B.ARCH

BACHELOR OF ARCHITECTURE

[5 YEAR FULL TIME UNDER GRADUATE DEGREE PROGRAM]

RECOGNISED BY THE COUNCIL OF ARCHITECTURE, NEW DELHI

REGULATIONS, CURRICULUM AND SYLLABUS

2017 – 2018Batch (New Syllabus)

CHOICE BASED CREDIT SYSTEM

(CBCS)

FACULTY OF ARCHITECTURE

KARPAGAM ACADEMY OF HIGHER EDUCATION
(Deemed to be University Established Under Section 3 of UGC Act 1956)
Pollachi Main Road, Eachanari Post, Coimbatore – 641 021. INDIA

B.ARCH SYLLABUS : 2017-2018 BATCH

SEMESTER 1

17ART101	THEORY OF ARCHITECTURE I								SEMESTER-I
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	2	T	0	P/S	0			Credits	2

COURSE OBJECTIVE

- To introduce architecture as a discipline and to sensitize the students to the various functional aspects of architecture
- To make them understand the meaning of Architecture and its visual aesthetic sense
- To introduce the students to the ordering elements, principles of architecture
- To gain Knowledge about the organization principles of Form and Space
- To gain Knowledge about the theoretical aspects of Design
- To gain knowledge and understand the vocabulary of the architectural language through the analysis of selected buildings.

COURSE OUTCOME:

1. Student will understand on the definition of architecture; elements of architectures of form.
2. Student will be exposed to the principles of architecture and applications of the same in buildings and spaces.
3. Student will understand the meaning of character and style of buildings with examples.
4. Student will understand on ideologies and philosophies of architectures of contemporary
5. Student will undertand about the theoretical aspects of Architectural Design
6. Student will gain Knowledge in the Vocabulary of the Architectural Terms and languge

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.

UNIT- 2

Ordering Elements

Point, line, plane, form, shape, motif, pattern, light, color, 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

UNIT- 3

Principles of Architecture

– 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- 4

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- 5

Circulation and Organisation

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

SUGGESTED READINGS

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.

17ART102	HISTORY OF ARCHITECTURE I								SEMESTER-I
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	3	T	0	P/S	0			Credits	3

COURSE OBJECTIVE :

- To Gain the understanding of the Architecture from the prehistoric age
- To gain knowledge of the ancient civilization of the World
- To gain knowledge of the ancient civilization of Egypt
- To gain knowledge on the Social fabric, Relevance design principles
- To gain knowledge of the construction materials and methods
- To gain knowledge on the different architectural styles across the world

COURSE OUTCOME :

1. An understanding about the spatial and stylistic qualities associated with architecture.
2. An understanding of the diversity of architecture in the world
3. An understanding to appreciate particular culture, symbolic, spatial and material qualities
4. An understanding about architecture and cities as givers of meaning and continuity.
5. An Underatanding about the Greek Style through examples
6. An Understanding about the Egyptian, Mayan and Chinese architecture styles

UNIT -1

INTRODUCTION AND WEST ASIAN ARCHITECTURE

Relevance of History - Old Stone Age - the Middle Stone age – The New Stone Age - Development of Shelter. – catalhuyuk, 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, Erecthion, , Theatre Epidaurous.

SUGGESTED READINGS:

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

.17ART103	MATHEMATICS IN ARCHITECTURE									SEMESTER-I
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	0			**Credits**	**2**

COURSE OBJECTIVE :

- To develop analytical skills needed for problem solving a
- To develop creative thinking as well as an understanding of Geometry
- To develop the application of mathematical concepts in architecture.
- To develop the skill of Parmatric architecture
- To develop the Skill of programming by Mathemeatical Approach
- To develop an understanding of platonic solids through physical model making

COURSE OUTCOME:

1. Student will be trained on the basis of the topics of Mathematics necessary for effective understanding of architecture subjects.
2. Students will understand the advanced level applications by using coordinate geometry
3. Students will understand the Statistical charts and and variance for applications in architecture
4. Students will develop the skill and understating of Area & volume calculations for Applications in Architectural design
5. Students will understand the historical applications of mathematics and use of it in current context
6. Student would have an understanding of the basics of parametric design concept 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.

SUGGESTED READINGS:

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

17ARP111	ART,MODEL MAKING AND PRESENTATION								SEMESTER-I
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	1	**T**	0	**P/S**	4			**Credits**	**3**

COURSE OBJECTIVE:

- To introduce the vocabulary of art and the principles.
- To inform students about the various art forms through the ages within the cultural contexts.
- To develop presentation skills, visual expression and representation
- To Improve the imaginative thinking and creativity
- To develop the knowledge of Visualisation by simple Two & Three dimensional excercises
- To develop the art skill by hands on working with various mediums and materials.

COURSE OUTCOME:

1. Student will understand the vocabulary of art and form principles
2. Student will understand to appreciate the art forms and analyse and apply the concept in architecture
3. Student will gain mastery in sketching, visualizing and expression through manual drawing, sensitized to culture, craft and context.
4. Student will gain Skill Development in Handling Materials and in Making Products and models.
5. Student will gain knowledge about various mediums of presentation
6. Student will gain deep understanding about the art Appreciation and essence of the Aesthetic value

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: Building exterior – models – composition of forms
Type 4: Building interiors – Anthropometry – Space standards

Making Scaled models based on architectural concepts, anthropometric, proportions,Interiors etc
Making compositions of Design presentations using manual rendering techniques and computer aided techniques.

Suggested Presentation excercises :
Type 1 : Poster Design
Type 2 : Sketch of building , form exploration and concept sketches – manual presentation
Type 3 : Presentations using Design softwares

SUGGESTED READINGS:

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
10. Model to design – Damdi, Damdi Publications
11. Architectural Models2 ,Damdi, Damdi Publications

17ARS121	ARCHITECTURAL DESIGN- I								SEMESTER-I
Marks	Internal	140	External			210	Total	350	Exam Hours	6
Instruction Hours /week		L	3	T	0	P/S	10		Credits	7

COURSE OBJECTIVE:

- To provide a comprehensive introduction to the discipline of Architectural Design Fundamentals
- To deveop the skill in Visual Arts.
- To encourage creative thinking and design analysis by various Excercises
- To develop the dialogue & Communication visually & Verbally
- To deveop the graphic thinking ability and provide a platform for graphical representation.
- To develop an understanding of the design process and develop aesthetic judgment.

COURSE OUTCOME:

1. Student will understand the qualities of different elements as well as their composite fusions.
2. Student will be able to engage and combine the elements of design in spontaneous as well as intentional ways in order to create desired qualities and effects.
3. Student will develop these required skills – observation / analysis / abstractions / interpretation / representations / expressions through models and drawings
4. Student will be able to develop the confidence to communicate effectively by explaining their own design product
5. Student will deveop the art of Design Communication through his expression
6. Student will understand wth whole design Design process from the concept tot the final product.

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 OF DESIGN

Introduction to Elements of design. -Properties, qualities, and characteristics of (i) line, (ii) direction, (iii) shape, (iv) size, (v) texture, (vi) space (vii) time and motion (viii) value and (vii) colour. Exercises involving the same .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 PRINCIPLES OF DESIGN:

The principles of design relationships/ Composition – Unity & Harmony, Balance, Scale & Proportion, Contrast and Emphasis, and Rhythm. Exercises involving the same.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 EXCERCISES AND MODEL:

Design thought process – Sketching various process designs- Subjective – Objective – priciples of design – oriented design –design context – Shape grammer – Fluidity – Parametric – Biomimicry etc -evolution of design – model making

UNIT -5 INTRODUCTION TO ARCHITECTURAL DESIGN:

Lecture introduction into the discipline of architecture, highlighting fundamentals that contribute to the complex totality that constitute a work of architecture: Placing Architecture (Site, Orientation, Climate, City and Landscape); History & Precedent; Materials & Construction; Representation and Realization. -Focus on design fundamentals realized artistically and practically in works by selected architects. Study of basic interrelationships of material, construction, site and program.

SUGGESTED READINGS:

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. The Elements of Graphic Design: Space, Unity, Page Architecture, and Type (Paperback) by Alexander W. White
5. Geometry of Design: Studies in Proportion and Composition, Kimberly Elam.David Gibson
6. Ching, F.D.K., "Design Drawing", Van Nostrand Reinhold, 1998
7. Neufert, P., "Architects‟ Data", 3rd Ed., Blackwell Science, 2000

17ARS122	BUILDING MATERIALS AND CONSTRUCTION- I								SEMESTER-I
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To provide an understanding of the building materials
- To deveop the knowledge of construction detailing.
- To develop basic knowledge of the various components of a built structure.
- To deveop the knowledge of the Material properties
- To deveop the Knowledge of the techniques in material usages
- To develop an understanding of the design excecution methods

COURSE OUTCOME:

1. Students will learn about the properties of various building materials
2. Students will understand the properties of stone, brick and its usage through drawing
3. Student will be able to recognize the apt usage of materilals through proper research
4. Students will be able to understand and submit drawing plates comprising of technical plan, elevation and section along with sketches and details.
5. Student will be able to understand the technical details and construction details of the subject
6. Students will gain knowledge in cost and availability by their field Survey and Site visits

UNIT-1

SOIL ANDSTONE

Soils: Formation – grain size distribution – soil classification systems - earth -

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. – Market study

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.- market study

UNIT-4

BUILDING COMPONENTS

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

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 – small material volume- basic – calculations

1. **SUGGESTED READINGS:**

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

17ARS123	ARCHITECTURAL GRAPHICS- I									SEMESTER-I
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To make them understand the nature of geometrical forms in terms of drawing plane and solid projections.
- To make them understand the representation of 2 dimensional and 3 Dimensional forms
- To make them understand the plans, sections, isometric and axonometric drawings of forms
- To deveop the skill of doing perspectives
- To deveop the Skill of technical Architectural Representation
- To deveop the Skill of creating measure drawings

COURSE OUTCOME:

1. Student will be able to understand the 2 dimensional & the 3dimensional perspective of the objects
2. Student will be able to construct the 3d views and perspective drawings of the buildings.
3. Student will be able to draw the perspective drawings with sciography
4. Student will be able to do Architectural Rendering
5. Student will be able to do architectural detailed drawing for a smaller scale project.
6. Student will be able to do read and Do a technical Architectural Drawing

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 -SIMPLE & COMPLEX OBJECTS – SCIENTIFIC METHOD AND SHORT CUT METHOD

Introduction to perspective projections – One point perspective, Two point perspective, Three point perspective, - - Cone of Vision –scientific method and short cut method

UNIT 4

SCIOGRAPHY AND RENDERING

Introduction to Sciography – Plan sciography,elevation sciography, perspective sciography-Light source Shade and shadow of the object- Manual rendering techniques- color pencils- watercolor- poster color

UNIT 5

MEASURED DRAWING OF FURNITURE/ OBJECT

Introduction to Furniture drawings- drafting and detailing of simple and complex components of the furniture

SUGGESTED READINGS:

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

SEMESTER – 2

17ART201	THEORY OF ARCHITECTURE II								SEMESTER-II
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	0			**Credits**	**2**

COURSE OBJECTIVE:

- To impart knowledge about the various design philosophies
- To create an understanding of the evolution of various design processes in architecture
- To learn to apply the process of architectural design.
- To learn to use design as a problem solving exercise
- To gain knowledge about various aspects in architectural design process
- To learn different styles of architecture

COURSE OUTCOME:

1. A thorough understanding on the architectural design process
2. An insignt of the different tools used in the design process
3. An exposure to students on ideologies and philosophies of famous architects
4. Students will gain an understanding of different proportioning systems
5. Students will learn about the different aspects in site analysis
6. Students will learn representation methods of various site features

UNIT-1

ARCHITECTURAL DESIGN PROCESS AND METHODOLGY

Definition of design, understanding of design, purpose of design, nature of good design and evaluation of design, types of design classifications, role of designer, design in history. Context for architectural design problems, design process, stages in the design process, different considerations, different ideas of design methodology-Bubble diagrams-Proximity charts- Tiem Space activity analysis- analytical thuinking

UNIT-2

EVOLUTION OF DESIGN AND APPROACH

Evoultion of design from history-architecture/Product – evidence – Pragmatic – Iconic- canonic – analogic – mathematical expressions -approach to architectural design

