project management for design professionals By William Ramroth
2. Jerome D. Wiest and Ferdinand K. Levy, A Management Guide to PERT/CPM, Prentice Hall of Indian Pub.Ltd. New Delhi, 1982.

Elective - CONSTRUCTION TECHNOLOGY

OBJECTIVES:

- To study the advancements in construction with concrete for large span structures.
- To familiarize the students with the manufacture, storage and transportation of concrete.
- To inform the various equipment used in the construction industry and the criteria for choice of equipment.
- To familiarize the students with an overview of construction management, planning and scheduling

UNIT 1

GENERAL BUILDING REQUIREMENTS

Classification of buildings - Sites and Services - Requirements of parts of buildings.

UNIT 2

CONSTRUCTION SYSTEMS

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

UNIT 3

CONSTRUCTION PRACTICE

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

UNIT 4

CONSTRUCTION EQUIPMENT

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

UNIT 5

CONSTRUCTION MANAGEMENT

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

REFERENCES:

1. R. Chudley, Construction Technology, Longman Group Limited, England, 1985
2. R. Barry, The Construction of Buildings, The English Language Book Society and Crosby Lockwood, Staples, London, 1976
1. National Building Code of India, 1983
2. Frank R. Dagostino, Materials of Construction – Details given Reston Publishing Company, nc.Virginia, 1976.
- 3.M. Mohsin, Project Planning and Control, Vikas Publishers, New Delhi, 1983

Elective- INTEGRATED BUILDING MANAGEMENT SYSTEM

OBJECTIVE:

To familiarize the student with minimum safety requirements for a high rise building with exposure to NBC.

To study fire alarm systems and fire suppression systems and their installation..

UNIT 1

SAFETY REQUIREMENTS

Minimum safety requirements for a building, particularly for a high rise building as per the National Building Code.

UNIT 2

FIRE ALARM SYSTEMS

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

UNIT 3

FIRE SUPPRESSION SYSTEMS:

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

UNIT 4

SECURITY SYSTEMS

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

UNIT 5

AUTOMATION SYSTEMS

The objectives of the Building Automation system (BAS), the list of utility, safety and security systems that are generally monitored and controlled through IBMS, the various components of IBMS, types of integration with the utility, safety and security systems and the basic knowledge on how they are designed and installed.

REFERENCES:

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

REFERENCES:

1. The Principles and Practice of Closed Circuit Television – Author: Mike Constant and Peter Turnbull
2. Rules of Automatic Sprinkler Installation – 2nd Edition – Published by Tariff Advisory Committee.
3. Fire Suppression Detection System – Author : John L. Bryan
4. Design and Application of Security/Fire Alarm system – Author: John E. Traister.
5. CCTV Surveillance – Author: Herman Kruegle
6. Security Systems and Intruder Alarm Systems – Author: Vivian Capel

Elective -EARTH QUAKE RESISTANCE ARCHITECTURE

OBJECTIVES:

To understand the fundamentals of Earthquake and the basic terminology

To inform the performance of ground and buildings.

To familiarise the students with design codes and building configuration

To understand the various types of construction details to be adopted in a seismic prone area.

UNIT 1

Fundamentals of earthquakes

- a) Earth's structure, seismic waves, plate tectonics theory, origin of continents, seismic zones in India.
- b) Predictability, intensity and measurement of earthquake
- c) Basic terms- fault line, focus, epicentre, focal depth etc.

UNIT 2

Site planning, performance of ground and buildings

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

UNIT 3

I. Seismic design codes and building configuration

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

UNIT 4

II. Various types of construction details

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

UNIT 5

III. Urban planning and design

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

REFERENCES

1. Guidelines for earthquake resistant non-engineered construction, National Information centre of earthquake engineering (NICEE, IIT Kanpur, India)
2. C.V.R Murthy, Andrew Charlson. "Earthquake design concepts", NICEE, IIT Kanpur India.
3. Ian Davis (1987) "Safe shelter within unsafe cities" Disaster vulnerability and rapid urbanisation, Open House International, UK
4. Socio-economic developmental record- Vol.12, No.1, Jan-Feb 2005
5. Learning from Practice- A review of Architectural design and construction experience after recent earthquakes- Joint USA-Italy workshop, Oct.18-23, 1992, Orvieto, Italy.

Elective - DIGITAL ARCHITECTURE

OBJECTIVE:

To develop the advanced knowledge and skills related to building visualization and rendering and create simple multimedia presentations, brochures, videos as required in architectural practice.

TOPICS

1. Advanced techniques in rendering with differential lighting for realistic rendering
2. Advanced techniques in building information modeling
3. Animations and Walkthroughs
4. Simulating gravity, wind and other effects in the scene, distributed rendering
5. Performance Analysis on Building Model using softwares.

