

**ANNA UNIVERSITY :: CHENNAI – 600 025**

**CURRICULUM - 2004**

**B.ARCH.**

**SEMESTER – I**

Code No.	Course Title	L	T	P	M
<b>THEORY</b>					
MA1102	<a href="#">Mathematics – I</a>	3	1	0	100
AR1101	<a href="#">Art Appreciation</a>	2	0	0	100
AR1102	<a href="#">History of Architecture - I</a>	2	0	0	100
<b>THEORY CUM STUDIO</b>					
AR1103	<a href="#">Computer Studio – I</a>	1	0	4	100
AR1104	<a href="#">Architectural Drawing – I</a>	0	0	6	100
AR1105	<a href="#">Materials and Construction – I</a>	2	0	3	100
<b>STUDIO</b>					
AR1106	<a href="#">Architectural Design – I</a>	0	0	12	300

**SEMESTER – II**

Code No.	Course Title	L	T	P	M
<b>THEORY</b>					
AR1151	<a href="#">Mechanics of Structures – I</a>	3	0	0	100
AR1152	<a href="#">Theory of Architecture – I</a>	2	0	0	100
AR1153	<a href="#">History of Architecture – II</a>	2	0	0	100
<b>THEORY CUM STUDIO</b>					
AR1154	<a href="#">Computer Studio – II</a>	1	0	4	100
AR1155	<a href="#">Architectural Drawing – II</a>	0	0	6	100
AR1156	<a href="#">Materials and Construction – II</a>	2	0	3	100
<b>STUDIO</b>					
AR1157	<a href="#">Architectural Design – II</a>	0	0	12	300

[Lab equipment for B.Arch. Courses](#)

**AIM**

This course aims to develop the skills of the students in Engineering Mathematics. They will be trained on the basics of chosen topics of Mathematics necessary for effective understanding of engineering subjects. The course is a prerequisite for the students to learn further topics of Mathematics in their higher semesters. At the end of the course, the students would have an understanding of the appropriate role of the mathematical concepts learnt.

**OBJECTIVES:**

- Identifying Eigenvalue problems, obtain solution and acquired the technique of diagonalizing a matrix.
- Studying the properties of lines and plans in space, along with sphere and providing a tool to understand 3D material.
- Understand geometrical aspects of curvature and elegant application of differential calculus.
- Understand function of more than one variable, along with differentiation under integral sign.
- Solving differential equation of certain type.

**1. MATRICES 9**

Eigenvalue problem – Eigenvalues and eigenvectors of a real matrix – Characteristic equation – Properties of eigenvalues and eigenvectors – Cayley – Hamilton theorem (without proof) – Similarity transformation (concept only) – Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation.

**2. THREE DIMENSIONAL ANALYTICAL GEOMETRY 9**

Direction cosines and ratios – Angle between two lines – Equations of a plane – Equations of a straight line – Coplanar lines – Shortest distance between skew lines – Sphere – Tangentplane – Plane section of a sphere – Orthogonal sphere.

**3. GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS 9**

Curvature – Cartesian and polar co-ordinates – Centre and radius of curvature – Circle of curvature –Involutives and evolutes – Envelopes – Properties of envelopes and evolutes – Evolute as envelope of normals.

**4. FUNCTIONS OF SEVERAL VARIABLES 9**

Functions of two variables – Partial derivatives – Total differential – Taylor's expansion – Maxima and Minima – Constrained maxima and minima – Lagrange's Multiplier method – Jacobians – Differentiation under integral sign.

## 5. ORDINARY DIFFERENTIAL EQUATIONS

9

Simultaneous first order linear equations with constant coefficients – Linear equations of second order with constant and variable coefficients – Homogeneous equations of Euler type – Equations reducible to homogeneous form – Method of variation of parameters.

**TOTAL : 45**

### TEXT BOOKS

1. Veerarajan, T., “Engineering Mathematics (for First Year)”, Second Edition, Tata McGraw–Hill Pub., Co., Ltd., New Delhi, 2002.
2. Venkataraman, M.K., “Engineering Mathematics”, Volume I, Fourth Edition, The National Pub. Co., Chennai, 2003.