UNIT-3

PROPORTIONING SYSTEMS

Mathemetics in Architecture-Proportions of Architecture -Manufactured proportions – human proportions– Golden ratio- Ken system- modular- fibonacci-anthropometry-Recent geometric siulations- parametric etc

UNIT-4

ARCHITECTURAL DESIGN CONCEPTS, PHILOSOPHIES AND STRATEGIES

Concept – definition – ideologies -types- based on context such as biomimicry,shapegrammer,fluidity,parametric– perspectives of various designers – critical evolution of concept – theoretical review -personal Philosophy and strategies of individual designers – Futuristic thinking- analysis and interpretation using the case of a building, architectural style, work(s) of the contemporary architects- Raj rewal,Charlescorrea,SantiagoCalatrava,Zahahadid,petereisenmann,Daniellibeskind- etc

UNIT-5

SITE ANALYSIS and CLIMATOLOGY

Site –Inventory – site features – on site – off site- climate analysis-Site Analysis and Process for design-Climate- fundameantals-Sun movement- wind – daylighting-climate responsivenes architectural concepts

SUGGESTED READINGS:

1. Geoffrey Broadbent - Design in Architecture - Architecture and the human sciences - John Wiley & Sons, New York, 1981
2. Nigel Cross - Developments in Design Methodology, John Wiley & Sons, 1984
3. Bryan Lauson - How Designers Think, Architectural Press Ltd., London, 1980.
4.Tom Heath - Method in Architecture, John Wiley & Sons, New York, 1984
5. Site Analysis – Edward .T.White

17ART202	HISTORY OF ARCHITECTURE II								SEMESTER-II
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	3	T	0	P/S	0			Credits	3

COURSE OBJECTIVE:

- To Gain the understanding of the Architecture in the chronology 400B.C to 800 A.D
- To understand the social Fabric, Relevance, Design Principles & Construction materials and Methods.
- To understand about the Roman Architecture
- To Gain knowledge in Romanesque Architecture
- To understand about evolution of Gothic Architecture
- To Gain knowledge in Italian Renaissance

COURSE OUTCOME:

1. Student will understand the various Architecture features and its outcome due to various social, political and economic upheavals, and its response to the cultural and context.
2. Student will understand about the spatial and stylistic qualities associated with Roman architecture.
3. Student will understand about the spatial and stylistic qualities associated with Romanesque architecture.
4. Student will understand about the spatial and stylistic qualities associated with Italian Renaisance and Baroque architecture
5. Student will understand the Styles and Details of Gothic Architecture
6. Student will expertise in Spatial understanding of historical places by Sketching & reading

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 Abbay 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'sBasilica, 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.

SUGGESTED READINGS:

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, TanjavurBrhadisvara, Ecole Francaise D' Extreme Orient, New Delhi, 1995

17ART203	MECHANICS OF STRUCTURES - I								SEMESTER-II	
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To gain understanding of basic structural form of any building
- To gain understanding of stuructiral details of various materials and techniques
- To gain understanding about the theoretical aspects and the component aspects involved in a building
- To gain understading about the forces and structural systems
- To gain underatnding about the Structural sections
- To gain underatnding about material properties

COURSE OUTCOME:

1. Student will understand the concepts of action of forces on a body and should be able to apply the equilibrium concepts.
2. Student will understand the basic geometric properties and the behavior of materials under effect of forces
3. Student will understand the various structural components of the building and its usage for strength of the structure.
4. Student will understand about the Reinforced stuctures structural system and ability
5. Student will understand about Steel Structures in Architectural Design
6. Student will be Ble to relate various building structural components

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.

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

SUGGESTED READINGS:

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

17ARP211	COMPUTER APPLICATION -I								SEMESTER-II	
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	0	**T**	0	**P/S**	4			**Credits**	**2**

COURSE OBJECTIVE:

- To introduce computer operation principles and explore image editing through a graphical composition.
- To impart training in computer aided 2D drafting and 3D modelling through projects.
- To enable the use of computer applications to develop a design from the initial stages to the final outcome
- To enable the rendering of a building so as to create a photo realistic image.
- To develop the skill of Digital Applications in Architecture
- To develop the skill of programming in Architecture

COURSE OUTCOME:

1. Student will be able to express using digital tools in the realm of visual composition, drafting, 3D visualization and rendering
2. Student will be able to draw measured drawings uing the software
3. Student will be able to detail the building components using the software
4. Student will be able to produce accurate drawings faster using the software
5. Student will be able to give a rendered image of the Architectural Design by software
6. Student will be able to conceptualise. visulaise and Produce digital drawings at ease

UNIT-1
SIMPLE APPLICATIONS
Creating technical documents and reports, Cost estimates with simple calculations, Presentations with graphics. – Charts – tables- Statistics-estimations

UNIT-2
SKETCHING TOOLS
Introduction to Sketch up models – Simple Buildings – Material Application– Vray rendering

UNIT-3
COMPUTER AIDED DRAFTING
Introduction to 2D application – Plan ,section, elevation drawings,3D applications

UNIT-4
IMAGE EDITING AND ANIMATION
Introduction to image editing- color enhancement

UNIT-5
ADVANCED PROGRAMMING
Simple Programming laguages.

SUGGESTED READINGS:

1. Sketchup – latest Version - Tutorials
2. AutoCAD architectural users guide - Autodesk Inc.,
3. AutoCAD 2016 User Manual, Autodesk
4. Adobe Photoshop-Tutorials
5. Corel Draw – tutorials
6. Adobe premier

17ARS221	ARCHITECTURAL DESIGN - II								SEMESTER-II
Marks	**Internal**	**140**	**External**			**210**	**Total**	**350**	**Exam Hours**	**6**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	10			**Credits**	**7**

COURSE 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 and Process
- Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.
- Ability to conceptulaise a design idea by Sketching and other techniques
- Ability to do a frame work of Design methodology
- Ability to understand the process of Design and deliver the Architectural Design with Technical Drawings

COURSE OUTCOME:

1. Student shall understand the basic functional aspect of designing simple building type and its relevant spatial organization.
2. Student will be learning to reciprocate and sensitize the design/concept to the environment and the design skill of the project
3. Student will be able to transform the theoretical ideas to the tangible output of design.
4. Student will be able to understand the space organization, space- volume design approach
5. Student will be able to research, Analyse and Deliver a Architectural Design .
6. Student will be able to Communicate effectively through the design ideas

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.

SUGGESTED READINGS:

1. Paul Laseau, Graphic Thinking for Architects.
2. E and O.E. Planning, Lliffe 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.
6. Rendow Yee, Architecutral Drawing: A visual Compedium of types and Methods.
7. Francis D Ching, Design Drawing.
8. Francis D Ching, Drawing a Creative Process.
9. Mike. W. Lin, Architectural Rendering Techniques: A Colour Reference.
10. Richard M. Mc Garry, Marker Magic: The Rendering Problem Solver for Designers.
11. Michael. E. Doyle, Color Drawing: Design drawing Skills & Techniques for Architects, Landscape Architects & Interior Designers.

17ARS222	BUILDING MATERIALS AND CONSTRUCTION- II								SEMESTER-II	
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To provide an understanding of the construction materials
- To provide an understanding of the construction methods through construction detailing
- To develop basic knowledge of the various components of a built structure
- Ability to understand by field study on all Topics
- Ability to understand materials like brick, clay and timber
- Ability to gain Knowledge about the techniques of Timber Construction

COURSE OUTCOME:

1. Student will gain Knowledge of properties and construction methods of brick, clay products and timber products.
2. Student will be able to detail structural and nonstructural components of simple buildings using the above materials.
3. Student will understand to integrate knowledge of properties and construction methods of basic building materials in the design of simple projects.
4. Student will understand about the Timber construction techniques for doors and windows.
5. Student will be able to gain advanced knowledge about Timber Roof Constructions.
6. Student will understand the building construction techniques of the timber staircases.

UNIT-1

BRICKS PRODUCTS - CONSTRUCTION

Structural members in brickwork – Brick piers, footings, Brick manufacture and process
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

UNIT-4

TIMBER CONSTRUCTION – STAIRCASE

Timber staircase and design

UNIT-5

TIMBER CONSTRUCTION – TRUSS

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

SUGGESTED READINGS:

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, CharotarPub.House, Anand, 1997.

17ARS223	ARCHITECTURAL GRAPHICS- II								SEMESTER-II
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To involve students in a number of exercises that will help them develop the skill of representation in advanced drawing techniques
- To make them understand the measured drawing method
- To make them understand to document buildings of architectural interest
- To understand and Develp the skill of measured drawing of Sections & Elevations
- To understand and develop the set of Architectural working drawings
- To develop them in making the working drawings for the Site Execution

COURSE OUTCOME:

1. Student will be able to construct and draw detailed architectural working drawings
2. Student will understand the 3d views and perspective drawings of the buildings.
3. Student will understand the detailed specifications of a small construction drawing
4. Student will learn to Collect the building data and document accordingly
5. Student will deveop the skill of making a Arhitectural Working Drawing
6. Student will develop the skill of reading a Interior working Drawing

UNIT-1

ARCHITECTURAL DRAWING & REPRESENTATION

Introduction to Architectural drawings – composition of various drawings- list of drawings –simple plans , sections , elevations – dimension – scale drawings- details – representations – arrows – stairs – material hatches etc

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 OF A BUILDING

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

DETAILED DOCUMENTATION OF A 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

SUGGESTED READINGS:

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 Elservier Burlington 2006.

SEMESTER 3

17ART301	SURVEYING, LEVELLING &SITE PLANNING								SEMESTER-III
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	0			**Credits**	**2**

COURSE OBJECTIVE:

- To understand the principles of surveying, classification, types of surveys
- To understand the applications of surveying
- Know about techniques of surveying.
- Understand the concepts of levelling and its applications.
- Get exposed to total station surveying, GIS and GPS.
- To understand the site, its premises and various factors involved

COURSE OUTCOME:

1. Student will understand the various systems of Surveying
2. Student understand the concept of levelling and its applications on site for various types of buildings.
3. Student will understand about the larger survey context using the total station and GIS mapping
4. Student will understand about the Site Inventory and Site analysis
5. Student will learn aout Hill survey and method of Contouring
6. Student will learn about the item planning principles, methods and its applications in architectural design.

UNIT 1

CHAIN SURVEY AND LEVELLING

Chain survey- principles- classification- instruments used, ranging, reciprocal ranging, Leveling , methods of leveling, booking and reduction of levels, longitudinal leveling, cross sectioning, errors in leveling, problems in leveling, contouring- plane table survey – radiation , Intersection, traversing and resection (experiment – 2nos)

UNIT 2

THEODILITE SURVEY

To understand Theodolite survey, measurement of horizontal and vertical angles, problems tackled like centre line of building, setting out angles- Rise and fall method- Dumpy level etc.

UNIT 3

CONTOURING

Characteristics of contours,direct and indirect methods of contouring

UNIT 4

TOTAL STATION

Total Station Survey- Different types - Introduction of GIS and GPS

UNIT 5

SITE INVENTORY,SITE ANALYSIS AND SITE PLANNING

Importance of site analysis - factors involved in accessibility - site characteristics - land, contours, water shed, climate and topography, preparation of site analysis diagram

SUGGESTED READINGS:

1. Site Analysis – Edward T.White
2. Site Planning
3. B.C.Punmia – Surveying and Levelling

17ART302	HISTORY OF ARCHITECTURE – III								SEMESTER-III
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	3	T	0	P/S	0			Credits	3

COURSE OBJECTIVE:

- To Gain the understanding of the regional Architecture
- To understand the social Fabric, Relevance and Design Principles
- To understand various Construction materials and Methods used in different architectural styles
- To understand about the Dravidian Architecture
- To Gain knowledge in Buddhist Architecture
- To understand about evolution of Islamic &Mugal Architecture

COURSE OUTCOME:

1. Student will understand the various Architecture features and its outcome due to various social, political and economic upheavals, and its response to the cultural and context.
2. Student will understand about the spatial and stylistic qualities associated with Dravidian architecture.
3. Student will understand about the spatial and stylistic qualities associated with Buddhist architecture.
4. Student will understand about the spatial and stylistic qualities associated with Islamic architecture
5. Student will understand the Styles and Details of Mughal Architecture
6. Student will expertise in Spatial understanding of historical places by Sketching & reading

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, Bhuvaneswar- Sun temple, Konarak. Kunds and Vavs –- Adalaj - Surya kund, Modhera.