Recommended Software: Auto desk Revit, 3ds Max, rhino, lumion, vector works, BIM, Ecotect, v-ray rendering techniques

REFERENCES

1. Rendering Techniques for mixed reality, Thomas Grlinger, Daniel Dauch, Andre Stork, Springer, Berlin, October 2009
2. 3D Computer Animated Walk Throughs, Clark Cory, Scott Meador, William Rosi, McGraw Hill 2009.
3. The Animation Book: A complete guide to animation and film making, Kit Laybourne, Three Rivers Press, December 1998
4. Creating a website, Matthew McDonald, Pogue Press, January 2009s

Elective- ADVANCED CONCRETE TECHNOLOGY

UNIT 1

CONCRETE MAKING MATERIALS

Aggregates classification, IS Specifications, Properties, Grading, Methods of combining aggregates, specified gradings, Testing of aggregates. Cement, Grade of cement, Chemical composition, Testing of concrete, Hydration of cement, Structure of hydrated cement, special cements. Water Chemical admixtures, Mineral admixture.

UNIT 2

CONCRETE

Properties of fresh concrete, Hardened concrete, Strength, Elastic properties, Creep and shrinkage, Variability of concrete strength, durability of concrete.

UNIT 3

MIX DESIGN

Principles of concrete mix design, Methods of concrete mix design, Testing of Concrete. Statistical quality control- sampling and acceptance criteria.

UNIT 4

SPECIAL CONCRETE

Light weight concrete, Fly ash concrete, Fibre reinforced concrete, Sulphur impregnated concrete, Polymer Concrete, Super plasticised concrete, Hyper plasticized concrete, Epoxy resins and screeds for rehabilitation - properties and applications - high performance concrete. High performance fiber reinforced concrete, self-compacting-concrete.

UNIT 5

CONCRETING METHODS

Process of manufacturing of concrete, methods of transportation, placing and curing. Extreme weather concreting, special concreting methods. Vacuum dewatering - underwater concrete, special form work.

References:

1. Neville, A.M., Properties of Concrete, Prentice Hall, 1995, London.
2. Shetty M.S., Concrete Technology, S.Chand and Company Ltd. Delhi, 2003.
3. A.R.Santhakumar ;"Concrete Technology",Oxford University Press,2007.
4. Rudhani G. Light Weight Concrete Academic Kiado,Publishing Home of Hungarian Academy of Sciences, 1963

Elective - REAL ESTATE MANAGEMENT

Objectives:

- * To give a overview of real estate development and market potential
- * Stimulating an awareness of the issues involved in international real estate
- * Developing analytical and methodical skills that are critical for management decision making an problem solving roles
- * To gain knowledge about the leverage that the real estate could provide in the overall development

UNIT 1

REAL ESTATE DEVELOPMENT

Fundamentals of real estate development – concepts – techniques – recognizing institutional elements – issues encountered in various phases of development like the site evaluation and land procurement – lease hold and free hold property – development team assembly – market potential – demand estimation study – development scheme – construction and project management – Project marketing

UNIT 2

DEVELOPMENT ANF PROJECT FINANCING

Project feasibility – options – development financing – asset disposal and redevelopment options – analysis of development sites and case studies – integrated case study on specific development project – reviewing and analysis – problems and strategic issues

UNIT 3

URBAN POLICY AND REAL ESTATE MARKET

Impact of government regulations and public policies on real estate markets – urban land rate and location theories – Land use structures – community and neighborhood dynamics – degeneration and renewal in urban dynamics – private public participation- government policies – public and private housing and fiscal policy – Property taxation – local government finance

UNIT 4

CORPORATE REAL ESTAT EMANAGEMENT

Strategic plans to align real estate needs with corporate business plans – performance measurement techniques – identify assets acquisition or disposal – methods for enhancing values through alternative – efficient source utilization or improving user satisfaction

SEMESTER 10

15ARS1021 ARCHITECTURAL THESIS

OBJECTIVE:

All the five years of Architectural Design culminate in the Thesis Project to motivate students to involve in individual research and methodology; this is to train in handling projects independently.

UNITS: 1 to 5

The main areas of study and analysis shall be Architecture, Urban design, Urban renewal and Human settlements, Environmental Design, Conservation, Landscape Design, Housing etc.. However, the specific thrust should be architectural design of built environment.

Research Methods as applicable to architectural studies is to be taught as part of Thesis.

METHOD OF SUBMISSION

The Thesis Project shall be submitted in the form of drawings, project report, physical/ digital models, presentations and walkthroughs.

REFERENCES

1. E and OE Planning London Books Ltd 1973
2. National Building Code ISI
3. De Chiasa and Callendar- Time saver standards for Building Types - Mc Graw Hill Co., 1973.
4. Edward D Mills, planning, 4 volumes, newness Butterworths, London 1976

Elective - INDUSTRIAL ARCHITECTURE

UNIT 1

INTRODUCTION

Five year plans and thrust in housing – Issues in Urban Housing – use of modern building materials – application of modern technology – meaning of industrial building system.