### REFERENCES

1. Grewal, B.S., “Higher Engineering Mathematics”, Thirty Sixth Edition, Khanna Publishers, Delhi, 2001.
2. Kandasamy, P., Thilagavathy, K., and Gunavathy, K., “Engineering Mathematics” Volume I, Fourth Revised Edition, S. Chand & Co., New Delhi, 2000.
3. Kreyszig, E., “Advanced Engineering Mathematics”, Eighth Edition, John Wiley and Sons (Asia) Ltd., Singapore, 2001.

**AIM**

To create an awareness – that other arts and art forms were simultaneously developing with architecture in cultures and civilization and to understand that architecture is also a form of art – That arts and art forms could be a source of inspiration and application to architecture. – That art and architectural creations depend on creativity, originality and derive inspiration from Nature.

**OBJECTIVE**

- To have comprehension of art, its meaning and language and how architectural details get inspired from nature.
- To understand the various types of drawing, basics of etching, engraving, and branches of minor arts.
- To understand the various developments in Europe, the definition of various philosophies, and to be conversant with art forms used as details and ornaments in historic buildings.
- To understand the various development in India in terms of art forms and development during the Islamic period.
- To have an understanding of modern materials used in art creation, the contribution of British colonial period and recent development that has influenced contemporary art.

**1. UNDERSTANDING ARTS 4**

Definition of art – Need for and meaning of works of art – Technical language of art – Appreciating art form in relation to architecture and Nature.

**2. TECHNIQUES OF ART 4**

Techniques and types of drawing, Sculpture, painting, and printing – minor arts.

**3. ART IN WESTERN WORLD 10**

Cave paintings of pre-historic period –Art forms and shapes in Egyptian, Mesopotamian, Greek, Roman and Italian Renaissance periods –Birth of Modern arts, definitions of- impressionism and post impressionism, art nouveau, cubism Dadaism, surrealism, abstract art, expressionism, futurism & constructivism.

**4. ART IN ASIAN WORLD 8**

Art forms and pictorial language of river valley, - forms in vedic, Buddhist, Dravidian and Indo-Aryan cultures – Rock paintings and art in India – Colour and art in Islamic Culture in India.

**5. RECENT TRENDS**

**4**

Art forms, patterns and furnitures of the British period in India, Use of modern materials and technique- Recent development in Indian Art.

**TOTAL : 30**

**TEXT BOOKS**

**Gardner –Hartcort**

1. Art through the ages – Gardner –Hartcort, Brazen & world year- 2002.

**REFERENCES :**

1. Peter and Linda Murray, - The penguin Dictionary of Art and Artist, Penguin Books – 1989.
2. Mailland Graves - Theory of Art and Colour, Van Nostrand, Reinhold Co. New York – 1983.
3. Opdyke H.G. - Art and Nature Appreciation, Macmillan 1993.
4. Judith Collins - Techniques of Modern Artists, John Welchman – 1987.
5. Arnason – History of Modern Art – Painting, Sculpture and Architecture - Thames and Hudson London 1989.

**AIM**

To inform about development of architecture in Europe from pre-historic to Byzantine period, as to how architecture is influenced by geographical, geological, Cultural, Social, religious forces, - to study the contributions in various periods with select examples of buildings their uniqueness in terms of form material and construction techniques.

**OBJECTIVES:**

- To enable a student to understand the progress in civilization leading to the development of shelter and how art and architecture emerged in Egyptian civilization.
- To make student understand how science emerged during the Sumerian period and how architecture and planning evolved, through select examples.
- To study the concept of governance, development of art and architecture and the contribution of Greece through study of select examples.
- To enable a student understand the concept of republican state and the architecture character of Romans through select examples.
- To study the birth & spread of Christianity, its influence on architecture and character during the Roman period through select examples.

**1. PREHISTORIC AGE AND EGYPT****6**

Old Stone Age - the Agricultural revolution – The New Stone Age - Development of Shelter. Nature of Art and Architecture - Factors influencing Architecture - Outline of Architectural Character – Great Pyramid of Cheops, Gizeh, Great temple of Ammon, Karnak.

**2. WEST ASIA****4**

Evolution of Sumerian, Babylonian and Persian cultures - Factors influencing architecture - Outline of architectural character - Ziggurat, Urnammu, Palace of Sargon, Khorsabad - Palace at Persepolis.