UNIT-2

DRAVIDIAN STYLE

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

UNIT-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 architecturewith 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, Aurangazeb- important examples - development of the Mughal garden - important examples.

SUGGESTED READINGS

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. ChristoperTadgelli, The History of Architecture in India from the Dawn of civilization to the end of the Raj, Longmon 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 Willey & Sons Publishers, New Jersey,2007.

17ART303	MECHANICS OF STRUCTURES- II									SEMESTER-III
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	3	T	0	P/S	0			Credits	3

COURSE OBJECTIVE:

- To gain understanding of structural concepts in architecture
- To gain understanding of stuructural details of various Forces and techniques
- To gain understanding about the theoretical aspects and the component aspects involved in a building
- To gain understading about the R.C.C structural elements
- To gain underatnding about the Indeterminate Structures
- To gain underatnding about the forces acting on structural elemnts

COURSE OUTCOME:

1. Student will understand the concepts of action of forces like bending moment and shear force
2. Student will understand the basic geometric properties and the behavior of beams under effect of stress
3. Student will understand the various structural components of the building like columns
4. Student will understand about the Reinforced stuctures structural system and ability
5. Student will understand about Indeterminate Structures in Architectural Design
6. Student will be able to relate various building structural components and their behavior

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)

SUGGESTED READINGS:

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.
5. R.K. Rajput - Strength of Materials , S. Chand & Company Ltd., New Delhi 1996.

17ARP311	COMPUTER APPLICATION- II								SEMESTER-III	
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	0	**T**	0	**P/S**	4			**Credits**	**2**

COURSE OBJECTIVE:

- To develop the advanced Digital knowledge and skills
- To deveop the skills of three dimensional rendering
- To develop the skill and knowledge of the Building information Modelling
- To develop the Skill related to building visualization,
- To deveop the skill of multimedia presentations, brochures,
- To deveop the skill of video presentations as required in architectural practice.

COURSE OUTCOME:

1. Student will be able to understand the use of digital tools in the realm of visual composition,
2. Student will understand the drafting & Details through Software
3. Student will deveop the skill of 3D visualization and rendering
4. Student will understand the concept of BIM- building information modelling through the specific software
5. Student will gian the Skill of Multimedia & video making presentations required for Architectural practice
6. Student will gain knowledge about the latest developments of digital applications in Architecture

UNITS

1. COMPUTER AIDED 3D MODELLING

Working in 3 Dimensions, Viewing 3D Objects, Basic Wireframe Models, Regions and 3D Faces, Extruding and Lofting, Revolved objects, Boolean operations ;

2. COMPUTER AIDED 3D RENDERING

Concept of shading; Rendering; Material mapping; Environment attributes, Project: Building Model.

3. INTRODUCTION TO BUILDING INTEGRATED MODELLING

New Features , Editing and Working with Families in a Project, Concepts, creating a shared

Family, Project and System settings.

4. BASIC MODELLING AND DOCUMENTATION

Creating the Basic Model, Adding Doors and Windows, Floors and Floor Openings, Roof and Ceiling,

5. RENDERING AND PRESENTATION

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

3 Dimensional Drafting ,detailing and rendering softwares

SUGGESTED READINGS:

1. AutoCAD 2016 User Manual, Autodesk 2011.
2. Sketch up Tutorials
3. 3D max tutorials

17ARS321	ARCHITECTURAL DESIGN-III								SEMESTER-III	
Marks	**Internal**	**140**	**External**			**210**	**Total**	**350**	**Exam Hours**	**6**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	10			**Credits**	**7**

COURSE OBJECTIVE:

- Understanding Complex Design Programme and the Components of the Design Problem.
- Investigate and Acquire the Knowledge to address the various aspects of the Design Problem and Process
- Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.
- Ability to conceptualize a design idea by Sketching and other techniques
- Ability to do a frame work of Design methodology
- Ability to understand the process of Design and deliver the Architectural Design with Technical Drawings

COURSE OUTCOME:

1. Student shall understand the basic functional aspect of designing simple building type and its relevant spatial organization.
2. Student will be learning to reciprocate and sensitize the design/concept to the environment and the design skill of the project
3. Student will be able to transform the theoretical ideas to the tangible output of design.
4. Student will be able to understand the space organization, space- volume design approach
5. Student will be able to research, Analyse and Deliver the Architectural Design.
6. Student will be able to Communicate effectively through the design ideas

TOPICS

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,Villas, Institutional buildings: banks, Nursery or Primary /Secondary schools, primary health center, school for children with learning disabilities, neighborhood market,Municipaloffice,Cafeteria,Multicuisine Restaurant etc.

Design Process to be approached stage wise through Architectural Programming

SUGGESTED READINGS:

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, RudollHerg, Crosby Lockwood and Sons Ltd., 1970.

17ARS322	BUILDING MATERIALS AND CONSTRUCTION -III								SEMESTER-III
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To give an introduction to cement and concrete as materials for building construction.
- To help understand the principles, types, methods of construction
- To underatnad aboutapplications of concrete
- To underatnad about structural and non-structural building components
- To understand and enable design and detail using concrete in buildings
- To understand about concrete staircase.

COURSE OUTCOME:

1. Student will learn about the concrete as a versatile material in different contexts.
2. Student will understand the concepts of concrete as a building construction material.
3. Student will be able to design and detail specific components in concrete in Architectural Design
4. Student will underatnd about concrete Footing , column by doing detailed drawings
5. Student will understand about concrete Slab, beams by doing detailed drawings
6. Student will understand about concrete Pinth, lintel, Sill by doing detailed drawings
7. Student will understand about concrete Staircase by doing detailed drawings

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 – Raft foundation

UNIT 3

CONCRETE CONSTRUCTION

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

Concrete floors, walls and partitions,roof.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

SUGGESTED READINGS:

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.

17ARS323	BUILDING SERVICES - I								SEMESTER-III	
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To get a Brief undersatnding about the list of Services involved in Building
- To understand the sequence ans importance of the services in a Building during the planning
- To develop basic technical knowledge in water supply & Applications in Architecture
- To develop the technical knowledge in Electricl Supply & Applications in Architecture
- To develop sanitation, electrical, air conditioning, mechanical and firefighting systems.
- To develop basic technical knowledge in acoustics of a space

COURSE OUTCOME:

1. Student will understand about Building services and its integration in a building
2. Student will learn about water supply, sewage, drainage and waste systems in buildings.
3. Student will learn about the various electrical systems and applications in building
4. Student will understand about Heating, ventilation and air-conditioning systems in a building.
5. Student will learn about the Fire safety & Services in a building
6. Student will understand the importance of application of services in a building.

UNIT-1

WATER CHARACTERISTICS AND QUALITY

Surface and ground water sources - quality/quantity - nature of impurities

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 harvesting and disposal

UNIT-3

ELECTRICAL SYSTEMS AND ILLUMINATION

A) Basics of electricity - Single/Three phase supply - Protective devices in electrical installations - Earthling for safety - Types of earthling - ISI specifications.

b) Principles of illumination: Modern theory of light - Synthesis of light - Additive and subtractive synthesis of color - 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 vapor - sub cooled 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-efficient and measurements, choice of absorption material, resonance, reverberation, echo, exercises involving reverberation time and absorption co-efficient.

SUGGESTED READINGS:

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.

SEMESTER 4

17ART401	CLIMATE RESPONSIVE ARCHITECTURE								SEMESTER-IV
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	0			**Credits**	**2**

COURSE OBJECTIVE:

- To study about climatic factors and its influence
- To understand about the of external and internal factors of Climate for a certain location
- To understand deeply abou the Microclimatic influences in a building
- To understand about the Solar geometry and itd impacts in a building
- To understand the Air movement & its principles ans Applications for humathemrla comfort
- To understand about the Classification of climate and Design strategies recommendations for each climatic Zone

COURSE OUTCOME:

1. Student will understand the whole climatic scenario of the world
2. Student will learn about the Solar geometry, sun path its irradiation effects and control
3. Student will learn about heat transfer in buildings due to materials and design implications.
4. Student will understand about the Various ventilation principles and techniques for good ventilation
5. Student will understand hybrid design strategies and its design applications for different climatic zones
6. Student will develop the skill of doing a climatic design for any building with optimum recommendations.

UNIT 1

CLIMATE & MICROCLIMATE

Introduction of the earth formation,sun-Latitide , longitude, Altitude-Factors that determine climate -Climatic zones of the world,India –Climate classifications -characteristics-Thermal comfort-Mahony's tables,Psychrometricchart,Bioclimatic chart and fanger point scale- Microclimate-Urban heat Island-Built forms – Natural and manmade features – vegetation

UNIT 2

SOLAR GEOMETRY- HEAT TRANSFER-BUILDING ENVELOPE CONCEPTS

Movement of sun- Sun path diagram – Solictice-Overheated period–Solar shading–Shadow angles – Types of shading devices and materials,techniques-Transfer of heat through solids -Wall,roof,ground,glass,other materials– Definitions-Conductivity, Resistivity, Emmissivity,Absorbtance– Surface resistance and air cavities– Air to air transmittance (U value) –Time lag and decrement factor – Material Properties-calculations

UNIT 3

AIR MOVEMENT STRATEGIES –VENTILATION PRINCIPLES

The wind –wind patterns – Air currents around the building – Air movement through the buildings – Fenestration techniques– Thermally induced air currents – Stack effect, Venturi effect ,bernoullistheory,Finwalls,windtowers etc

UNIT 4

DESIGN STRATEGIES -PASSIVE,ACTIVE AND DAYLIGHITNG

Heating:principles – Passive and Active solar-Direct gain systems - Glazed walls, Bay windows,sun space-Indirect gain systems-Trombe wall,SolarChimney,Roof pond, Roof radiation trap, Solarium etc.Cooling: General principles – Evaporative cooling, Nocturnal radiation cooling,induced ventilation, earth sheltering, Berming, Wind Towers, earth air tunnels, Curved Roofs & Air Vents, Insulation, Vary Thermal wall etc.-Daylighting concepts – Natural – Artificial – WWR – Light shelf etc

UNIT 5

DESIGN RECOMMENDATIONS FOR CLIMATE & SUSTAINABILITY IN ARCHITECTURE

Design strategies recommended in warm humid, hot and dry,Moderate , composite and cold climates-Fundamentals of Sustainability- green buildings – rating sstems -Biomimicry -Case studies of buildings -Excercises involving design strategies receommended

SUGGESTED READINGS:

1. MiliMajunder, Teri – Energy – Efficient Bldgs in India – Thomson Press , New Delhi – 2001
2. Arvind Krishnan & Others – Climate Responsive Architecture, Tata Mcgraw –Hill New Delhi 2001.
3. Heating,Cooling and Lighting – Norbert Lechner
4. How Buildings Work- Natural order of Architecture – Edward Allen
5. Charles. J. Kibert, 'Sustainable Construction' John Wiley and sons Inc, USA.
6. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.
7. O.H. Koenigsberger and others (1993), Manual of Tropical Housing and Building –Part I - Climate design, Orient Longman, Madras, India.
8. Sun wind and light- Mark Dekay , G. Z. Brown
9. Man Climate and architecture –Baruch Givoni(1981)

17ART402	CONTEMPORARY ARCHITECTURE I								SEMESTER-IV	
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To give exposure to the critiques of modern architecture.
- To understand about influence of new materials in modern architecture
- To study in detail the different post modern directions in architecture
- To study about the influence of industrial revolution in Architecture
- To understand about the Modern era of Architecture
- To understand the evolution of Western Architecture

COURSE OUTCOME:

1. Student will understand the spread and varied later directions of modern architecture across the world.
2. Student will understand the architectural production from the 1960s as driven by large scale changes across the world.
3. Student will become familiar with contemporary forces and directions in architecture across the world.
4. Student will understand the basis of Architecture revolutuons and its changes in every decade
5. Student will understand the Ideologies of various Arhitects& their Works
6. Student will impart this Knowledge in his Arhitectural Design

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 Leibskind(Jewish Museum, Berlin and World Trade Centre, New York), Rem Koolhas(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.