UNIT 2

APPLICATION OF INDUSTRIAL BUILDING SYSTEM

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

UNIT 3

MODULAR CO-ORDINATION AND INDUSTRIALISED SYSTEM

Concept and definition of Modular dimensional discipline – Advantages and Limitations of modular principle – Components of residential buildings – precast elements.

UNIT 4

PRE-FABRICATION SYSTEM

Objective and necessity – Off site on site prefabrication elements and construction joints – architectural and technical limitations.

UNIT 5

PROCEDURES AND ORGANISATION

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

REFERENCES:

1. Industrial Building and Modular Design Henrik Missen – C & CK, UK 1972.
2. Albert G.H.Dietz, Laurence Secotter – “Industrialized Building Systems for Housing” – MIT, special summer session, 1970 USA.
3. “Industrialized Building Construction” – Proceedings of National Seminar, Nov-17-18, 2000, Indian Concrete Institute, Mumbai.
4. “Innovative Construction Materials” – Proceedings of Seminar, Jan 20-21,2001, Veermata Jeejabai Technical Institute, Mumbai.

ELECTIVE - GREEN BUILDING

Objective:

To develop and acquire knowledge about environment and ecosystems, about the use of energy efficient technologies in contemporary buildings – use of natural materials and water conservation technique. Rating of current buildings

UNIT 1

SUSTAINABILITY AND GREEN BUILDING

Understanding of food and energy cycle – Principles of sustainability – Natural ecosystem – Elements of green development – Introduction to green architecture – green building design – benefits – rating systems – LEED, GRIHA, BREEM, ECBC

UNIT 2

SUSTAINABLE STRATEGIES AND DEVELOPMENT

Sustainable design concepts – strategies – Design principles – Active and passive techniques – land use patterns – site development – site selection – adaptive reuse – existing buildings up gradation

UNIT 3

ENERGY – USAGE AND REGENERATION

Water – consumption – domestic usage – efficiency in usage – low flow plumbing fixtures – water appliances – rain water harvesting – reuse of gray water – energy efficiency – optimizing building envelopes configuration – renewable power- Towards net zero energy building - use of photovoltaic- automation for efficient usage – smart buildings

UNIT 4

BIO DEGRADABLE MATERIALS AND RECYCLING

Concept of embodied energy – performance and life cycles – building materials – selection of sustainable materials – recycling waste – collection and disposal – appropriate technologies – use in landscape.

UNIT 5

ENVIRONMENTAL IMPACT ASSESSMENT.

Environmental Impact Assessment – Internal frame works & Assessment Tools.

References

1. Anna ray – Jone – Sustainable architecture in japan – The green buildings of Nikken seiki, Wiley – academy 2000
2. Architecture and the environment – bio climatic building design – David Lloyd (Laurence king publishers, London 1998)
3. Sustainable Architecture low tech houses – Charles Broto & Arian Mostedi Pub : joseph Ma Minguet 2002.
4. Energy efficient buildings in India – Milli majundar. TER publication and ministry of non conventional energy sources, 2001
5. Ecology of the sky – Ivor Richards , The Image publishing groups , 2009

Elective - RESEARCH METHODS

Objective:

To learn the importance of and undertake research and field studies and understand its applications in architectural design. TO understand the different methods and the techniques as relevant to the design profession and apply them in evaluation and appraisal of architectural design projects.

UNIT 1

Importance. Purpose and scope of research and field studies. Application in architecture in terms of design , technology, environment, economic and behavioral areas.

UNIT 2

Sequence and methods of research, Identification of problem, Hypothesis formulation objectives and methodology.

UNIT 3

Understanding and applying qualitative analytical interpretative correlation, quasi experimental, experimental, simulation and modeling techniques in Architectural design.

UNIT 4

Pilot studies field surveys and collection of samples – physical, Architectural, Environmental organizational, preparation and Analysis of Data sheets and Questionnaires.

UNIT 5

Preparation and analysis of data sheets and questionnaires. Arriving at conclusions from the research at fiels studies. Report writing and publications.

References:

- 1.Knight. A and Ruddock L., “Advanced Research Methods in build Environment”, John Wiley & Sons 2008.
- 2.Groat L, and Wang D, “Architectural Research Methods”. John Wiley & Sons, 2002.
- 3.Gibbs J P “ Urban Research Methods”, (rev.ed) Von Nostrand 1988.
- 4.Kothari C R, Research Methodology – Methods and Techniques”, New Age Interntional 2004.
- 5.Khanzode V V, “ Research Methodology – Techniques and Trends”, APH Publishing, 1995.