**3. GREECE****8**

Evolution of city states - Development of Art, Sculpture, architecture in the archaic and classic periods – Factors influencing architecture - Outline of architectural character – optical illusion in buildings, Orders in architecture - Doric Ionic and Corinthian, Parthenon, Athens; Erechion, Athens, Theatre Eipdaurous; Tower of Winds.

**4. ROME****8**

Evolution of Republican states - Factors influencing architecture - outline of architectural character Forum Romanum; Rome; Thermae of Caraculla; Colloseum Rome; Pantheon, Rome; Circus Maximus, Rome.

**5. EARLY CHRISTIAN AND BYZANTINE**

**4**

Birth and spread of Christianity - Evolution of church forms - Factors influencing architecture - Outline of Architectural character - St.Clement, Rome St.Sophia, Constantinople; St.Marks, Venice; St.Vitale, Ravenna.

**TOTAL : 30**

**TEXT BOOK:**

1. Sir Banister Fletcher – A History of Architecture University of London, The Athlone Press 1986.

**REFERENCES:**

1. Pier Liugi Nervi, General Editor - History of World Architecture - Series, Harry N.Abrams, Inc.Pub., New York, 1972.
2. S.Lloyd and H.W.Muller, History of World Architecture - Series, Faber and Faber Ltd., London, 1986.
3. Spiro Kostof - A History of Architecture - Setting and Rituals, Oxford University Press, London, 1985.
4. Gosta, E.Samdstp, Man the Builder, McGraw-Hill Book Company, New York, 1970.

**WEBSITES**

1. <http://library.advanced.org/10098>
2. <http://www.encylopedia.com/articles/05371.html>
3. <http://www.cup.org/Titles/09/0521094526.html>

**AIM**

To introduce the various components of a building like foundations, plinth, superstructure, roofs, the materials like soil, lime, clay, stone, their properties, preparation and application. Exclusive thrust on use of bamboo, Casuarina, Coconut, Palm other rural materials and stone are given. The students have to learn the application by construction drawings.

**OBJECTIVE:**

- To understand the importance of foundations, plinth, superstructure, and roof of a conventional building by manual drafting and theoretical understanding of soils, mortar as building materials.
- To enable the student to understand the importance of mud, need for stabilization, bamboo, need for its treatment, and simple foundation and wooden trusses by manual drafting.
- To have theoretical understanding of stone, properties, use in building in various areas and practice by manual drawing also.
- Theoretical understanding of brick, types, their manufacture, various products, and practical application through manual drafting exercises.

**1. INTRODUCTION****10**

Functional requirements of a building and its components - Drawings of foundations, plinth, superstructure, roofings.

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

Lime - fat/Hydraulic Limes - Their uses and properties – Manufacturing process - Mortar, functions – requirements - mix proportions.

**2. RURAL - MATERIALS AND CONSTRUCTION****30**

Mud as a building material - Soil stabilisation, soil blocks - Drawings of foundations - types, S.S.Block – S.S.Cast in situ walls - flooring - roofing - plastering.

Bamboo, casuarina coconut, palm, hay, coir, jute – properties - uses - fire retardant treatment insect proofing.

Types of foundations - walls - simple roof trusses floors for rural structures.

**3. STONE****25**

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.

Drawings of foundations - types of masonry - random rubble/Ashlar, etc. - cavity walls - flooring copings, sills, lintels, corbels, arches.

#### **4. BRICKS AND CLAY PRODUCTS**

**10**

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

**TOTAL : 75**

#### **TEXT BOOKS**

1. S.C.Rangwala – Engineering Materials Charotar Publishing House – Anand 1997
2. W.B.Mekay – Building Construction Vol. 1,2,3- Longmans U.K 1981.