SUGGESTED READINGS:

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.

17ART403	DESIGN OF STRUCTURES I								SEMESTER-IV	
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To get introduced to basic structural members in timber and steel.
- To give knowledge to design different timber components in a building.
- To enable an understanding of the types, efficiency and strength, advantages and disadvantages of rivet joints
- To enable an understanding of the types, efficiency and strength, advantages and disadvantages of welded joints
- To enable the design of tension (beams) and compression (columns) steel members in a building under different conditions.
- To Understand the concept of Structural system of Steel & Timber

COURSE OUTCOME:

1. Student will understand about Various Timber sections
2. Student will understand about the design timber beams and columns by applying the code provisions.
3. Student will understand about the Steel Sections and its usage.
4. Student will be able to design steel joints for maximum efficiency and strength.
5. Student will be able to design tension and compression members for different conditions by applying the
   code provisions.
6. Student will be able to design different types of laterally unsupported & supported beams for different conditions.

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.

SUGGESTED READINGS:

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 800:2007IS Code of practice for Timber design.

17ARP411	COMPUTER APPLICATION -III								SEMESTER-IV	
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	0	**T**	0	**P/S**	4			**Credits**	**2**

COURSE OBJECTIVE:

- To develop the advanced Digital knowledge and skills
- To deveop the skills of two dimensional rendering
- To develop the skill and knowledge of the Building information Modelling
- To develop the Skill related to building visualization,
- To deveop the skill of multimedia presentations, brochures,
- To deveop the skill of video presentations as required in architectural practice.

COURSE OUTCOME:

1. Student will be able to understand the use of digital tools in the realm of visual composition,
2. Student will understand the drafting & Details through Software
3. Student will deveop the skill of 3D visualization and rendering
4. Student will understand the concept of BIM- building information modelling through the specific software
5. Student will gian the Skill of Multimedia & video making presentations required for Architectural practice
6. Student will gain knowledge about the latest developments of digital applications in Architecture

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

REVIT,BIM,ECOTECT and reentsoftwares

SUGGESTED READINGS:

1. Rendering Techniques for mixed reality, Thomas Girlinger, 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

17ARS421	ARCHITECTURAL DESIGN -IV								SEMESTER-IV	
Marks	**Internal**	**140**	**External**			**210**	**Total**	**350**	**Exam Hours**	**6**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	10			**Credits**	**7**

COURSE OBJECTIVE:

- To create understanding of human built environment as a holistic, living entity from macro to micro scales, and shaped by geographic and socio-cultural forces as well as by historic, political and economic factors, through study of and design within the context of rural settlements.
- Understanding the Design Programme and the Components of the Design Problem&Investigate and Acquire the Knowledge to address the various aspects of the Design Problem and Process
- Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media&Ability to conceptulaise a design idea by Sketching and other techniques
- Ability to do a frame work of Design methodology
- Ability to understand the process of Design and deliver the Architectural Design with Technical Drawings
- To enable a comprehensive **study of rural settlement** and architecture in order to understand them as exemplar of collective design that evolved through various parameters.

COURSE OUTCOME:

1. Student will be able collect data, assimilate and integrate knowledge in a holistic manner.
2. Student will learn about the Sensitivity towards the nature and values of unselfconscious and collective design aswellas the interconnectedness of human society and environment
3. Student will learn about traditional techniques and concepts of Architecture.
4. Student will learn about the evolution and transformation of the rural settlements according to the time and cultural context.
5. Student will understand the essence of rural planning
6. Student will develop the skill of design process for the Rural settlements

CONTENT:

Rural settlements offer an opportunity to understand basic aspects of human built environment and what goes into its making/ influences it. The interrelationship between built form and society will be studied, understood and established, starting from either end as required. Study of specific modes of rural/vernacular/traditional architecture including their morphology, local materials and construction techniques, details, meaning, etc., will be done to give an insight into the particulars and universals of architecture.

Appropriate tools and processes can be used to aid the understanding. These include different methods of historical and socio-cultural study, oral history, discussions, information collection, surveys, maps, perceptual sketches, documentation through drawings, demographic study, assimilation and analysis.

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.

SUGGESTED READINGS:

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.

17ARS422	BUILDING MATERIALS AND CONSTRUCTION -IV							SEMESTER-IV	
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	5			Credits	4

COURSE OBJECTIVE:

- To give an introduction to metals as material for building construction.
- To give knowledge about the principles, methods of construction and applications of metals for structural and non-structural building components.
- To provide familiarity with market forms of metals and finishes for them.
- To gain Knowledge about Steel floor & Steel Staircase
- To understand about Door, windows & partitions
- To provide familiarity with market forms of metals and finishes for them.

COURSE OUTCOME:

1. Knowledge of properties of ferrous and non ferrous metals as materials for buildings.
2. An understanding of possibilities of steel as an important building construction material.
3. Ability to design and detail structural and non structuralcomponents of simple buildingsusingmetals.
4. Ability to use metal innovatively in building projects.
5. Student will gain Knowledge about Steel Floors & Staircase
6. Student will understand about the details of Door, windows & Partitions by detailed 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 roof covering. Steel staircases and handrails, balusters..

UNIT 3

STEEEL 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

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

UNIT 5

CONSTRUCTION USING NON-FERROUS METALS

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

SUGGESTED READINGS:

1. S.C.Rangwala, Engineering Materials, Charotar Publishing House, India, Recent Edition
2. B.C.Punmia, Building Construction, Laxmi Publications Pvt. Ltd., New Delhi, recent edition
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.
6. Building Construction Illustrated – Francis D.K. Ching
7. Barry – Buildin Construction

17ARS423	BUILDING SERVICES -II								SEMESTER-IV
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To inform about the principles and laws of Water distribution systems in buildings.
- To inform about the principles and laws of sewerage systems in buildings.
- To inform about the principles and laws of plumbing systems
- To inform about the electrical layout for residential Building
- To understand about compressors, evaporators and refrigerant control devices
- To Inform about the integration of service with the Architectural Design

COURSE OUTCOME:

1. Student will gain Knowledge of design of Water distribution systems in buildings
2. Student will learn and understand about the sewerage systems in buildings.
3. Student will learn and understand about the plumbing systems
4. Student will understand the electrical layout for residential Building
5. Student will gain basic knowledge about compressors, evaporators and refrigerant control devices
6. Student will understand the Applications of building Services in advanced level by detailed Drawings

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

UNIT- 2

SEWAGE AND SOLID WASTE MANAGEMENT

Arrangement of sewerage systems in buildings - sewage treatment plant- Solid waste Disposal: Collection, conveyance and disposal of town Solid waste

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.

UNIT- 4

ELECTRICAL SYSTEM 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 APPLICATION

Vapour compression cycle - compressors - evaporators - Refrigerant control devices - 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.

SUGGESTED READINGS:

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.

SEMESTER 5

17ART501	CONTEMPORARY ARCHITECTURE-II								SEMESTER-V
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE 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.
- To give an outline of architectural approaches across the world from late 20th century.
- To study in detail the different post-modern directions in architecture. +
- To provide information about the Alternate Practice
- To understand about the evolution of Architectural design of pre – independence
- To understand the Recent trends in Architecture

COURSE OUTCOME:

1. Student will learn about the spread and varied later directions of modern architecture across the world.
2. Student will become familiar with contemporary forces and directions in architecture across the world and in India
3. Student will understand about the post-independence architecture in India contemporaneous with the rest of the world, along with its own particular influences.
4. Student will understand abou the Post- independence revolution of design in India
5. Student will know about the Alternate practices
6. Student will gain knowledge in recent trends of Architecture & Design

UNIT-1

ALTERNATIVE PRACTICE

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

UNIT-2

PRE – INDEPENDENT ARCHITECTURE IN INDIA

Monumental buildings of Early colonial period – Examples – St.Pauls Cathedral, Calcatta& Bombay Townhall –Architectural character of Indo-Saracenic and Classical revival –University of Madras Senate House & Victoria Memorial hall, Calcatta – 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

CONTEMPORARY INDIAN ARCHITECTS AND THEIR WORKS

Ideas and works of BV Doshi (Institute of Indology Ahmedabad, IIM-Bangalore and Gufa, Ahmedabad), Charles Correa (RamaKrishna House, Ahmedabad, KanchenJunga 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), Lauire 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.
Sanjay Mohe, Christopher benninger, Hafeez contractor, Chitra viswanath,

SUGGESTED READINGS:

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

17ART502	DESIGN OF STRUCTURES-II								SEMESTER-V	
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week		L	3	T	0	P/S	0		Credits	3

COURSE OBJECTIVE:

- To introduce the material properties of reinforced cement concrete
- To enable students to carry out limit state method of design of flat slabs, beams, columns and foundation using BIS codes and hand books.
- To introduce the concepts in limit state design
- To enable use of limit state design for the analysis and design of columns.
- To enable the learning of design of structural elements like footings, retaining walls and masonry walls.
- To enable use of limit state design for design of staircases

COURSE OUTCOME:

1. Students will get introduced to the material properties of steel and concrete
2. An understanding of the different concepts in designing footings and columns and masonry walls using LSD methods.
3. An understanding of theconcepts in limit state design
4. An understanding of how to use of limit state design for the analysis and design of columns
5. An understanding ofdesign of structural elements like footings, retaining walls and masonry walls
6. An understanding of how to use limit state design for design of staircases

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.

SUGGESTED READINGS:

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.

17ARP511	COMPUTER APPLICATION-IV								SEMESTER-V	
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	0	**T**	0	**P/S**	4			**Credits**	**2**

COURSE OBJECTIVE:

- To develop the advanced knowledge and skills in computer application related to building visualization and rendering
- To create simple multimedia presentations, brochures, videos as required in architectural practice.
- To develop the skills of two-dimensional rendering
- To develop the Skill related to building visualization
- To develop the skill of video presentations as required in architectural practice.
- To develop the skill and knowledge of the Building information Modelling

COURSE OUTCOME:

1. Ability to express using digital tools in the realm of visual composition, drafting, 3D visualisation and rendering
2. Student will understand the drafting & Details through Software
3. Student will develop the skill of 3D visualization and rendering
4. Student will understand the concept of BIM- building information modelling through the specific software
5. Student will gain the Skill of Multimedia & video making presentations required for Architectural practice
6. Student will gain knowledge about the latest developments of digital applications in Architecture

TOPICS

1. Advanced techniques in rendering with differential lighting for realistic rendering

2. Animations and Walkthroughs

3. Simulation features of radiation, wind – Computational fluid dynamics,shadows,daylighting

Example:

RHINO,GRASSHOPPER,VECTORWORKS,

PLUGINS-LADYBUG,OPENSTUDIO,DAYSIM,RADIANCE,SEFAIRA

ECOTECT,REVIT SIMULATIONS

SUGGESTED READINGS:

1.Rendering Techniques for mixed reality, Thomas Girlinger, 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

17ARS521	ARCHITECTURAL DESIGN -V								SEMESTER-V
Marks	**Internal**	**140**	**External**			**210**	**Total**	**350**	**Exam Hours**	**6**
Instruction Hours /week		**L**	2	**T**	0	**P/S**	11		**Credits**	**7**

COURSE OBJECTIVE:

- Understanding Complex Design Programme and the Components of the Design Problem.
- Investigate and Acquire the Knowledge to address the various aspects of the Design Problem and Process
- Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.
- Ability to conceptualize a design idea by Sketching and other techniques
- Ability to do a frame work of Design methodology
- Ability to understand the process of Design and deliver the Architectural Design with Technical Drawings

COURSE OUTCOME:

1. Student shall understand the basic functional aspect of designing simple building type and its relevant spatial organization.
2. Student will be learning to reciprocate and sensitize the design/concept to the environment and the design skill of the project
3. Student will be able to transform the theoretical ideas to the tangible output of design.
4. Student will be able to understand the space organization, space- volume design approach in large scale projects
5. Student will be able to research, Analyse and Deliver a Mixed-use Architectural Design.
6. Student will be able to Communicate effectively through the design ideas

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.