Elective - MEDICAL ARCHITECTURE

Objectives:

The health care industry, or medical industry, is an aggregation of sectors within the economic system that provides goods and services to treat patients with curative, preventive, rehabilitative, and palliative care. The health care industry is one of the world's largest and fastest-growing industries.

UNIT 1

Introduction to health care industry, demand of the health care industry.

UNIT 2

Health care Industry - United Nations International Standard Industrial Classification (ISIC) - Hospital activities, Medical and dental practice activities and other human health activities.

UNIT 3

Health care Industry – Global Industry Classification Standard and the Industry Classification - Health care equipment & services and Pharmaceuticals, biotechnology & related life sciences.

UNIT 4

Health care Industry – Delivery System – Primary, Secondary, Tertiary and Quaternary, Community Health

UNIT 5

Modern concepts in planning, designing, equipping and commissioning of all such built environments which are associated with the health care industry. Future aspects of planning health care facilities and service

References:

- 1.Kunders .G.D, Hospitals – Facilities planning and Management, Tata Mcgraw Hill Publication, 2008
- 2.Joseph DeChiara, Julius Panero. Time-Saver Standards for Interior Design and Space Planning, McGraw-Hill Education, 2001
- 3.Peter Stone, British hospital and health-care buildings: designs and appraisals, Architectural Press, 1980
- 4.Joint Commission International Accreditation Standards for Hospitals, 2002
- 5.Carles Broto, New Health Care Facilities, Links International, 2009

Elective - RETAIL AND EXHIBITION DESIGN
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Objective:

The course aims at providing practitioners the fundamental and essential knowledge on exhibition design principles.

UNIT 1

Introduction **Discussion: The terms 'exhibition' and 'retail' and 'Space & Form- Space Layout'**

UNIT 2

Elements of environmental design: from flat graphics to 3D

UNIT 3

Ergonomics& Accessibility

UNIT 4

Exhibition Design: Form, Feel & Function, Introduction to aesthetic, form and functional aspects of basic exhibition design ,
Identification of critical issues through research , Execution of the design processes

Application of visualization skills

UNIT 5

Introduction to marketing theory / retail branding Marketing theory. Display of case studies.

References:

1. Pam Locker, BASICS INTERIOR DESIGN 02 – EXHIBITION DESIGN, Published by AVA Publishing.
2. Lynne Mesher, BASICS INTERIOR DESIGN 01 – RETAIL DESIGN, Published by AVA Publishing.

Elective - PROGRESSIVE ARCHITECTURE
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OBJECTIVE:

To understand and acquire knowledge in advanced architectural concepts and ideologies.

UNIT-1**Futuristic Vision**

Future concepts as envisioned by Antonio Saint Elia, Frank Lloyd Wright, Corbusier.

UNIT-2**Futuristic Trends**

Future trends being evolved by Marcos Novak, Neil Denari, Greg Lynn, Toyo Ito and others.

UNIT-3

Architectural Concepts and Ideas

Evolution of contemporary architectural concepts such as biomimcry, adaptive reuse, low cost development and urban regeneration.

UNIT-4**Materials, Technology and Systems**

Futuristic building materials, building tectonics and systems of the future.

UNIT-5**Energy Integration**

“Zero energy” and “Energy +” buildings with emphasis on an integrated approach.

REFERENCES

1. Bell, J., “21st Century House”, Laurence King Publishing, 2006
2. Jodidio, P., “Building a New Milleneum”, Vol.1 Taschen, 2003
3. Jodidio, P., “Architecture Now”, Vol. 2, Taschen, 2004

Elective - HGH RISE BUILDINGS

Objective :

To understand the various types of multistories buildings –its structural systems and building service systems.

UNIT 1

Introduction to High rise structures

Urban environment and physical planning considerations – architectural design considerations – space planning – planning building services – advanced service systems – automation – Bye laws and codes applicable – for every structure and service section

UNIT 2

Tall building types and floor systems

Classification of tall buildings – types – shear frames ,interacting systems – Tubular systems.

Composite steel floor systems , pre stressed and post tensioned concrete floor systems – examples

UNIT 3

Lateral load resisting systems

Braced frames – moment resisting frame systems – core and out trigger systems – benefits and drawbacks – tubular system – Hybrid systems – examples

UNIT 4

Services for Tall buildings

Express elevators- Sky lobbies – service floor etc – Water supply system- skip stage plumbing – energy conservation methods – location and sizing of water tanks – wet risers, sumps , smoke detectors , alarms ,sprinkler systems – fire escape stairs – fire resistant doors – Fire resistant materials – fire fighting equipments.

REFERENCES :

- 1.Bennetts , Ian etal – tall building structural systems
- 2.Proceedings of the council for tall buildings – Vol 1 to 10
- 3.NBC