#### **REFERENCES:**

1. R.J.S.Spencke and D.J.Cook, Building Materials in Developing Countries, John Wiley and Sons, 1983.
2. HUDCO - All you want to know about soil stabilized mud blocks, HUDCO Pub., New Delhi, 1989.
3. UNO - Use of bamboo and reeds in construction - UNO Publications.
4. Rural Construction - NBO, New Delhi

#### **WEBSITES**

1. <http://www.baboo-Flooring.com>
2. <http://ag.avizona.edu/SWES>
3. <http://www.angelfite.com/in>
4. <http://www.idrc.ca/library/documents/104800/chapz-e.html>
5. <http://www.angelfite.com/inz/granite>



3. AutoCAD reference manual - Autodesk UNC, 1998.
4. AutoCAD architectural users guide - Autodesk Inc., 1998.
5. Sham Tickko, Understanding AutoCAD - 14 (Windows) - 1997.

#### **WEBSITES**

1. <http://www.sln.fi.edu/>-Computer drafting
2. <http://www.ccollege.hccs.cc.tx.us/>-Comp.graphic

**AIM**

To develop manual sketching and drafting skills, which is a handy tool to practicing architects. Students will be taken out of studio to observe nature and built environment and draw using pencils, pen, and watercolours. In studio, concentration will be on use and development of scale orthographic, isometric, and axonometric projections of 2D shapes and 3D objects.

**OBJECTIVES:**

- To train the students manually to sketch in pencil & pen drawing and painting using appropriate media choosing subject both indoors & outdoors.
- To comprehend and draw manually using T' Square, set square or parallel drawing in the form of plates.
- To understand the relation between elevation, plan, and section of an object, group of objects and 3D views of simple object, and demonstrate through drawings.

**1. FREE HAND DRAWING 45**

Free hand drawing of object and natural elements – part of building environment, plants, trees, flowers, etc.

Outdoor sketching: study of form, their combination balance, etc. sketching of simple building forms and relations, simple three dimensional compositions.

Study of colour, composition, colour rendering of object, plants, interior and exterior spaces. Rendering of objects, built and natural environment with advance presentation skill, surface finishes (human figures, street furnitures, etc.) to communicate meaningfully and effectively.

**2. GEOMETRICAL DRAWING 30**

Plane Geometry - scales and angle construction of planes, curves, circles tangent and regular polygon area construction.

Solid geometry - simple projections, projection and development of the solid, section of solids, interpenetration of solids and true shape of sections.

**3. ORTHOGRAPHIC PROJECTION 15**

Introduction to orthographic projections - isometric and axenometric projections. Drawing of lines, basic shapes in different positions.

Orthographic projections of planar surface - geometrical shapes like square, circle, hexagon, etc. and combination of shapes.

Orthographic projection of 3D objections - constuction of plan, elevation and section of 3Dobjects and projections in various positions.

**TOTAL : 90**

## **TEXT BOOKS**

1. I.H.Morris – Geometrical drawing for Art Students. Orient Longman – Madras 1982
2. Albert. O. Halse – Architectural Rendering Techniques McGraw-Hill Book Co. New York 1972

## **REFERENCES:**

### **I. GEOMETRICAL DRAWING**

1. George K.Stegman, Harry J.Stegman, Architectural Drafting Printed in USA by American Technical Society, 1966.
2. Francis Ching, Architectural Graphics, Van Nostrand Rein Hold Company, New York, 1964.
3. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1964.

### **II. FREE HAND DRAWING**

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. Tokyo Musashino Academy of Art - Introduction to Pencil Drawing, Graphic - Shaw Publishing Co. Ltd., Japan, 1991.
6. Robert S.Oliver, The Complete Sketch, Van Nostrand Reinhold, New York, 1989.

## **WEBSITES**

1. <http://www.cs.brown.edu>
2. <http://www.dtcc.edu/> - document, project info – Arch.dwg.

**AIM**

To introduce the meaning of “design” and relate it to “architecture” through an understanding of basic elements of design, the principles of design relationships and analysis of design elements. Students are trained to develop abstract and real compositions in drawings. Simultaneously workshop exercises involving real and abstract models made of match sticks, Card boards, wires, wood pieces to familiarize students with such skills shall be given importance

**OBJECTIVE:**

- To theoretically understand first the various elements of basic design relationship, and principles and demonstrate the same through drawing exercises.
- To understand the workshop tools and equipments useful for model making and practically experiment with creative design ideas both in exterior and interior applications.

**1. BASIC DESIGN I****100**

Introduction to Architectural Design through Basic Design.