SUGGESTED READINGS:

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

17ARS522	BUILDING MATERIALS AND CONSTRUCTION -V								SEMESTER-V
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	5			Credits	4

COURSE OBJECTIVE:

- To give an introduction to glass as a material in architectural construction
- To give an introduction about plastic
- To give an introduction about composite materials
- To understand about the design of timber furnitures, paneling, partition etc.
- To give an introduction to cladding, flooring and painting in building construction.
- To provide familiarity with advanced building construction techniques (shell structures) and materials as well as design with them.

COURSE OUTCOME:

1. Student will learn about the Composition, manufacturing method, treatment, properties and uses of glass
2. Student will learn about Plastic building products
3. Student will learn about Timber floors , build in furnitures , interior details
4. Student will gain Knowledge of glass, plastics, paints and finishes in building construction.
5. Student will become familiar with Secondary Building products – windows, doors, sky light domes
6. Student will gain knowledge about Smart Materials: Characteristics, classification, properties, energy behaviour, intelligent environments.

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- wall paneling,false ceiling – partition

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: card board, earthsheltered structures, recycled plastics, recycled tyres, paper-crete
Exercises of the above through case studies and drawings

SUGGESTED READINGS:

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.

List of electives

17ARET531 Landscape Architecture
17ARET532 Structures in Architecture
17ARET533 Acoustics
17ARES534 Product design
17ARES535 Building services for special buildings

17ARET531	LANDSCAPE ARCHITECTURE									SEMESTER-V
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	0			**Credits**	**2**

COURSE OBJECTIVE:

- To introduce the various aspects of outdoor design and site planning
- To teach them to enhance & improve the quality of built environment, functionally and aesthetically.
- To stress on the role of landscape design in sustainability, to provide an overview of ecological balance and impacts of human activities and the need for environmental protection and landscape conservation.
- To study the historical method of garden Design
- To understand the significance of urban landscape.
- To provide familiarity with the various elements of landscape architecture and the principle of landscape design.

COURSE OUTCOME:

1. Student will understand the role of landscape design with respect to macro scale of sustainability and ecology
2. Studet will understand the micro scale of shaping of outdoor environments.
3. Student will gain Knowledge about the elements of landscape design and their scope.
4. Student will know about the Sensitivity towards evolution of different garden and landscape design across time and context.
5. Student will understand the historical method of landscape design
6. Student will understand the urban scale landscape design.
7. Student will be able to do landscape design with respect to site planning and different functional typologies of spaces

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

SUGGESTED READINGS:

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

17ARET532	STRUCTURES IN ARCHITECTURE								SEMESTER-V	
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week		L	2	T	0	P/S	0		Credits	2

COURSE OBJECTIVE:

- To outline the evolution of structural systems in the pre industrial era
- To outline the evolution of structural systems in the post industrial era
- To introduce concepts of structural design through works of architects/ engineers.
- To learn about the contemporary structural concepts
- To create understanding about the relationship between architectural expression/ form and structure.
- To learn different structural expressions through case studies

COURSE OUTCOME:

1. Familiarity with concepts of structural design and its influence on the functional and aesthetic domains of architectural design relating to historic periods.
2. Students will gain knowledge about structural systems in pre and post industrial era
3. Students will gain familiarity about structural concepts in contemporary period
4. Familiarity with the works of famous architects and engineers in the structural front
5. Gain knowledge on performing case studies on structurally relevant buildings
6. Understanding of architectural expression and its relation to form, structure and changing technology.

UNIT 1

HISTORY OF STRUCTURAL DESIGN IN THE PRE INDUSTRIAL ERA

Development of monolithic and rock cut structures- trabeated construction-arcuate constructionvaults And flying buttresses- tents and master 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 Nuigi 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 Normal 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.

SUGGESTED READINGS:

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 EnricMiralle& Carme Pinos
8. Eagle Rock House by Ian Ritchie
9. Le Grande Arche de La Defense by J O Spreckelsen

17ARET533	ACOUSTICS								SEMESTER-V
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week		L	2	T	0	P/S	0		Credits	2

COURSE OBJECTIVE:

- To understand the science behind acoustical design
- To expose students to understand noise control, sound transmission
- To familiarize the students with various building and interior elements for Acoustics
- To familiarize the students with the basic principles of acoustic design
- To familiarize the student with the applications of Acoustical materials
- To familiarize the students withconstructiona methods used in insulation

COURSE OUTCOME:

1. Student will understand the theoretical concepts of acoustics
2. Student will understand the theoretical ideas and concepts sound transmission and absorption
3. Student will be able to understand the basics of noise reduction and design applications of noise control
4. Student will be able to understand the construction methods for noise control
5. Student will understand about basic principles in designing open air theatres, cinemas, broadcasting studios, concert halls, class rooms, lecture halls, schools, residences
6. Student will understand about efficient insulation of fittings and gadjets, machine mounting and insulation of machinery

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 gadjets, 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.

SUGGESTED READINGS:

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

17ARES534	PRODUCT DESIGN								SEMESTER-V	
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	1	**T**	0	**P/S**	5			**Credits**	**3**

COURSE OBJECTIVE:

- To gain Knowledge about the various styles of furniture
- To gain knowledge about the manufacturing of various materials/ product
- To learn about visual codes & Symbols
- To understand the importance of Artefacts, murals and Artwork
- To learn about various prodcuts for the Physically challenged
- Understanding the methods and techniques involved in furniture and product design.

COURSE OUTCOME:

1. Student will gain knowledge about the various furniture and products
2. Student will understand the needs of the industry demand and product value
3. Student will gain knowledge in Composite materials and Products
4. Student will gain knowledge about Packaging design
5. Student will gain knowledge about the House hold items / products
6. Student will be able to do a Product design for the client

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 toclimate.

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.

SUGGESTED READINGS:

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.

17ARES535	BUILDING SERVICES FOR SPECIAL BUILDINGS								SEMESTER-V	
Marks	Internal	60	External			90	Total	150	Exam Hours	6
Instruction Hours /week	L	1	T	0	P/S	5			Credits	3

COURSE OBJECTIVE:

- To impart advanced technical and practical knowledge in building services
- To gain knowledge of special services through preparation of service drawing and details.
- To understand about the water distribution for high rise structures
- To gain understanding about the Sewage & Drainage for high rise buildings
- To gain knowledge about the Sewage treatment plant
- To gain knowledge about Electrical installation for high rise buildings

COURSE OUTCOME:

1. Student will be able to understand and design high rise buildings with essential services
2. Student will gain knowledge in advanced services
3. Student will understand about Safety standards for special buildings
4. Student will gain knowledge about Fire safety service standards for all types of buildings
5. Student will gain knowledge in Building management systems
6. Student will gain Knowledge about the integration of services for Multi storied structures

UNIT 1

Water Distribution for High rise / campus development

External water distribution layout- header pipe- U G sump – Puddle flange – water riser pipes – water calculation for campus – water meter – water irrigation – vision for landscaping- water management –

Iternal water distribution layout – toilet details- plumbing – kitchen –and utilities – types of pipies and joints – fixtures and fittings – shaft details

UNIT -2

Sewage and drainage for high rise and campus development

External sewage and drainage layout – Gully trap -Collection chamber – manholes – invert level – sewagw treatment plant – grey water supply and calculation –saucer drian – rain water harvesting and terrace rain water piping system

Internal sewage systems – toilet details – Trap details – pipes and joints –vent pipes – plumbing system types- fixtures details

UNIT -3

Electrcial installation for hish rise and campus design

Electrical panel details- basic SLD(single line diagram)-external cable layout – external lighitng layout –false ceiling layout - internal lighting layout – internal raw and UPS power layout – cable tray and cable trunk layout - Vertical shaft details -

UNIT -4

Heating Ventilation and Air conditioning Systems in High rise and campus design

Different types of chillers and layout –external chiller piping system – AHU details – false ceiling layout – supply and return air diffuser details – ducting layout – Verticial shaft – VRV – VAV systems- Sound attenuator.

UNIT -5

Fire Fighting and BMS systems in High rise and campus design

UG sump for Fire fighting- fire hydrant systems – external routing – internal hydrant systems – hose reel hydrant – foam hydrant -overhead tank – False ceiling layout -Fire detection – smoke detectors -Sprinklers - Glass break system - fire alarm system –Internal fire piping layout

IBMS(Integrated Building Management Systems)- types of IBMS- Control room details – Internal Routing details – sensors – CCTV – access control – burglar control etc

Drawings : Integrated Sevice layout – Internal and External – cross section details

SUGGESTED READINGS:

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.

SEMESTER 6

17ART601	BUILDING CODES AND REGULATIONS								SEMESTER-VI
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week		L	3	T	0	P/S	0		Credits	3

COURSE OBJECTIVE:

- To develop understanding of the duties and liabilities of an architect
- To gain knowledge of bye-laws that relate to the building
- To understand about the environment in the Indian context.
- To Understand about legislation of corporation areas
- To understand about the Legislation of panchayat
- To understand about legislation of Industries

COURSE OUTCOME:

1. Student will be able to read and understand government related documents and incorporate it in practice
2. Student will be able to understand the building regulations and follow accordingly
3. Student will understand about the legislation of corporation ares
4. Student will understand about the legislation of panchayat
5. Studen will understand about the legislation of Industries
6. Student will be able to design buildings as per the recent norms and standards

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- OTHER norms- HAKA,CRS norms,MOEF ,FMB DRAWINGS- Approval drawings .

SUGGESTED READINGS:

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

17ART602	PHYSICAL PLANNING								SEMESTER-VI	
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To introduce the vocabulary, elements and classification of human settlements.
- To learn about the planning theories
- To give exposure to planning concepts at different scales of settlements.
- To understand about the planning aspects by means of Survey
- To gain understanding about the land use planning
- To give an understanding of planning addressing current issues.

COURSE OUTCOME:

1. Student will understand morphology of settlements and their generating forces and characteristics.
2. Student will understand the role of planning processes in making positive changes to settlements.
3. Student will gain knowledge and awareness of planning interventions with respect to the current world.
4. Student will gain understanding about the city evolution process due to planning
5. Student will gain Knowledge about existing settlements by Survey studies
6. Student will gain vast knowledge about Landsue patterns and planning theories

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

SUGGESTED READINGS:

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

17ARS621	ARCHITECTURAL DESIGN VI								SEMESTER-VI	
Marks	**Internal**	**140**	**External**			**210**	**Total**	**350**	**Exam Hours**	**6**
Instruction Hours /week		**L**	2	**T**	0	**P/S**	11		**Credits**	**7**

COURSE OBJECTIVE:

- Understanding Complex Design Programme and the Components of the Design Problem.
- Investigate and Acquire the Knowledge to address the various aspects of the Design Problem and Process
- Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.
- Ability to conceptulaise a design idea by Sketching and other techniques
- Ability to do a frame work of Design methodology
- Ability to understand the process of Design and deliver the Architectural Design with Technical Drawings

COURSE OUTCOME:

1. Student shall understand the basic functional aspect of designing complex building type and its relevant spatial organization.
2. Student will be learning to reciprocate and sensitize the design/concept to the environment and the design skill of the project
3. Student will be able to transform the theoretical ideas to the tangible output of design.
4. Student will be able to understand the space organization, space- volume design approach in large scale projects
5. Student will be able to research, Analyse and Deliver a Campus Design.
6. Student will be able to Communicate effectively through the design ideas

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.

SUGGESTED READINGS:

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.

17ARS622	ARCHITECTURAL DETAILING AND WORKING DRAWING								SEMESTER-VI
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- 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 create architectural drawings for construction
- To understand the structural &services drawings
- To refer & integrate all the architectural and supporting working drawings
- To design, incorporate and detail architectural and interior components of the architectural design project

COURSE OUTCOME:

1. Student will gain understanding of all the aspects that go into the making of a building through study of drawings related to construction.
2. Student will gain the ability to resolve spatial concerns with technical aspects and services of a building.
3. Student will understand to design and detail components within a building.
4. Student will gain knowledge in interior detailing and planning
5. Student will gain knowledge in Interior furniture, fixtures as per the functionality
6. Student will gain understanding in the installation methods of cladding, integrated services by means of detailed drawings etc

UNIT 1 to 5

DETAILING OF RESIDENTIAL BUILDING

Detailing of a residence –Building marking drawing,Working Drawings- Plan, Section- Longitudinal ,Transverse sections,chordsections,Door Window schedule,centre line column marking drawing, door and window joinery details – Flooing layout – toilet layout – Electrcial layout and Plumbing layout – Terrace RWP details -Staircase details – Interior details -Detailing of built-in elements like kitchen counters, cupboards, cabinets, toilets, toilet fitting, Exercises of the above through case studies and drawings.

DETAILING OF COMMERCIAL BUILDINGS

A)Detailing of a commercial building – Building marking drawing,Working Drawings- Plan, Section- Longitudinal ,Transverse sections,chordsections,Door Window schedule,centre line column marking drawing, door and window joinery details – Flooing layout – toilet layout – Electrcial layout and Plumbing layout – Terrace RWP details -Staircase details – Interior details -Detailing of built-in elements like cabinets, toilets, toilet fitting, Structural Glazing, Staircase, Flooring. Exercises of the above through case studies and drawings.

B)Detailing of shop-fronts, office spaces for commercial buildings including detailing of crucial elements such as entrance porches, main doors, show-windows, enclosed and air-conditioned atrium spaces.

C) Detailing of façade and selected spaces for apartment buildings, hotels and hostels.

Exercises of the above through case studies and drawings.

SUGGESTED READINGS:

1. De Chiara and Callendar, Time Saver Standard Building Types, McGraw Hill Co,1980.
2. Richardson Die truck, 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

17ARS623	SUSTAINABLE ARCHITECTURE							SEMESTER-VI	
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	1	**T**	0	**P/S**	5			**Credits**	**3**

COURSE OBJECTIVE:

- To understand the concept of sustainability
- To understand the impacts of environment today and to follow the steps to sustainability
- To wrok towards sustainable development and to understand low impact construction practices,
- To understand the 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.

COURSE OUTCOME:

1. Student will understand about climate change and the need for the sustainable buildings
2. Student will understand the energy-based concepts and resource optimisation
3. Student will understand about the environmental impacts of today and Follow the Susainable approach
4. Student will gain ability to design energy efficient buildings
5. Student will understand the green concepts and apply them in every aspect and approach towards sustainable architecture
6. Student will understand about the building simulation for energy analysis and for various design solutions

UNIT 1

Concept of Sustainability – Carrying capacity, sustainable development– Ethics and Visions of sustainability. Eco system and food chain, natural cycles – Ecological foot print – Climate change and Sustainability-World population – Gdp – Carbon emmissions–steps by the organisations etc

UNIT 2

Energy – resources availability – Renewable and non – renewable energy resources – Embodied energy – energy efficiency – cost savings – technologies – net zero energy – Zero waste – Integrated energy design –Low energy building design- Life cycle assesments and Energy Audits -related Case studies

UNIT 3

Materials -Selection of materials Eco building materials and construction- Green materials – Biomimicry, Low impact construction, and recyclable products-Adaptive reuse and regeneration -related case studies

UNIT 4

Green building systems – Rating system –LEED-INDIA,GRIHA,etc., with related case studies

UNIT 5

Design Analysis and Simulation studies –Building performance anlaysis–Modelling tools and techniques – daylighting,shading , ventilation , insolation effects – Design Strategies – Passive ,Active ,Hybrid systems – Thermal comfort analysis – Psychological Effective Temperature(PET)- Percentage People dissatisfied(PPD)- PMV etc –

Usage of simulation softwares are recommended – ECOTECT,DAYSIM- RADIANCE,HEED,CLIMATE CONSULTANT and recent softwares updated

SUGGESTED READINGS:

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) – CarlesBroto 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.
8. Sun , Wind and light – Arch design strategies – Mark Dekay and G.Z.Brown
9. Heating, Cooling ,Lighting – Norbert Lechner
10. Man,Climate and Architecture- Baruch Givoni.
11. Arvind Krishnan & Others – Climate Responsive Architecture, Tata Mcgraw –Hill New Delhi 2001.
12. How Buildings Work- Natural order of Architecture – Edward Allen
13. Charles. J. Kibert, 'Sustainable Construction' John Wiley and sons Inc, USA.
14. N.D. Kaushika, Energy, Ecology and Environment, Capital Publishing Company, New Delhi.
15. O.H. Koenigsberger and others (1993), Manual of Tropical Housing and Building –Part I - Climate design, Orient Longman, Madras, India.

List of Electives

17ARET631 Vernacular Architecture
17ARET632 Progressive Architecture
17ARES633 Interior Design
17ARES634 Digital Architecture

17ARET631	VERNACULAR ARCHITECTURE								SEMESTER-VI	
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	0			**Credits**	**2**

COURSE 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 different regions of the country.
- To gain Knowledge about the methods & techniques of Vernacular Architecture
- To gain understanding about the climatic considerations & Design apects of vernacular Architecture
- To gain understanding about socio- economic aspects of the vernacular & Traditional Architecture

COURSE OUTCOME:

1. Student will understand the Indian vernacular architecture as a process and to also provide an overview of various approaches and concepts towards its study.
2. Student will gain Knowledge of vernacular architectural forms in different regions.
3. Student will gain understanding of the impact of colonial rule on vernacular architecture in India
4. Student will understand about the the climatic consideration & Design apstects
5. Student will understand the socio economic aspects existed in the various regions through the study of vernacular Architecture
6. Student will gain knowledge in the vernacular methods of construction and ways to incorporate in this modern architecture.

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 following - 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.

SUGGESTED READINGS:

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, Ahmedabad1992.
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
9. Vernacular Architecture – contemporary traditions – AiswaryaTipnis - TERI
10.Lessons from vernacular architecteure – Willi Weber- Routedge publishers

17ARET632	PROGRESSIVE ARCHITECTURE								SEMESTER-VI	
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	0			**Credits**	**2**

COURSE OBJECTIVE:

- To understand and acquire knowledge in advanced architectural concepts and ideologies.
- To gain Knowledge about the future concepts of eminent architects
- To understand about the material usage in the current rend of architecture
- To gain knowledge about the Concept of biomimicry
- To understand about the adaptive reuse
- To gain understanding about energy integration and zero energy developments

COURSE OUTCOME:

1. Student will be able to understand and evolve futuristic design ideas and concepts
2. Student will be able to inegrate various aspects of design thinking of future
3. Student will understand about the parametric design concepts and applications
4. Student will understand about the concept of Biomimicry
5. Student will gain knowledge about the Adaptive reuse
6. Student will gain knowledge about energy integration and zero energy development.

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.

SUGGESTED READINGS:

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

17ARES633	INTERIOR DESIGN								SEMESTER-VI
Marks	Internal	60	External			90	Total	150	Exam Hours	6
Instruction Hours /week		L	1	T	0	P/S	5		Credits	3

COURSE OBJECTIVE:

- To provide familiarity with the characteristics of interior spaces
- To gain knowledge in all types furniture across history.
- To introduce the profession of interior design and bring out its role.
- To inform about the various components of interior space and give an understanding of the design aspects involved in each
- To provide knowledge in Interior services
- To provide knowledge in interior specification & costing

COURSE OUTCOME:

1. Student will gain knowledge and understanding in Interior design
2. Student will understand the various elements in Interior Design
3. Student will gain knowledge in terms of Interior design lighting and accessories
4. Student will gain an overall exposure to the ways in which interior spaces can be enriched through the design of specific interior components.
5. Student will be able to do specification for an Interior Design layout
6. Student will be able to design a Interior project wih all working drawings

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.

SUGGESTED READINGS:

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. SyanneSlesin 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.

17ARES634	DIGITAL ARCHITECTURE								SEMESTER-VI
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	1	**T**	0	**P/S**	5			**Credits**	**3**

COURSE OBJECTIVE:

- To develop the advanced knowledge and skills in Digital application
- To develop knowledge in building visualization
- To develop knowledge in digital rendering
- To develop knowledge in walk through Animations
- To get familiarized & create simple multimedia presentations & brochures
- To learn about the videos & Presentations as required in architectural practice.

COURSE OUTCOME:

1. Student will learn about the Latest digital applications used in the architectural practice
2. Student will gain knowledge about parametric applications in design
3. Student will learn about the building visualization & Simulation
4. Student will learn about Advanced rendering techniques
5. Student will learn about animation and visualization techniques used in the architecture industry
6. Student will learn about the video presentations and realistic animations of buildings

TOPICS

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

Example :Advanced level of animations -Auto desk Revit, 3ds Max, rhino, lumion, vector works, BIM, Ecotect, v-ray rendering techniques,Grasshopper, Sketch up – Sefaira, Open studio and recent softwares

SUGGESTED READINGS:

1. Rendering Techniques for mixed reality, Thomas Girlinger, 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

SEMESTER 7

17ARP711	PRACTICAL TRAINING								SEMESTER-VI
Marks	**Internal**	**400**	**External**			**600**	**Total**	**1000**	**Exam Hours**	**6**
Instruction Hours /week	**L**	0	**T**	0	**P/S**	0			**Credits**	**14**

COURSE OBJECTIVE:

- To introduce the challenges of architectural practice.
- To enable overall understanding of different stages in real life architectural projects in practice.
- To create involvement in these stages as much as possible within the scope of a specific architectural practice
- To work from initiation of project, development of concepts into schematic drawings, approval process, presentations and release of working drawings
- To get involvement in office discussions and client meetings, integrating structural and service concerns, estimation and tendering processes, site supervision and coordination in the construction process
- To coordinate with the various levels of workman/contractors etc for execution of the Project

COURSE OUTCOME:

1. Student will get and overall idea of the nuances of architectural practice.
2. Student will understand about the total process that takes place in an Architectural firm
3. Student will understand the Specifications of a project, time involved and the execution process
4. Student will gain knowledge in architectural working drawings
5. Student will gain experience of client meetings & site Execution
6. Student will gain the maturity of Architectural design, and the experience gained from internship will be helpful in the thesis project

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

SEMESTER 8

17ART801	HOUSING								SEMESTER-VIII	
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- Understanding of the various issues involved in urban housing
- Understand the various issues of Rural housing
- Understand about the planning and design solutions for low income groups.
- Understanding about the housing Policies & Agencies involved
- Understanding about the housing design aspects in a Larger scale
- Understanding about the Socio-economic Aspects

COURSE OUTCOME:

1. Student will learn the various schemes and policies in Housing in India
2. Student will understand the importance of socio-economic aspects of the People and need for Housing
3. Student will learn about housing standards
4. Student will learn about the Housing design Process
5. Student will learn about government housing, orivate& cooperative housing
6. Student will be able to arrive at design ideas for large scale Housing Projects

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 – rehabilitation and resettlement 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.

SUGGESTED READINGS:

1. Babur Mumtaz and Patweikly, Urban Housing Strategies, Pitman Publishing, London, 1976.
2. GeofreyK.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.

17ART802	URBAN DESIGN								SEMESTER-VIII
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	3	T	0	P/S	0			Credits	3

COURSE OBJECTIVE:

- To provide knowledge of design of urban spaces including renewal and development.
- To provide knowledge of public spaces
- To provide knowledge oforganizing and articulation of spaces for residential, commercial, industrial and recreational areas
- To provide knowledge ofCauses and consequences of urban blight and obsolescence
- To provide knowledge of methods of conducting surveys and analysis
- To provide knowledge of programs for urban redevelopment

COURSE OUTCOME :

- Ability to gain knowledge in urban space planning
- Ability to handle large scale urban renewal projects
- Understanding of organizing and articulation of spaces for residential, commercial, industrial and recreational areas
- Ability to analyse the Causes and consequences of urban blight and obsolescence
- Ability to conduct surveys and analysis
- Understanding of programs for urban redevelopment

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 slumsand squatter settlements. Environmental and management issues.