Introduction to elements of design.

Properties, qualities, and characteristics of (i) line, (ii) direction, (iii) shape, (iv) size, (v) texture, (vi) value and (vii) colour exercises involving the same including use of the computer.

The principles of design relationships - Repetition, Harmony, Contrast - Exercises involving the same.

The analysis of design elements - Exercises involving the same.

**2. WORKSHOP****80**

Use of hand tools and materials in carpentry, masonry and model making.

Making mount board mobiles employing cubes cuboids, square pyramid, cylinder and cones.

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

Texture applicability to murals and interior decoration.

**TOTAL : 180****TEXT BOOK:**

1. Maitland Graves – The Art of Colour and Design McGraw-Hill Book company Inc. 1951

**REFERENCES:**

1. Edward D.Mills - Planning the Architects Hand Book - Bitterworth, London, 1985.

- V.S.Pramar, Design fundamentals in Architecture, Somaiya Publications Pvt. Ltd., New Nelhi, 1973.
2. Francis D.K.Ching - Architecture - Form Space and Order Van Nostrand Reinhold Co., (Canaa), 1979.
  3. John W.Mills - The Technique of Sculpture, B.T.Batsford Limited, New York - Reinhold Publishing Corporation, London, 1966.  
Elda Fezei, Henny Moore, Hamlyn, London, New York, Sydney, Toronto, 1972.
  4. C.Lawrence Bunchy - Acrylic for Sculpture and Design, 450, West 33rd Street, New York, N.Y.10001, 1972.  
Orbid Publishing Ltd., Know how the complete course in Dit and Home Improvements No.22, Bed fordbury, London, W.C.2, 1981.

### **WEBSITES**

1. <http://infinit.net> – elements of design
2. <http://www.okino.com> - design, visualization, rendering system
3. <http://www.interface> - signage.com
4. <http://www.designcommunity.com> – arch rendering, 3D design



**TEXT BOOKS:**

1. R.K.Bansal – A textbook on Engineering Mechanics. Lakshmi Publications. Delhi 1992
2. R.K.Bansal – A textbook on Strength of Materials Lakshmi Publications. Delhi 1998

**REFERENCES:**

1. P.C.Punmia, Strength of Materials and Theory of Structures; Vol. I, Laxmi publications, Delhi 1994
2. S.Ramamrotham, Strength of materials - Dhanpatrai & Sons, Delhi, 1990.
3. W.A.Nash, Strength of Materials - Schaums Series – McGraw-Hill Book Company, 1989.
4. R.K. Rajput - Strength of Materials, S. Chand & Company Ltd., New Delhi 1996



**TEXT BOOKS:**

1. V.S.Pramar, Design Fundamentals in Architecture, Samaiya Publications Private Ltd., New Delhi, 1973.

**REFERENCES:**

1. Paul Alan Johnson - The Theory of Architecture - Concepts and themes, Van Nostrand Reinhold Co., New York, 1994.
2. Francis D.K.Ching, Architecture-Form, Space and Order, Van Nostrand Reinhold Company, New York, 1979.
3. Helm Marie Evans and Caria David Dunneshil, An initiation to design, Macmillan Publishing Co. Inc., New York

**AIM**

To inform about development of architecture in India from River-valley civilization to IndoAryan Period as to how architecture in India had thrust on religion as a basic force and how bamboo, timber, wood, stone as materials developed to result in trabeated technology. Exposure will be on select examples from various historic periods resulting in an understanding of materials their uses and development of construction technology.

**OBJECTIVES:**

- To make the student understand, contributions to architecture by the river valley, Aryan and Mauryan civilization and the kinds and building materials and techniques adopted by them.
- To enable the student to understand the influence of Buddhism in northern India and architecture of buildings and caves by studying specific examples.
- To study the mythological evolution of Hindu temple during the Gupta and Chalukyan period through selected examples.
- To understand the rock cut and stone architecture of Dravidian period and later developments in south India.
- To enable a student to understand the plan forms of Indo Aryan temple through select examples.

**1. ANCIENT INDIA****4**

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

**2. BUDDHIST ARCHITECTURE****8**

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

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

**3. HINDU ARCHITECTURE****6**

Evolution of Hindu temple - Early shrines of the Gupta and Chalukyan periods - Tigawa temple, Ladh Khan and Durga temple, Aihol, Papanatha and Virupaksha temples, Pattadakal.

**4. DRAVIDIAN ARCHITECTURE****6**

Dravidian culture - Rock cut productions under Pallavas - Shore temple, Mahabalipuram - Dravidian Order - Brihadeeswara Temple, Tanjore - Evolution and form of gopuram -

Complexity in temple plan due to complexity in Ritual - Minakshi temple, Madurai.

**5. INDO ARYAN STYLE**

**6**

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

**TOTAL : 30**

**TEXT BOOKS:**

1. Percy Brown, Indian Architecture (Buddhist and Hindu Pd.) - Tarapore Vala and Sons Bomabay 1983.

**REFERENCES:**

1. Satish Grover, The Architecture of India (Buddhist and Hindu Period), Vikas Publishing Housing Pvt. Ltd., New Delhi, 1981.
2. A.Volwahren, Living Architecture - India (Buddhist and Hindu), Oxford and IBM, London, 1969.
3. Christoper Tadgelli, 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. Carmen Kagal, Vistara: The Architecture of India, Published by Festival of India, 1986.

**WEBSITES**

1. <http://www.greatbuildings.com/gbc-types/styles/hindu.html>
2. <http://indianculture.tqn.com/msub19.htm>
3. [http://web1.arch.hawaii.edu/courses/courses/300/arch371/09\\_04/9-4htm](http://web1.arch.hawaii.edu/courses/courses/300/arch371/09_04/9-4htm)
4. [http://www.hindunet.org/alt\\_hindu/1995\\_Apt\\_1/msg00069.html](http://www.hindunet.org/alt_hindu/1995_Apt_1/msg00069.html)
5. <http://bishop.calpoly.edu/libarts/jwetzels/study/HinduArtOflaterDynasties.htm>

**AIM**

To enable the student to understand – how Bricks and clay products are used in foundations, walling, and roofing systems, - how Timber and allied products are examined for their properties and their uses in construction industry, their application for paneling, false ceiling, trusses and furniture. Thrust will be on Low Cost Building Technology developed in India for components of Buildings. The students have to learn the applications and various components through scaled drawings.

**OBJECTIVES:**

- To bring in an awareness in student about use of brick as a conventional and popular building material, its application and method in walls and roofs through drawing exercises.
- To make student understand: Wood, Timber, defects and preservation process treatment and architectural applications.
- To enable a student draw joinery details, the various use in building industry, its structural application, and furniture through select exercises.
- To understand cost efficient techniques of construction using different materials by drawing exercises and study details required for physically challenged people.

**1. BRICKS AND CLAY PRODUCTS 15**

Drawings of brick foundations - buildings in brickwork, bonds columns, corners – structural members in brickwork.

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

Hollow clay blocks - for walls - partitions - roofs.

Roofings - Flat Roofs - or Terrace roofs - Sloping roofs. Detailing includes for physically handicapped

**2. TIMBER AND ALLIED PRODUCTS 10**

Softwood and hardwood - Secondary timber - Physical properties and uses - Defects, Conversion, Seasoning, decay and preservation of timber - Fire retardent treatment, anti-termite treatment.

Industrial timbers - plywood, blockboard, particle board, fibre boards.

Manufacture and uses - current developments.

**3. TIMBER 40**

Drawings of timber joinery for Windows, doors, ventilators. Timber partitions, panelling, false ceiling, fixed partitions, sliding, folding, top hung bottom rested false ceiling - wall panelling. Timber staircases - Designed staircase - timber trusses - Lean to - close couple - Kingpost - Queen pot - Trusses. Timber floors - timber built-in-furniture – Detailing and fittings for physically handicapped.

#### **4. LOW COST BUILDING TECHNOLOGY**

**10**

Drawings of foundations – walling – Roofs – partitions – ceiling panel – doors and windows. Miscellaneous – Drawing of Birck jails, Screen walls – pavement blocks – Ferrocement water tanks. Detailing and specifications for physically handicapped.