UNIT-5

URBAN REDEVELOPMENT

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

SUGGESTED READINGS:

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

17ARS821	ARCHITECTURAL DESIGN - VII								SEMESTER-VIII
Marks	**Internal**	**200**	**External**			**300**	**Total**	**500**	**Exam Hours**	**6**
Instruction Hours /week	**L**	1	**T**	0	**P/S**	14			**Credits**	**8**

COURSE OBJECTIVE:

- Understanding Complex Design Programme and the Components of the Design Problem.
- Investigate and Acquire the Knowledge to address the various aspects of the Design Problem and Process
- Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.
- Ability to conceptulaise a design idea by Sketching and other techniques
- Ability to do a frame work of Design methodology
- Ability to understand the process of Design and deliver the Architectural Design with Technical Drawings

COURSE OUTCOME:

1. Student shall understand the basic functional aspect of designing complex building type and its relevant spatial organization.
2. Student will be learning to reciprocate and sensitize the design/concept to the environment and the design skill of the project
3. Student will be able to transform the theoretical ideas to the tangible output of design.
4. Student will be able to understand the space organization, space- volume design approach in large scale projects
5. Student will be able to research, Analyse and Deliver a Urban Design proposal
6. Student will be able to Communicate effectively through the design ideas.

TOPICS

Design of advanced and complex problems – URBAN LEVEL - 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- Urban and regional planning etc

SUGGESTED READINGS:

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.

17ARS822	ESTIMATION AND SPECIFICATION								SEMESTER-VIII
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To provide the student adequate knowledge to write the specifications for a given item of work
- To gain knowledge in specification
- To gain Knowledge in Estimation of Civil Work
- To gain knowledge in estimation of Carpentary work
- To gain Knowledge in the estimation of Plumbing work
- To unde to work out the unit cost of individual items based on their specifications and arrive at the overall cost of the project.

COURSE OUTCOME:

1. Student will be able to understand and write specification for the given item of work
2. Student will gain knowledge & Understanding of Estimation of civil work
3. Student will gain knowledge about estimation of Carpentry work
4. Student will gain knowledge about estimation of plumbing work
5. Student will be able to do calculate the quantities on site with Field measurement book
6. Student will learn about various calculation of bill of quantities for Interiors

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 dado work, 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 – PART-1

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,

UNIT-5

DETAILED ESTIMATE – PART-2

.Deriving detailed estimate for items of work such as -plastering, painting, flooring, weathering course for a single storied building using centre line method and long and short wall method.

SUGGESTED READINGS:

1. Data, 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.

List of Electives

17ARET831 Architectural Conservation
17ARET832 Construction technology
17ARET833 Disaster management
17ARET834 Vaastu and principles of Traditional Indian Architecture
17ARES835 Architectural Journalism
17ARES836 Green Buildings

17ARET831	ARCHITECTURAL CONSERVATION								SEMESTER-VIII
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To introduce the various issues and practices of Conservation
- To familiarize the students with the status of conservation in India
- To teach them about the various agencies involved in the field of conservation worldwide and their policies.
- To outline the status of conservation practice in the country
- To Know about 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

COURSE OUTCOME:

1. Student will understand the importance of heritage, issues and practices of conservation through case studies.
2. Student will become familiar with historic materials and their properties, different technologies for investigating masonry, foundation and also traditional and modern repair methods
3. Student wil gain knowledge about the government agencies involved in Conservation
4. Student will understand the methods of urban Conservation.
5. Student will gain knowledge about various methods of Conservation techniques and Design
6. Student will gain knowledge about various policies involved in Conservation and practice in India

UNIT 1

INTRODUCTION TO CONSERVATION

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 tohistoric 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

SUGGESTED READINGS:

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

17ARET832	CONSTRUCTION TECHNOLOGY								SEMESTER-VIII
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	3	T	0	P/S	0			Credits	3

COURSE OBJECTIVE:

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

COURSE OUTCOME:

1. Ability to understand the practice of construction technology
2. Ability to understand the construction systems for high rise buildings
3. Ability to understand the process of manufacture, storage and transportation of concrete
4. Ability to understand thevarious equipment used in the construction industry
5. Ability to understand thecriteria for choice of equipment
6. Students will gain 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 draglings, cableways and belt conveyors, batching plants - Transit mixers and agitator trucks used for ready mix concrete pumps Gunitingequipments - 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

SUGGESTED READINGS:

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

17ARET833	DISASTER MANAGEMENT								SEMESTER-VIII
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To create awareness about natural disasters-factors
- To be aware of the disaster cause them-and to foster knowledge about strategies
- To learn about the methods of disaster prevention and management-
- To understand the fragile Eco-systems and factors that cause global climatic changes.
- Overview of major natural disasters-design & planning solutions for disaster mitigation-organizational
- To understand about the Disaster management aspects.

COURSE OUTCOME:

1. Student will be able to understand the cause and effects of natural disasters
2. Student will understand about climate change & disaster influences due to natural calamities
3. Student will learn to understand the prevention and design resistant structures
4. Student will understand the strategies to be implemented for disaster Mitigation.
5. Student will leran about Disaster management & recovery
6. Student will gain knowledge in design and Planning solutions of disaster proof structures

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, Lattur, 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 [NCMC], State crisis management group [SCMG].

UNIT-4& UNIT - 5

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.

SUGGESTED READINGS:

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 Roorkhe& DMMC, 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

17ARET834	VAASTU AND PRINCIPLES OF TRADITIONAL INDIAN ARCHITECTURE								SEMESTER-VIII	
Marks	Internal	40	External			60	Total	100	Exam Hours	3
Instruction Hours /week	L	3	T	0	P/S	0			Credits	3

COURSE OBJECTIVE:

- To introduce the principles of Vastu and Vaastu and relationship between building and site.
- To familiarize the students with the units of measurement in traditional architecture.
- To introduce concepts of orientation and Cosmo gram according to the Vaastu Purusha Mandala.
- To learn about the planning aspects of all residential, commercial & other buildings
- To study the detailing and design of various building components and their material and method of construction.
- To learn about the vasstu detailing

COURSE OUTCOME:

1. Student will be able to understand the principles of vastu and Vaastu
2. Student will understand the traditional site planning principles and its application in the present context.
3. Student will understand the relevance of vasstu and Architecture
4. Student will gain Knowledge in various material usage as per the principles of vasstu
5. Student will gain knowledge in Architectural design in accordance with vasstu
6. Student will learn about the landscape design as per Vaastu

UNIT -1
INTRODUCTION

Vastu and Vaastu -its definition and classification -Relationship to earth.
Features of good building site -good building shapes -macro, micro, enclosed and material spaces -relationship between built space, living organism and universe -impact of built space on human psyche.

UNIT -2
MEASUREMENT AND RESONANCE TO VIBRATION

Units of measurement -Tala system and Hasta system of measures -Theory of vibration -vibration as time, equation of time and space -Time space relationship and measurement of the same.

UNIT-3
SITE PLANNING AND COSMOGRAM

Orientation of building, site, layout and settlement -positive and negative energies -importance of cardinal and ordinal directions -The celestial grid or mandala and its types. The Vaastu Pursha Mandala and its significance in creation of patterns, and lay-outs, Types of lay-outs. Simple design of residential buildings.

UNIT 4
COMPONENTS AND DETAILING

Building heights -Base and basement -wall and roof specifications -column and beam designs -Pitched roof and domical roofs -significance of pyramid.

UNIT 5
MATERIALS AND CONSTRUCTION

Use of wood, stone, metal, brick and time -marking technology, corbelling technology, jointing technology -foundations for heavy and light structures -Landscaping in and around buildings Aesthetics in Indian Architecture.

SUGGESTED READINGS:

1. Dr.V.GanapatiSthapati -:Sthapatya Veda" Dakshina Publishing House, Chennai-41, India, 2001.
2. Stella Kramrisch -The Hindu Temple Vol.IMotitalBanarsidass Publishers Pvt. Ltd., Delhi -1991.
3. K.S.SubramanyaSastri -Maya Matam -Thanjavur Maharaja Sarjoji Saraswathi Mahal Library - Thanjavur -1966.
4. Dr.V.GanapatiSthapati -:Sthapatya Veda" Dakshina Publishing House, Chennai-41, India, 2001 .
5.Bruno Dagens -Mayamatam, Vol.I& II IGNCA and Motilal Bamarsidars Publishers Pvt. Ltd., Delhi -1994.
6.Dr.V.Ganapati Sthapati -Vastu Purusha Mandalam, Dakshina Publishing House, Chennai, 1998.
7.Ananda Kentish Coomaraswamy, Symbolism of Indian Architecture" – Historical ResearchDocumentationProgramme, Jaipur, 1983

17ARES835	ARCHITECTURAL JOURNALISM								SEMESTER-VIII
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week		L	2	T	0	P/S	5		Credits	4

COURSE OBJECTIVE:

- To introduce general skills necessary for the practice of professional journalism.
- To introduce the fundamentals of writing, explain different strategies and their criticism.
- To give good exposure to architectural journalism.
- To make them understand the importance of writing articles
- To introduce photojournalism, bring out importance/ contributions of photography
- To gain knowledge in modern photography techniques.

COURSE OUTCOME:

1. Student will gain the ability to critically think and analyse about the effects of architecture on society as well as the tools to enable recording of the same
2. Student will be able to express by means of effective communication, writing and video documentation
3. Student will learn about the composition of content in Architecture Journals
4. Student will learn about Photography and Photo Journalism
5. Stuednt will be able to document , analyse and crtic the work by means of interview and data collection
6. Student will develop the proficiency in Field program, interviews and Architectural Document witting

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.

SUGGESTED READINGS:

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

17ARES836	GREEN BUILDINGS								SEMESTER-VIII
Marks	Internal	80	External			120	Total	200	Exam Hours	6
Instruction Hours /week		L	2	T	0	P/S	5		Credits	4

COURSE OBJECTIVE:

- To develop and acquire knowledge about environment and ecosystems
- To understand about Energy usage &energy efficient technologies
- To learn about the use of natural materials and water conservation technique.
- To Understand about Water Efficiency & regeneration
- To understand about the Rating of current buildings
- To understand the Bio degradability materials & recycling

COURSE OUTCOME:

1. Student will understand the basic concept of sustainability in Architecture
2. Student will gain knowledge in passive and Hybrid design strategies for designing a green building
3. Student will understand the energy usage of various types of buildings
4. Student will learn about energy efficiency and ways to minimize the energy.
5. Student will learn about the environmental impacts and assessment
6. Student will gain knowledge about the green rating systems and codes in India

UNIT 1

SUSTAINABILTY AND GREEN BUILDING

Understanding of food and energy cycle – Principals of sustainability – Natural ecosystem – Elements of green development – Introduction to green architecture – green building design – benefits – rating systems – LEED, GRIHA,codes -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 ASSESMENT.

Envirnmental Impact Assesment – Internal frame works & Assessment Tools.

SUGGESTED READINGS:

1.Anna ray – Jone – Sustainable architecture in japan – The green buildings of Nikken seiki, Wiley – acdemy 2000

2.Architecture and th e 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 effiecient 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

SEMESTER 9

17ART901	PROFESSIONAL PRACTICE -1								SEMESTER-IX
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To give an introduction to the architectural profession
- To know about the role of professional bodies and statutory bodies as well as ethics of the profession.
- To give familiarity with basic aspects of running an architectural practice.
- To know about the tenders & market Evaluations in Architectural practice
- To give exposure to the processes involved in taking up and completing an architectural project.
- To inform about legal aspects and legislations associated with the profession.

COURSE OUTCOME:

1. Student will gain knowledge of the role of professional and statutory bodies.
2. Student will become familiar with the process involved in an Architecture Project
3. Student will gain knowledge about the Scale of Services and Fees for an Architect
4. Student will understand the code of conduct and ethical values of the Profession
5. Student will understand about the Tender & Contract
6. Student will understand about the participation, award in an Architectural competition

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 competition.

UNIT -4 LEGISLATION

Salient features of various acts such as Architects Act 1972
Chennai corporation building rules 1972
The panchayat building rules
Tamilnadu factory rules
Development control rules for Chennai metropoliton

UNIT-5 EMERGING AREAS OF IMPORTANCE

Role of urban arts commission – need for special rules on architectural control and development

SUGGESTED READINGS:

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, Lakhsmi 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 TamilNaduHillAreasSpecialBuilding Rules - 19
8. Heritage Act
9. Consumer Protection Act
10. Indian Easements Act

17ART902	RESEARCH METHODS AND FIELD STUDIES								SEMESTER-IX
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To learn the importance of and undertake research and field studies
- To understand the research applications in architectural design.
- To understand the different methods and the techniques as relevant to the design profession
- To understand the experimental research methods
- To apply research in evaluation and appraisal of architectural design projects.
- To understand about different survey methods

COURSE OUTCOME:

1. Student will understand the research methodology and research methods
2. Student will understand the various analytical methods
3. Student will understand the experimental methods of Research
4. Student will learn about the survey methods and documentation
5. Student will know to collect relevant data, compile and document
6. Student will be able to critically analyse the data and present it as a document

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.