**TOTAL : 75**

#### **TEXT BOOKS:**

1. S.C.Rangwala, Engineering Materials, Charotar Pub.House, Anand, 1997.
2. W.B.Mckay, 'Building Construction', Vol.1, 2, 3 Longmans, U.K. 1981.

#### **REFERENCES:**

1. Don A.Watson, Construction Materials and Processes, McGraw Hill Co., 1972.
2. Alanwerth, Materials, The Mitchell Pub. Co. Ltd., London, 1986.
3. R.Chudleu, 'Building Construction Handbook', British Library Cataloguing in Publication Data, London, 1990.

#### **WEBSITES**

1. <http://www.ibex-ibex-intl.com>
2. <http://www.inika.com/chitra>
3. <http://www.routbdge.com>
4. <http://www.venturaindia.com>



5. Sham Tickko, Understanding AutoCAD - 14 (Windows) - 1997.

**WEBSITES**

1. <http://college.hccs.cc.tx.us/>
2. <http://www.ciips.ee.uwa.edu.au/>

**AIM**

To enable to perceive built environment in terms of their detail, form, colour, texture, so as to help to present architectural design solutions in a realistic way. Firstly to make student understand, the intricacies of detail, use of material in furniture and components of building. Secondly to enable to draw manually 3D drawings understanding types and methods of perspective drawings. Lastly to enable the student to visualize the created design in a realistic way with an input of knowledge on Sciography.

**OBJECTIVES:**

- To make the student conversant with architectural drafting using instruments, train him to draw and write with knowledge on composition, of select components and details of a building.
- To enable a student understand the theory of perspective to draw an object and later on simple buildings in perspective by doing series of exercises.
- To make a student understand the theory and purpose of casting shade and shadows in buildings in simple objects and later in simple building through select exercises.

**1. MEASURED DRAWING****45**

Principle of basic architectural drafting - line value lettering basic, multiview projections and sections - presentation formats.

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

Detailed measured drawing/documentation of historic and architectural monument or building.

**2. PERSPECTIVE****30**

Characteristics of Perspective Drawings, Perspective systems and methods.

Two point perspective of simple objects, outdoor and indoor view of a building, etc. One point and three point perspective of interiors

Perspective theory and practice

**3. SCIOGRAPHY****15**

Principles of shades and shadows - Shadwos of lines and circles

Shadows of architectural elements, etc.

Shadows of circular solids

Shadows on buildings, etc.

**TOTAL : 90**

### **TEXT BOOKS:**

1. Robert. W.Gill – Advanced perspective and Sciography Thames and Hudson London 1974
2. Claude Batley – Indian Architecture Taraporevale sons & co. Bombay.

### **REFERENCES:**

#### **I. MEASURED DRAWING**

1. William Kirby Lockard, Drawing as a Means to Architecture, Van Nostrand, Reinhold Company, New York.
2. George A.Dinsmore, Analytical Graphics - D.Van Nostrand, Company Inc., Canada.

#### **II. PERSPECTIVE**

3. John M.Holmes, Applied Perspective, Sir Isaac, Piotman and Sons Ltd., London 1954.
4. Robert W.Gill, Basic Perspective, Thames and Hudson, London, 1974.  
Interiors: Perspective in Architectural Design Graphic - SMA Publishing Co. Ltd., Japan, 1967.

#### **III. SCIOGRAPHY**

5. C.Leslie Martin, Architectural Graphics, The Macmillan Company, New York, 1964.
8. Francis Ching, Architectural Graphics, Van Nostrand and Reinhold Company, New York, 1975.
9. Ernest Norling, Perspective drawing, Walter Foster Art Books, California, 1986.
10. Bernard Alkins - 147, Architectural Rendering, Walter Foster Art Books, 1986.
11. Rober W.Gill, Advanced Perspective, Thames and Hudson, London, 1974.

### **WEBSITES**

1. <http://www.cs.brown.edu>
2. <http://www.dtcc.edu/-document,project> info – Arch.dwg.

**AIM**

To bring in confidence as to how basic design principles and knowledge are used in solving simple space, small span buildings and create spaces and buildings responding to human anthropometrics and creating environments which are barrier free. Students are trained to solve design solutions based on simple topologies, and present them in the form of drawings.

**OBJECTIVES:**

- To enable a student understand the basics of anthropometrics, its application in articulating vertical, horizontal space and later on in simple buildings including considerations for physically challenged through a design process resulting in specific typologies, as specified.
- To enable a student to work with hand, details, and simple models of selected elements of components of a building. Later on the students are to be trained to make models of simple buildings and structure, which they design in their exercises.

**1. DESIGN STUDIO****100**

The problems involve simple space organization starting with single space single use - small span Horizontal movement - single bay - passive energy type spaces.

The study of space standards and anthropometrics related to each problems is stressed upon. Anthropometry as related to physically handicapped and elderly persons are required to be studied.

Examples of exercises include

- a) Toilet for a physically handicapped person. Hostel room, bed room, kitchen
- b) Shop, Workshop, pavilions, snack bar
- c) Residence, petrol bunk, fire station, police station, 100 cottage for an elderly couple

**2. WORKSHOP II****80**

Elementary models indicating wall surfaces floral designs, ceilings, glass areas, lawn water, bodies, etc.

Block models of small campuses using wood, thermacol mount board, soap, cork board, etc.

Detailed model of a small building like branch bank, small residences, bus shelter, snack bar, including landscape details.

**TOTAL : 180**

### **TEXT BOOKS:**

1. De. Chiara and Callender, Time-saver Standards for Building Types, McGraw-Hill Co., New York, 1973.

### **REFERENCES:**

#### **DESIGN STUDIO**

1. E and O.E. Planning, Liffé Books Ltd., London, 1973.
2. Sid Del Mar
3. Leach, Techniques of Interior Design Rendering and presentation, McGraw-Hill Co., New York, 1973.

#### **WORKSHOP II**

1. Arundell (Jan), Exploring Sculpture, Mills and Boon, London/Charles T.Branford Company, USA, 1972.
2. John W.Mills, The Technique of Sculpture, B.T.Batsford Ltd., New York Reinhold Publishing Corpn., London, 1966.

#### **WEBSITES**

1. [www.designbasics.com/](http://www.designbasics.com/)-(on house type – Americans)
2. <http://www.geosystems.gatech.edu/> - (on detail design method)
3. <http://www.c.s.berkely.edu/> - (on bubble diagram builder with interaction)
4. <http://www.plannet.com/resources.htm> - (on resource info)

**Minimum requirements of Studio and laboratory Equipments for the Architecture Courses.  
(For a batch of 40 students)**

**1. Studios (All the Years)**

<b>Sl. No.</b>	<b>Description of Equipments</b>	<b>Quantity required</b>
1.	Drawing Board of minimum size A1 (110cm x 80cm) and Stand with stool (as per the sanctioned intake for each batch)	1 No. / Student

**2. CADD LAB (For all the batches)**

<b>Sl. No.</b>	<b>Description of Equipments</b>	<b>Quantity required</b>
1.	One Computer (Pentium 4) with required licensed software (as per the sanctioned intake)	1 No. / Student
2.	Plotter (A0 size)	1 No.
3.	Laser Jet Printer (A4 Size)	1 No.
4.	LCD With Support System	1 No.
5.	Flexi vision / Paxi Scope / OHP	2 Nos.
6.	Inkjet Printer (for the whole of Department)	1 No.

**3. Workshop and Model Making Lab**

<b>Sl. No.</b>	<b>Description of Equipments</b>	<b>Quantity required</b>
1.	Portable Drilling Machine	1 No.
2.	Portable Screw and Nutt Setter Machine	1 No.
3.	Measuring Tape (Steel 30m)	2 Nos.
4.	Model Miniature Bricks in Wood	4 Boxes.
5.	Plani Meter	1 No.
6.	Handiman Tool Kit	2 Nos.
7.	Thermo Cole Cutting Machine	1 No.
8.	Glass Cutter	2 Nos.

**4. Climatology Lab**

<b>Sl. No.</b>	<b>Description of Equipments</b>	<b>Quantity required</b>
1.	Barometer	2 Nos.
2.	Solarimeter	1 No.
3.	Animometer	1 No.
4.	Windwave	1 No.
	<b>(OR)</b>	
	Comprehensive Whether Station	1 No.

**Note : The above equipments will be shared for respective subjects hours as per timetable.**