SUGGESTED READINGS:

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.

17ARS921	DISSERTATION								SEMESTER-IX
Marks	**Internal**	**80**	**External**			**120**	**Total**	**200**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To inculcate the spirit of research in architecture.
- To enable the acquisition of in-depth knowledge in a specific aspect/ issue in the discipline of architecture
- To develop perspectives on the same through reading, study, analysis and thought.
- To develop the skill of experimentation by their own course of study
- To facilitate the development of a coherent line of thinking and express it through clear writing.
- To serve as prelude to Thesis.

COURSE OUTCOME:

1. Student will learn to research on a specific interested topic and collect appropriate data
2. Student will develop the skill of analytical approach towards the related topic
3. Student will be able to develop a coherent line of thought based on point of view,
4. Student will be able to do observation, analysis and study
5. Student will be able to prepare a dissertation report which is based on accepted norms of technical writing.
6. Student will become prepared for the larger thesis project.

Unit I to Unit V

Identification of Dissertation Topic and Area, Hypothesis Formulation, Objectives and Methodology. Importance, Purpose and Scope of the Dissertation in architecture in terms of design, technology, environment, economic and behavioral areas.

Related Research, Literature and Field Studies. Submission of the above in report form.

SUGGESTED READINGS:

1.Knight, A. and Ruddock,L., "Advanced Research Methods in Built Environment", John Wiley & Sons. 2008.
2.Groat, L. and Wang D., "Architectural Research Methods", John Wiley & Sons. 2002.
3.Kothari, C.R., "Research Methodology- Methods and Techniques", New Age International. 2004.
4.All relevant Local, National and International Codes related to the Dissertation topic.
5. All relevant Books and Publications related to the Dissertation topic.

17ARS922	ARCHITECTURAL DESIGN - VIII								SEMESTER-IX
Marks	**Internal**	**200**	**External**			**300**	**Total**	**500**	**Exam Hours**	**6**
Instruction Hours /week	**L**	1	**T**	0	**P/S**	14			**Credits**	**8**

COURSE OBJECTIVE:

- Understanding Complex Design Programme and the Components of the Design Problem.
- Investigate and Acquire the Knowledge to address the various aspects of the Design Problem and Process
- Develop Ability to Communicate Design Ideas throughout the Design Stages with multiple media.
- Ability to conceptualize a design idea by Sketching and other techniques
- Ability to do a frame work of Design methodology
- Ability to understand the process of Design and deliver the Architectural Design with Technical Drawings

COURSE OUTCOME:

7. Student shall understand the basic functional aspect of designing complex building type and its relevant spatial organization.
8. Student will be learning to reciprocate and sensitize the design/concept to the environment and the design skill of the project
9. Student will be able to transform the theoretical ideas to the tangible output of design.
10. Student will be able to understand the space organization, space- volume design approach in large scale projects
11. Student will be able to research, Analyse and Deliver a Urban Design proposal
12. Student will be able to Communicate effectively through the design ideas.

TOPICS

Design of large scale township -Neighbourhood Planning -large structures - Multiuse multi span- Pavilions – transport hub– Design and detailing for movement and use by physically handicapped people within and around building technology and services. Examples: Large scale projects – neighbourhood, Integrated Township , IT park, Satellite town ,Sports complex,Apparelpark,SEZetc

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.

SUGGESTED READINGS:

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, Time saver standards for building types. McGraw Hall Col. 1983.

List of electives

17ARET931 Project Management
17ARET932 Earth quake resistance Architecture
17ARET933 Advanced concrete technology
17ARET934 Real estate management
17ARES935 Industrial Architecture
17ARES936 High rise buildings

17ARET931	PROJECT MANAGEMENT									SEMESTER-IX
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To introduce different Project management techniques
- To learn about project control, updating & Monitoring
- To Know about network concepts, network elements and inter - relationships
- To know about PERT network
- To understand about the project Costing
- To enable understanding of management systems for accomplishing the task efficiently in terms of quality, time and cost.

COURSE OUTCOME:

1. Student will understand a project from concept to commissioning,
2. Student will understand the feasibility study & facility programme, design, construction to commissioning.
3. Student will be able to apply project management techniques in achieving objectives of a project like client needs, quality, time & cost.
4. Student will understand about the Project Costing
5. Student will understand about the various softwares of project management.
6. Student will gain understanding of principles of management, construction scheduling, scope definition and team roles

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

SUGGESTED READINGS:

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.

17ARET932	EARTH QUAKE RESISTANCE ARCHITECTURE								SEMESTER-IX
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To understand the fundamentals of Earthquake and the basic terminology
- To familiarize the students with design codes and building configuration
- To understand the site planning and performance of ground & Buildings
- To understand the seismic design codes & configurations
- To understand the impacts in urban level due to earth quake and solution for mitigation
- To understand the various types of construction details to be adopted in a seismic prone area.

COURSE OUTCOME:

1. Student will be able to understand the formation and causes of earthquakes
2. Student will gain understanding of the factors to be considered in the design of buildings
3. Student will understand the services to resist earthquakes.
4. Student will become familiar with the Seismic Design Codes & configurations
5. Student will understand about designing earth quake resistant structures
6. Student will learn about urban level planning strategies for earth quake resistance

UNIT 1

Fundamentals of earthquakes

a) Earths 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 buildingslike 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 .

SUGGESTED READINGS:

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.

17ARET933	ADVANCED CONCRETE TECHNOLOGY								SEMESTER-IX
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To learn about the classification and specifications in concrete
- To learn about the Chemical composition and Testing of concrete
- To learn about the properties and durability of concrete
- To learn about the Principles and Methods of concrete mix design
- To learn about the Statistical quality control- sampling and acceptance criteria
- To learn the advanced level concrete technological applications.

COURSE OUTCOME:

1. An understanding of the classification and specifications in concrete
2. An understanding of special types of concrete and concreting methods
3. An understanding of the Chemical composition and Testing of concrete
4. An understanding of properties and durability of concrete
5. An understanding ofStatistical quality control- sampling and acceptance criteria
6. An understanding ofthe advanced level concrete technological applications

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 plasticisedconcrete,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.

SUGGESTED READINGS:

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

17ARET934	REAL ESTATE MANAGEMENT									SEMESTER-IX
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To give an overview of real estate development
- To understand about the market potential in the current scenario
- Stimulating an awareness of the issues involved in international real estate
- To learn about urban level policy & Decisions
- To learn about various differences in Real Estate market conditions all over the world
- To gain knowledge about the leverage that the real estate could provide in the overall development

COURSE OUTCOME:

1. Student will gain knowledge in the concepts of Real estate development
2. Student will understand about Property development
3. Student will learn about urban level policies in Real estate management
4. Student will learn about the corporate Real estate management
5. Student will gain knowledge in Project financing and development
6. Student will understand the Current scenario through case studies

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

DEVLOPMENT 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 us e 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 and 5

CORPORATE REAL ESTATE MANAGEMENT

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

17ARES935	INDUSTRIAL ARCHITECTURE									SEMESTER-IX
Marks	Internal	60	External			90	Total	150	Exam Hours	6
Instruction Hours /week	L	2	T	0	P/S	5			Credits	4

COURSE OBJECTIVE:

- To introduce about Industrial design building and architecture
- To understand about the types of industrial space
- To understand about precast building types & practice
- To gain knowledge in on site & off-site prefabrication systems
- To gain deep understanding about the Modular - technologies
- To understand about the overall structural system of Industrial buildings

COURSE OUTCOME:

- Student will understand the application of Industrial buildings
- Student will gain understanding about the pre fabrication systems
- Student will gain Knowledge in Industrial construction
- Student will understand about the modular components & coordination of Industrial Buildings
- Student will understand about the overall structural system of Industrial buildings
- Student will be able to design large scale Industrial buildings

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.

SUGGESTED READINGS:

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.

17ARES936	HIGH RISE BUILDINGS								SEMESTER-IX
Marks	**Internal**	**60**	**External**			**90**	**Total**	**150**	**Exam Hours**	**6**
Instruction Hours /week	**L**	2	**T**	0	**P/S**	5			**Credits**	**4**

COURSE OBJECTIVE:

- To understand the various types of multistoried buildings
- To understand the structural systems of High -rise buildings
- To understand deeply about the building service systems of high- rise buildings
- To deeply understand about the Structural Systems in High Rise Buildings
- To understand about the Safety Systems in high Rise buildings
- To understand about the Bye – laws & codes of design of high -rise buildings

COURSE OUTCOME:

1. Student will learn about the Design and planning aspects of High-rise structures
2. Student will gain knowledge about the National building Codes of high rise structures
3. Stduent will understand about the various development control regulations all over India
4. Student will gain knowledge about the Structural aspects of High-Rise buildings
5. Student will gain knowledge about various technical services involved in High rise buildings
6. Student will gain knowledge about functionality of the high-rise structures

UNIT 1 Introduction to High rise structures

Urban environment and physical planning considerations – architectural design considerations – space planning-building services – advanced service systems – antomation – 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 evators- 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

UNIT- 5 **Fire Escape**

fire escpae stairs – fire resistant doors – Fire resistant materials – fire fightingequipments.,sprinklersystwms

SUGGESTED READINGS: :

1.Bennetts , Ian etal – tall building structural systems

2.Proceedings of the council for tall buildings – Vol 1 to 10

3.NBC

SEMESTER 10

17ART1001	PROFESSIONAL PRACTICE -II								SEMESTER-X
Marks	**Internal**	**40**	**External**			**60**	**Total**	**100**	**Exam Hours**	**3**
Instruction Hours /week	**L**	3	**T**	0	**P/S**	0			**Credits**	**3**

COURSE OBJECTIVE:

- To give an introduction to easements and its types
- To know about the role of tenders and the processes involved within
- To give familiarity with a contract and the conditions therein
- To give exposure to the Arbitration in disputes
- To inform about legal aspects like Environmental acts and laws
- To know about the consumer protection act and their relevant provisions

COURSE OUTCOME:

1. Student will gain knowledge of the easements and its types
2. Student will become familiar with the tenders and the processes involved within
3. Student will gain knowledge about a contract and the conditions therein
4. Student will understand the Arbitration in disputes
5. Student will understand about the legal aspects like Environmental acts and laws
6. Student will understand about the consumer protection act and their relevant provisions

UNIT-1

EASEMENTS

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

UNIT-2

TENDER

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

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

UNIT-3

CONTRACT

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

UNIT-4

ARBITRATION

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

UNIT-5

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

SUGGESTED READINGS:

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, Lakhsmi 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

17ARS1021	ARCHITECTURAL THESIS								SEMESTER-X
Marks	**Internal**	**400**	**External**			**600**	**Total**	**1000**	**Exam Hours**	**6**
Instruction Hours /week	**L**	4	**T**	0	**P/S**	27			**Credits**	**18**

COURSE OBJECTIVE:

- To ensure consolidation and application of the knowledge gained in preceding years of the programme
- To develop the skill of Design in the context of a project of the student's choice.
- To enable addressing of specific projects through key, identified issues inherent in the project
- To enable development of thought processes in specific areas/aspects into a project.
- To facilitate development of ability to complete and handle projects independently
- To develop the career of Architecture by exhibiting the skill in thesis

COURSE OUTCOME:

1. Student will gain an overall understanding of an Architectural project
2. Student will be able to research, Analyse, synthesise and present his ideas
3. Student will apply his skills developed in the previous years in this Project
4. Student will gain the ability to handle major architectural project of a larger scale
5. Student will be able to design with all Socio, economic and Environmental aspects.
6. Student will become an expertise in his domain of architectural design

UNITSI to UNIT V

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.

SUGGESTED READINGS:

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.

Edward D Mills, planning, 4 volumes, newness Butterworths, London 1976